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A STUDY OF SAVING IN THE UNITED STATES

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I. Introduction; Tables of Annual Estimates of Saving, 1897 to 1949. By Raymond W. Goldsmith.

II. Nature and Derivation of Annual Estimates of Saving, 1897 to 1949. By Raymond W. Goldsmith.

III. Special Studies. By Raymond W. Goldsmith, Dorothy S. Brady, and Horst Mendershausen.

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A STUDY OF SAVING IN THE UNITED STATES

VOLUME III

Special Studies

BY

RAYMOND W. GOLDSMITH
DOROTHY S. BRADY
AND
HORST MENDERSHAUSEN

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PREFACE

Fortunately, I may be brief in this Preface, as it covers only matters not touched upon in the rather lengthy Preface to Volumes I and II,[1] which should be regarded as "incorporated by reference".

Volumes I and II dealt with annual estimates of saving from 1897 through 1949 for the entire economy and for its main sectors. This, the third volume, contains a number of studies that either utilize different bodies of data on saving (Parts II and III, which are the work of Dorothy S. Brady and Horst Mendershausen respectively), or make different use of the basic data of Volume I (Parts I and IV), or supply figures which, although not dealing with saving directly, are required in other parts of the Study (Parts V and VI).

Almost all of the material presented in this volume has been utilized, although not exhaustively, in one way or another in the Introduction to the Study in Volume I. I am, therefore, grateful to the Life Insurance Association of America for making it possible to present in this volume these basic materials—which in Parts II, III, and IV include a good deal of analysis—in reasonably detailed form for the information of the public and for further use by research workers.

Part of the material in this volume has been published before, though in general only in summary or preliminary shape. Thus, summaries of the estimates of Parts I and III were presented in two papers read at the Conference on Research in Income and Wealth, and published in *Studies in Income and Wealth*, Volume XIV (1952). Some additional results of Dorothy Brady's work reported in Part II will be found in an article in *Studies in Income and Wealth*, Volume XV (1953).

The work reflected in Part I and Parts IV to VI was done at various times between 1948 and 1953, mostly during the earlier part of the period. In general, therefore, no use was made of material that became available after the middle of 1953.

In the preparation of Parts I and IV I have had the most helpful assistance of Charlotte Hanley Scott, who also participated in seeing the entire volume through press. Bertram E. Rifas aided in the preparation of Part V. In Section III of Part I, I was greatly helped by members of the staff of the Research Division of the Board of Governors of the Federal Reserve System (particularly by John Frechtling), as well as by Bertram Rifas, both in the derivation of the tables and in the explanation of the techniques of estimation and the meaning of the figures. I am very grateful to the Board for having made available through the good offices of Dr. Ralph A. Young the basic data derived from the Board's Survey of Consumer Finances, but I must absolve the Board from any responsibility for the blow up of the original data or for their interpretation. Alexander Ganz assisted in the preparation of Part VI. The difficult task of typing successive drafts of the manuscript was ably performed by Elsie Jennings. My other debts are about

[1] This latter Preface is found at the beginning of Volume I.

the same as are acknowledged in the Preface to Volumes I and II (pp. xvii–xviii of Volume I).

The analysis of the saving data provided by cross-section surveys of individual consumer units in Part II was carried out by Dorothy S. Brady at the University of Illinois in the years 1948–1950. Summary information from surveys of expenditures and savings for later dates was included where possible in the final manuscript, but the greater part of the study relates to statistical data for various dates between 1888 and 1948. Marvin Kogan assisted in the statistical analysis of the data. Margaret G. Reid and Leonid Hurwicz provided many valuable suggestions in the development of the statistical analysis. The Bureau of Labor Statistics and the Survey Research Center of the University of Michigan gave considerable assistance by supplying preliminary and unpublished data from the surveys made in the years 1947–1950.

The study of the pattern of estate tax wealth in Part III was begun by Horst Mendershausen in the fall of 1948 and terminated in the spring of 1951. It covers estate tax data for the years 1922 through 1946 to the extent that they have been published, and it utilizes special tabulations of the data by age of decedent that were made available by the (then) Bureau of Internal Revenue for the years 1941, 1944, and 1946. These tabulations, together with earlier published material of similar nature (for 1922 to 1924), afforded an opportunity to estimate the wealth of the living in these years with the help of the "estate multiplier" method; but only for 1944 did the data give the breakdown by type of assets that is essential for a satisfactory estimate. No data of similar scope have become available since. Dr. Mendershausen was assisted by Erika Teutsch, Anne Kaposey, Catherine Siconolfi, Marion Vince, and Frederick V. Loud. He also wishes to acknowledge the cooperation of officials of the Bureau of Internal Revenue, the Bureau of the Census, and the Metropolitan Life Insurance Company, who were very helpful in obtaining the necessary basic data.

Partly because of the character of the various parts of this volume and partly because of the late date of completion of part of the manuscript, the Advisory Committee has been unable to give all of this volume as much attention as the body of Volumes I and II. As has been emphasized in Dr. Riefler's Foreword to Volume I, the Committee should not be held responsible for the content or form of Volume III either.

RAYMOND W. GOLDSMITH

Washington, D.C.
March 1955

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A	Agricultural Saving	Volume I, pp. 752–851
B	Supplementary Tables on the Derivation of Annual Estimates of Saving	Throughout Volume II
C	Corporate Saving	Volume I, pp. 912–971
D	Nonfarm Individuals' Non-Real Estate Debt	Volume I, pp. 698–719
E	Wealth of the Estate Tax Population	Volume III, pp. 281–379
F	Saving of the Federal Government	Volume I, pp. 972–1043
G	Saving of State and Local Governments	Volume I, pp. 1044–1077
H	Household Saving	Volume III, pp. 142–268
I	Saving through Life Insurance and Pension Funds	Volume I, pp. 448–471
J	Individuals' Saving through Savings and Loan Associations	Volume I, pp. 434–447
K	Net Foreign Investment of the United States	Volume I, pp. 1078–1093
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N	National and Personal Income	Volume III, pp. 427–445
P	Nonfarm Saving through Producer Durable Goods and Inventories	Volume I, pp. 870–911
Q	Nonfarm Saving through Consumer Durable Goods	Volume I, pp. 674–697
R	Nonfarm Saving through Real Estate	Volume I, pp. 582–673
S	Period Averages of Annual Estimates of Saving	Volume I, pp. 259–321
T	National Saving by Major Saver Groups; Personal Saving by Major Components	Volume I, pp. 344–377
U	Saving by Unincorporated Business Enterprises	Volume I, pp. 852–869
V	Individuals' Saving through Securities	Volume I, pp. 472–581
W	National Wealth and Balance Sheet Statements	Volume III, pp. 12–135
X	Assets of Private Nonfinancial Nonprofit Institutions	Volume III, pp. 450–455
Y	Econometric Analysis of Relation of Saving and Income	Volume III, pp. 393–417
Z	Supplementary Tables to Introduction	Volume I, pp. 229–258

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PART I

NATIONAL BALANCE SHEETS AND NATIONAL WEALTH STATEMENTS 1896 to 1949

BY RAYMOND W. GOLDSMITH

I. Introduction

The purpose of this part of the Study is solely to show the derivation of the estimates of national wealth and of the combined group and national balance sheets which have been used in the Introduction to Volume I, particularly Chapter VIII, as well as in *Studies in Income and Wealth*, Volume XIV, [1] in *Income and Wealth*, Series II, [2] and in a forthcoming study of financial intermediaries. [3] It thus tries to provide the reader with an explanation of the figures used and the basic data on which further work in this field can be based. This is done, following the principle of reproducibility, [4] by showing in Tables W-1 to W-65, and in the notes to them, all the basic data from which the estimates were built up, or by indicating where they can be found; and by describing all manipulations of the data that were required to fit them into the structure used in the Study. Interpretation of the figures is deliberately omitted. Readers interested in it are referred to Chapter VIII of the Introduction and to the two papers in *Studies in Income and Wealth* and *Income and Wealth*, all of which remain far from exhausting the data presented here.

The tables which form the body of this part consist of three main groups:

(1) Annual national wealth statements (Tables W-1 to W–8);

(2) Group and national balance sheets for eight benchmark dates (W-9 to W-17), and for twelve major groups of economic units (W-18 to W-43);

(3) Blown-up sample balance sheets of households as of the beginning of 1950 based on data from the Survey of Consumer Finances (W-44 to W-65).

A fourth group of closely related tables is included in Part III of this volume, viz.:

(4) Balance sheets for 1944 of estate tax population, i.e. all individuals having an estate in excess of the estate tax exemption (Tables E-52 to E-69).

The introductory text of this part is made up of two sections: a brief summary of principles underlying the construction of group and national balance sheets and of national wealth statements; and a fuller discussion of the special problems encountered in blowing up the sample balance sheets of the Survey of Consumer Finances. [5]

II. National Wealth and National Balance Sheets, 1896–1949

The social accounting principles underlying the derivation of national wealth statements and national balance sheets, as well as the main problems arising in such calculations, have been discussed in some detail in *Studies in Income and*

[1] Goldsmith, "A Perpetual Inventory of National Wealth," pp. 5–73 of the book cited.

[2] Goldsmith, "The Growth of Reproducible Wealth of the United States of America from 1805 to 1950," pp. 247–328 of the book cited.

[3] *Financial Intermediaries in the Saving and Investment Process, 1900–1952*, to be published by the National Bureau of Economic Research.

[4] Cf. Volume II, Chapter III.

[5] A similar discussion of the blow-up of estate tax returns will be found in Part III, Chapter II.

Wealth, Volumes XII and XIV. [6] A few general statements on the methods applied in deriving the national wealth statements and national balance sheets shown in this volume may therefore suffice:

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

(2) The combined national balance sheet is simply the sum of group balance sheets. Hence, the combined national balance sheet does not eliminate either intergroup or intragroup creditor-debtor or owner-issuer relationships.

(3) When all intergroup and intragroup relationships are eliminated we obtain instead of a combined national balance sheet a national wealth statement. This statement, which is equivalent to a nationally consolidated balance sheet, shows only two items on the left hand side, i.e. tangibles (subdivided into as many components as necessary for the purpose of analysis) and net foreign claims; and one item on the right hand side, consolidated net national worth.

(4) The national wealth statement is presented on three price bases: (a) current values, interpreted as replacement cost for structures and equipment (Tables W-1 and W-2); (b) base period (1929) prices (Tables W-3 and W-4); and (c) original cost (Tables W-5 and W-6). The need for estimates in current values is obvious as original cost figures are not comparable between units or groups, and as both original cost and base period values presumably have only limited significance in determining the actions of owners, creditors, and debtors.

(5) In the case of base period (1929) values, it is preferable to limit the estimates to reproducible tangible wealth since there is no satisfactory way of reducing the value of land and other nonreproducible tangible assets to base period prices. If nonreproducible tangible assets are carried for all dates at the absolute values they happen to have in the base period, their relationships to other items in the national wealth statements for other periods are in many cases patently unrealistic. [7]

Alternatively, if the value of land is related to the values of the structures erected on it, the latter of course expressed in 1929 prices, considerable variations will be introduced in the deflated value of land which do not conform to the basic

[6] Goldsmith, "Measuring National Wealth in a System of Social Accounting," in Volume XII, pp. 23–79, and "A Perpetual Inventory of National Wealth," in Volume XIV; see also Kuznets, "On the Measurement of National Wealth," in *Studies in Income and Wealth*, Volume II.

[7] If, for instance, nonreproducible tangible assets are carried throughout at their 1929 value, they will account for 50 percent of total national wealth, in 1929 prices, in 1900, although it is obvious from consideration of balance sheets expressed in current values that this percentage is far too high.

principles of deflation, the reduction of fluctuating monetary values to supposedly unchanging physical units. Tables W-3 and W-4 nevertheless include estimates of land on both bases for the convenience of those whose anxiousness for figures of aggregate national wealth in stable prices overrides their misgivings about the meaning of deflated estimates of land values.

(6) Reproducible tangible assets are reduced to base period prices by specific deflators, e.g. construction cost indices for the different types of structures. There is doubt even in these cases whether the goal of eliminating the influence of price changes has been satisfactorily accomplished. If the deflators err it is probably by paying insufficient attention to product improvement over time. This means that the deflators are relatively too high for the more distant past as compared with the present, and that the resulting estimates in supposedly stable prices somewhat understate the rate of growth of national wealth. Unfortunately it cannot be assumed that these differences in the deflators affect all forms of wealth to an equal extent. On the contrary, it is likely that they have been more serious for components like producer and consumer durables and livestock than for structures and inventories. Consequently the deflated figures may well understate the increase in the share of machinery, equipment, and livestock in relation to other forms of national wealth if comparisons are made on the basis of deflated figures for protracted periods.

(7) National and group balance sheets are shown only on the basis of current prices. (Tables W-9 to W-43.) Reduction to base period prices is practically ruled out as hardly any meaning can be attached to the process of "deflating" the value of intangible assets, there being no physical units in which such assets could be expressed. [8]

It is of course possible, and in some respects meaningful, to adjust group and national balance sheets for changes in the general price level and thus to reduce them to money of "constant purchasing power." Such a deflation would affect all items equally and, hence, is not called for except in the case of total assets and possibly total net worth of the various groups. [9] There is also some point, following a procedure occasionally employed in the case of saving, in applying different deflators to the various groups in an attempt to take account of differences in group purchasing power which, in turn, reflect differences in the course of prices of the items bought by these groups. Such a procedure again will be significant only for total assets and net worth of the different groups. [10]

National and group balance sheets could theoretically be based on original cost to the owning unit. Such figures, however, have only limited economic significance as they are not comparable as between units and groups. As long as business accounting methods are based on original cost, it cannot be denied that such figures may have some motivational significance.

[8] See the discussion of deflation of estimates of saving in Volume II, Chapter III.

[9] These figures could be obtained by deflating figures shown in Tables W-9 to W-16 by Table T-16, col. 1.

[10] The required deflators are shown in Table T-16 of Volume I.

(8) The national wealth statements (Tables W-1 to W-8) distinguish eighteen types of durable tangible assets (six types of structures; two types of durable equipment; five categories of inventories, including monetary gold and silver; and five categories of nonreproducible assets); and net foreign assets, a mixture of tangible and intangible assets. All the primary categories are based on the physical nature of the assets, but some of the breakdowns use ownership as the criterion. It is thus possible to divide the main physical categories of wealth (structures, equipment, inventories, and land) among the main groups of economic units (nonfarm households, farmers, business enterprises, and government) and to derive totals for all durable tangible assets operated by each of the main groups.

(9) In addition to the main estimate of national wealth shown on the three bases of valuation in Tables W-1, W-3, and W-5, an alternative estimate is presented in Tables W-2, W-4, and W-6. The two estimates differ only in the value assigned to residential structures and to the land underlying them. Tables W-2, W-4, and W-6 include the estimates derived from the statistics of construction expenditures as they now stand. In Tables W-1, W-3, and W-5, on the other hand, these figures have been slightly increased—by 20 percent—in order to bring them more closely in line with the available benchmark data on the value of residential real estate. [11]

(10) Military assets (i.e. items like guns, tanks, planes, ammunition, and military supplies, as well as fortifications, barracks, and airfields) have been omitted from both national wealth statements and national balance sheets, and the balance sheets of the federal government. However, using rough estimates for military assets derived elsewhere in the Study, [12] national wealth including military assets would amount to:

$ bill.

End of year	Current prices			1929 prices		
	Civilian assets	Military assets	Total	Civilian assets	Military assets	Total
	1	2	3	4	5	6
1939	395.6	2.6	398.2	434.6	2.1	436.7
1945	570.6	52.0	622.6	447.1	55.0	502.1
1949	898.2	70.4	968.6	529.9	39.7	569.6

(11) Separate balance sheets have been prepared for the seven groups distinguished in the estimation of saving viz. nonfarm households, agriculture, unincorporated business enterprises, corporations, and local, state, and federal governments and are shown in Tables W-22 to W-43. For many purposes, however, it is necessary—and possible if some precarious procedures are accepted—to distinguish several additional groups the saving of which cannot be estimated separately, particularly in the case of groups with assets which are large compared to their saving. Thus, separate balance sheets are shown in Tables W-25 and W-26

[11] For discussion of these data see Volume II, Chapter IX.

[12] See Table F-31 of Volume I.

for nonprofit institutions, and for personal trust funds administered by banks and trust companies, although their saving was included with that of nonfarm individuals. Furthermore, corporations, the saving of which had to be estimated for most of the period in one aggregate figure, could be split for the purpose of building up group balance sheets into three subgroups: nonfinancial corporations, financial corporations other than financial intermediaries, and financial intermediaries. (Tables W-31 to W-38.)

(12) The body of this Part consists essentially of two separate sections: first, national wealth statements limited to tangible assets and net foreign balance (Tables W-1 to W-8); and secondly, group and national balance sheets (Tables W-9 to W-43). National wealth statements are presented annually from 1897 to 1949. National and group balance sheets are shown only for the eight benchmark dates of 1900, 1912, 1922, 1929, 1933, 1939, 1945, and 1949. It is possible to prepare similar balance sheets for each single year. However, the effort required would be prohibitive, and the accuracy of many estimates insufficient to make annual changes significant.

(13) The estimates of tangible assets in the group and national balance sheets tie in with the national wealth statement except for monetary metals. The sum of the holdings of a given form of tangibles in the balance sheet of all groups is therefore equal to the value of the same item in the national wealth statement.

(14) Hardly any of the entries in the national wealth statements and only a minority of those in the group balance sheets are taken from owners' records. Indeed, it is only for corporations and for the federal government that a substantial proportion of the items which appear in the balance sheet come, either directly or indirectly, from their own financial statements. For most groups the balance sheets are "constructed," i.e. the different assets or liabilities have been estimated on the basis of such data as were available in financial, production, and other statistics, while net worth is treated as the residual between total ascertainable assets and liabilities. This heavy reliance on constructed figures was necessitated both by the complete absence of comprehensive data based on their own records for some groups; and by the necessity of basing entries uniformly on current values. For some groups and items comprehensive figures derived by other estimators were available, e.g. for agriculture; and some of these in turn were based on exhaustive official statistics. In other cases the results of sample surveys (Tables W-44 to W-65) could be used, at least as checks, but this possibility was essentially limited to the last benchmark year (1949) and to farm and nonfarm households.

(15) National and group balance sheets employ a uniform classification of assets and liabilities distinguishing nine forms of tangible assets, twenty-one forms of intangible assets, and sixteen forms of liabilities and equity. In fitting the available data into this uniform mould very rough estimates and almost arbitrary allocations have to be used in not too rare instances, mostly in cases where the absolute amounts involved are not very large. Types of assets and liabilities not likely to be present at all in the case of certain groups of holders or presumably of very small size have been omitted altogether.

(16) One would want to set up the balance sheets in a form to show the claims of each group against and liabilities of each group to each other group, including stocks and equity in unincorporated business enterprises as forms both of assets and of liabilities. Lack of data as yet prevents such a complete cross classification. Hence a compromise has been adopted. A sufficient number of intangible assets and liabilities have been distinguished to come reasonably close to a cross classification for at least the quantitatively most important forms of assets and liabilities. For example, segregation of nonfarm nonresidential mortgages enables us to show each group's mortgage claims on nonfarm nonresidential property, but does not go as far as to show separately each group's liability on account of nonfarm mortgages to each other group, say, to nonfarm individuals, unincorporated business enterprises, nonprofit organizations, and nonfinancial organizations separately. Such a complete cross classification remains the goal. For many assets and liabilities, fortunately, only one class of creditors or debtors needs to be taken into account, so that if they are shown separately no further cross classification is required. If, for instance, deposits with commercial banks are treated as a separate form of intangible assets, as is done in these statements, there is obviously only one debtor group (commercial banks) to be taken into account, and the national balance sheets in the form shown here provide all the information that a complete cross classification would furnish. The larger the number of groups which are of significance as creditors (holders) or debtors (issuers) of a given asset, the more serious is the lack of a full cross classification. From that point of view the treatment in the balance sheets presented here is probably least satisfactory for accounts receivable from and payable by business and for nonfarm mortgages.

(17) Claims of one group of domestic economic units against another should exactly balance liabilities of the second to the first group if allowance could be made for valuation differences, particularly for bad debt reserves. Actually the figures differ—and often by more than could be attributed to bad debt allowances —in many cases in which independent information is available or can be inferred from the balance sheets of both creditor and debtor. The question then arises whether to force consistency by altering one or both of the reported figures for claims and liabilities, which means altering a number of items, including footings, in the combined reported balance sheet of the groups affected; or to accept the discrepancy, a procedure which will result in the appearance of net receivables or net payables among domestic units in consolidated balance sheets which ought not to include such an item. Of these two alternatives the second has been accepted, chiefly because the discrepancies involved are generally small compared with national balance sheet totals and because any adjustment would have had to be arbitrary.

(18) While most items of assets and liabilities are sufficiently determinate to make differences in their definitions among groups—the result of such differences in the underlying data—a matter of secondary, though not negligible, importance, there are some items in which separation is only possible in an approximative way and without assurance of uniformity as between groups. This difficulty

is particularly pronounced in the fields of short-term claims and of short-term liabilities excluding those against and to financial institutions.

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

(20) There is unfortunately no way of estimating the margin of error in the individual items of assets and liabilities and net worth, or in the balance sheet totals. This is due partly to conceptual difficulties, i.e. the difficulty of agreeing what should be regarded as the true figure for a given asset or liability of a given group at a given date, even if the basic principle of valuation at current prices is accepted. [13] It also reflects the absence, in almost all cases, of benchmark or alternative estimates. The margin of error obviously is considerably lower for assets like cash, inventories, bonds, and farm and residential mortgages, and for the corresponding liabilities, than for items like structures and equipment, land, accounts receivable and payable, common stock, and interest in unincorporated business. The estimates of net worth, being derived as residuals are of course particularly subject to error, and the more so the smaller the proportion of net worth to total assets and liabilities. Similarly, the figures are as a rule more reliable—for the same class of assets or liabilities—for groups like corporations and agriculture, for which comprehensive balance sheets of some type have been available, than for nonfarm individuals, unincorporated business, personal trust departments, and governments, for which they have had to be developed practically from the ground up. Finally, the margin of error is undoubtedly smaller—again for the same group and type of asset or liability—for the last three benchmark dates, i.e. from 1939 on, than for earlier dates. This statement, however, must be qualified by the fact that over-all national wealth statements, which provide valuable checks, exist for the first three benchmark dates, but are entirely absent for later ones.

(21) In the interest of uniformity all wealth estimates (except Tables W-32 to W-34) have been carried to the nearest million dollars. This, of course, does not mean that the figures themselves or changes in them are significant to that extent. Indeed, in most of the estimates the last digit shown is of no significance, and in many cases this is true of even the last two and three digits. [14]

(22) It should be clear from the difficulties and shortcomings enumerated in the preceding paragraphs that the national balance sheets, as well as the sector balance sheets on which they are based, represent but a modest first step [15] in the

[13] For some discussion on this problem see Volume II, Chapter IV.

[14] See the similar discussion for estimates of saving, in Volume II, Chapter IV.

[15] The only previous attempt which has been noted is limited to the year 1929 and is even less

direction of the goal—a national balance sheet built up from balance sheets for all important economic groups, expressed on a common basis of valuation of assets and liabilities, and providing a complete cross classification of claims, liabilities, security holdings, and security issues among sectors.

The results of this first attempt have been included in the published results of the Study for two main reasons. The first is that even in their imperfect form they permit some valuable inferences on the nature and results of the saving process in the United States that cannot be drawn from other available sources. The second is the hope that the very imperfection of the results will stimulate others to improve upon the estimates and will thus gradually lead to filling what is at the moment probably the most important gap in a comprehensive social accounting system for the United States—the lack of a usable national balance sheet.

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detailed in segregation of sectors and classification of assets and liabilities (Dickinson and Eakin, *A Balance Sheet of the Nation's Economy*, University of Illinois, Bulletin No. 54, 1936).

TABLES W-1 TO W-65

TABLE W-1

Column 1 – 1896–1949: Sum of cols. 2, 19, and 25.

Column 2 – 1896–1949: Sum of cols. 3, 10, 13, and 18.

Column 3 – 1896–1949: Sum of cols. 4 to 9.

Columns 4 to 9 – 1896–1949: Cumulated depreciated capital expenditures in 1929 prices multiplied by appropriate price index and adjusted for fire losses. For details of sources and procedures see Table W-7. Cumulated depreciated outlay on one- to four-family structures increased by 20 percent to bring estimates in line with Census-type benchmark figures.

Column 10 – 1896–1949: Sum of cols. 11 and 12.

Columns 11 and *12* – 1896–1949: Same procedure as for cols. 4 to 9.

Column 13 – 1896–1949: Sum of cols. 14 to 17.

Column 14 – 1896–1949: From Table A-31, col. 2.

Column 15 – 1896–1949: From Table A-31, col. 3.

Column 16 – 1896–1949: From Table P-19, col. 1 (1949 revised).

Column 17 – 1896–1949: Sum of (a) inventories of federal corporations taken for 1904–1928 from Table F-4, col. 7 and for 1929–1949 from Table F-14, col. 10; and (b) inventories of state and local governments, obtained by rough extrapolation and interpolation of Reeve's estimates for 1939 and 1946 given in "Government Component in the National Wealth," *Studies in Income and Wealth*, Volume XII, pp. 466–467.

Column 18 – 1896–1949: From Table W-8, col. 8.

Column 19 – 1896–1949: Sum of cols. 20 to 24.

Column 20 – 1900, 1912, 1922: Kuznets, *National Product since 1869*, p. 201.
1910, 1919, 1920, 1925, 1930, 1935, 1940: *Census of Agriculture*. Figures were regarded as applying to Dec. 31 of preceding year.
1945: Unpublished estimate of Bureau of Agricultural Economics.
All other years: Obtained by multiplying total value of farm land and buildings (1896–1939, Table A-13, col. 1; 1941–1949, revised statistics as given in Bureau of Agricultural Economics, *Current Developments in the Farm Real Estate Market*, March 1952, p. 19) by percent value of land is of total value, which was derived by straight line interpolation between Kuznets' and Census' figures respectively. Ratio for 1946–1949 was assumed unchanged from 1945 value.

Column 21 – 1896–1949: Obtained by multiplying cumulative depreciated value of one- to four-family dwellings increased by 20 percent and multifamily structures, current prices (see col. 4), by ratio of land value given in Table B-50.

Column 22 – 1896–1949: Value of land underlying commercial, industrial, public utility, and institutional properties and of vacant lots. Value underlying structures derived by same procedure as for residential land (col. 21). Land-structure value ratio for commercial and industrial properties taken from Table B-50; for public utility properties obtained by straight line interpolation between estimates of share of land in total value of real estate for 1890, 1900, 1912, and 1922 as derived from Kuznets' figures (*National Product since 1869*, pp. 201–202), and for 1929, 1939, and 1948 as obtained from rough extrapolation of the trend. Value of institutional land was estimated at 25 percent of total value of institutional real estate. Value of vacant lots obtained by straight line interpolation between the benchmark figures given in Table B-51.

Column 23 – 1929, 1939, 1946: Reuss, "Land Utilization Data as Background Information for the National Balance Sheet and Approximations of the Value of Forest Land," *Studies in Income and Wealth*, Volume XII, p. 233.
1896, 1900, 1904, 1908, 1912, 1916, 1920, 1922, 1924, 1928, 1932, 1936, 1940, 1944, 1948: Extrapolated or interpolated from Reuss's figures on basis of stumpage and lumber prices, assuming a slight decrease in timber stands. (*Historical Statistics*, p. 125; *Statistical Abstract*, 1951, p. 926.)
All other years: Straight line interpolation between benchmark estimates.

Column 24 – 1939, 1946: Reeve, et al., "Government Component in the National Wealth," *Studies in Income and Wealth*, Volume XII, pp. 466–467, plus rough estimates of land under roads and streets.

1896, 1900, 1904, 1908, 1912, 1916, 1920, 1922, 1924, 1928, 1929, 1932, 1936, 1940, 1948: Extrapolated mainly by the value of tax exempt property. (See Kuznets, *National Product since 1869*, p. 201).

All other years: Straight line interpolation between benchmark estimates.

Column 25 – 1900, 1912, 1922, 1929: Table K-7, line 12 minus Table K-6, line 19 plus estimate of cumulated depreciated construction expenditures on Panama Canal, current prices (see Table W-7).

1939–1949: Sum of (a) American private assets abroad (Table K-7, line 12); (b) U.S. Government investments abroad (for 1939–1944 from Department of Commerce, *International Transactions of the United States during the War, 1940–45*, p. 110, and for 1945–1949 from Department of Commerce, "Balance of International Payments," *Business News Reports*, released June 29, 1950 by Office of Business Economics, p. 382); and (c) cumulated depreciated construction expenditures on Panama Canal, current prices; minus (d) foreign assets in the United States (Table K-6, line 19). Figures do not include U.S. Government tangible assets abroad on the assumption that most of this type of investment is for military purposes. For the years 1940–1945 and 1947–1949, for which figures are not shown in Tables K-6 and K-7, estimates were made on the basis of data in the Department of Commerce sources referred to above.

All other years: Roughly interpolated on basis of the benchmark data and trend of security prices.

W-1
(Part 1)

NATIONAL WEALTH BY TYPE OF ASSET

Current Values: 1896 to 1949

$ mill.

End of year	Total national wealth	Reproducible tangible assets										
		Total	Structures							Equipment		
			Total	Nonfarm		Mining (underground)	Farm	Institutional	Government	Total	Producer durables	Consumer durables
				Residential	Nonresidential							
	1	2	3	4	5	6	7	8	9	10	11	12
1896	68 586	44 714	27 708	13 734	8 966	277	2 603	789	1 339	8 901	4 574	4 327
1897	71 570	46 939	28 767	13 922	9 585	291	2 694	847	1 428	9 604	5 079	4 525
1898	76 248	50 689	31 012	14 663	10 551	318	2 890	932	1 658	10 428	5 559	4 869
1899	82 527	55 894	33 488	15 545	11 572	359	3 127	1 021	1 864	11 511	6 094	5 417
1900	87 721	59 144	34 992	15 748	12 466	391	3 262	1 101	2 024	12 556	6 508	6 048
1901	92 003	61 187	36 126	15 854	13 145	415	3 381	1 163	2 168	13 451	6 865	6 586
1902	98 618	65 320	38 397	16 586	14 253	457	3 603	1 124	2 374	14 145	7 102	7 043
1903	104 128	68 509	40 443	17 210	15 064	499	3 736	1 337	2 597	15 329	7 874	7 455
1904	108 998	71 024	42 202	17 864	15 670	538	3 885	1 389	2 856	16 121	8 376	7 745
1905	117 098	76 478	45 560	19 194	16 769	591	4 235	1 483	3 288	17 315	9 040	8 275
1906	126 686	83 613	49 231	20 583	18 054	650	4 624	1 593	3 727	19 290	10 030	9 260
1907	133 803	88 095	51 762	21 532	19 135	703	4 726	1 696	3 970	20 651	10 794	9 857
1908	137 539	98 511	53 025	22 041	19 539	734	4 778	1 740	4 193	20 632	11 026	9 606
1909	144 816	94 364	55 325	22 940	20 143	776	5 047	1 794	4 625	21 816	11 756	10 060
1910	152 005	99 625	57 713	23 750	20 945	826	5 276	1 866	5 050	23 860	12 582	11 278
1911	157 728	103 414	60 107	24 733	21 706	876	5 409	1 941	5 442	25 471	13 047	12 424
1912	165 209	109 069	62 521	25 426	22 606	940	5 636	2 035	5 878	27 337	13 750	13 587
1913	171 828	113 781	64 275	25 951	23 236	1 000	5 807	2 093	6 188	29 074	14 671	14 403
1914	175 783	116 501	66 211	27 092	23 465	1 047	6 013	2 118	6 476	29 786	15 291	14 495
1915	191 836	126 942	72 292	29 122	25 378	1 179	6 654	2 285	7 674	32 369	17 097	15 272
1916	226 811	152 562	85 769	33 414	30 361	1 459	8 076	2 712	9 747	39 439	21 385	18 054
1917	274 414	190 899	103 680	39 950	36 552	1 877	10 197	3 208	11 896	50 766	28 336	22 430
1918	314 440	221 895	120 753	47 039	41 566	2 509	12 469	3 665	13 505	60 974	34 559	26 415
1919	372 973	262 406	146 242	58 920	47 587	3 324	15 781	4 478	16 152	71 697	38 109	33 588
1920	374 373	264 648	149 076	60 428	48 927	3 535	15 271	4 486	16 429	73 453	37 328	36 125
1921	328 585	228 350	129 849	52 820	43 304	3 123	12 298	3 888	14 416	64 365	31 599	32 766
1922	334 188	233 176	134 506	56 608	42 621	3 307	12 391	4 056	15 523	61 726	30 786	30 940
1923	357 109	253 394	146 718	63 312	45 593	3 587	12 700	4 328	17 198	66 320	32 779	33 541
1924	367 635	261 092	153 340	67 414	47 114	3 746	12 544	4 457	18 065	67 306	32 979	34 327
1925	384 182	272 864	161 357	72 552	48 730	3 933	12 488	4 693	18 961	69 662	33 849	35 813
1926	398 890	263 865	169 044	77 262	50 519	4 094	12 383	4 883	19 903	73 181	35 222	37 959
1927	413 887	293 896	176 331	81 112	52 451	4 186	12 361	5 083	21 138	75 828	36 078	39 750
1928	430 601	306 359	185 702	86 766	54 607	4 197	12 421	5 360	22 351	79 061	37 205	41 856
1929	439 123	313 207	189 811	89 519	55 042	4 075	12 232	5 568	23 375	80 612	38 383	42 229
1930	410 097	293 396	182 444	85 114	53 111	3 855	11 053	5 475	23 836	74 691	36 682	38 009
1931	360 115	258 475	163 333	75 108	48 271	3 374	8 961	4 945	22 674	65 578	33 275	32 303
1932	323 146	234 279	152 460	67 903	45 147	3 216	8 417	4 585	23 192	57 117	29 821	27 296
1933	330 199	241 001	159 435	69 641	46 697	3 447	8 681	4 766	26 203	54 925	29 206	25 719
1934	341 847	251 184	163 379	70 365	47 934	3 664	8 942	4 825	27 649	55 083	29 592	25 491
1935	344 885	256 124	163 730	70 170	47 677	3 772	8 899	4 757	28 455	55 169	29 280	25 889
1936	366 612	275 747	174 403	76 522	49 011	4 031	9 215	5 044	30 580	59 715	31 241	28 474
1937	383 351	291 799	182 098	80 955	50 098	4 346	9 251	5 331	32 117	64 632	33 795	30 837
1938	384 376	293 468	183 681	82 988	49 254	4 479	8 924	5 378	32 658	64 855	33 744	31 111
1939	395 614	305 297	188 480	86 278	49 373	4 713	8 998	5 368	33 750	66 748	34 234	32 514
1940	424 172	331 178	200 195	92 506	51 008	5 090	9 634	5 471	36 486	73 517	36 971	36 546
1941	473 074	372 732	218 825	100 514	54 404	5 621	10 936	5 693	41 657	85 526	41 568	43 958
1942	505 175	398 417	232 847	104 943	56 605	5 963	12 321	5 801	47 214	89 773	43 741	46 032
1943	522 939	408 870	241 425	110 053	56 308	6 245	13 609	5 900	49 310	91 220	44 656	46 564
1944	538 218	417 472	247 992	116 363	55 851	6 767	14 618	6 079	48 314	93 752	45 867	47 885
1945	570 578	441 488	265 065	124 614	59 812	7 788	15 730	6 400	50 721	101 263	50 311	50 952
1946	679 488	529 800	311 307	147 036	70 589	9 355	19 626	7 301	57 400	126 977	63 248	63 729
1947	797 771	629 181	363 823	174 468	80 803	10 884	24 057	8 432	65 179	159 801	79 900	79 901
1948	865 806	689 554	390 217	187 639	85 985	11 856	25 626	9 181	69 930	184 622	93 694	90 928
1949	898 201	720 661	408 427	195 141	90 213	12 755	26 248	9 864	74 206	203 508	104 172	99 336

NATIONAL WEALTH BY TYPE OF ASSET

Current Values: 1896 to 1949

$ mill.

End of year	Reproducible tangible assets						Land						Net foreign assets
	Inventories					Monetary gold and silver	Total	Private				Public	
	Total	Private			Public			Nonfarm					
		Livestock	Crops	Nonfarm				Agricultural	Residential	Nonresidential	Forests		
	13	14	15	16	17	18	19	20	21	22	23	24	25
1896	7 001	1 981	1 031	3 979	10	1 104	26 072	12 337	3 814	5 321	1 300	3 300	−2 200
1897	7 298	2 355	1 135	3 798	10	1 270	26 831	12 578	3 872	5 556	1 350	3 475	−2 200
1898	7 813	2 603	1 216	3 984	10	1 436	27 759	12 818	4 085	5 806	1 400	3 650	−2 200
1899	9 354	3 028	1 284	5 032	10	1 541	28 833	13 058	4 338	6 162	1 450	3 825	−2 200
1900	9 953	3 117	1 420	5 406	10	1 643	30 918	14 546	4 392	6 480	1 500	4 000	−2 341
1901	9 863	3 213	1 546	5 094	10	1 747	33 016	16 048	4 421	6 772	1 525	4 250	−2 200
1902	10 947	3 399	1 681	5 857	10	1 831	35 398	17 560	4 610	7 178	1 550	4 500	−2 100
1903	10 825	3 365	1 646	5 804	10	1 912	37 719	19 085	4 770	7 539	1 575	4 750	−2 100
1904	10 729	3 370	1 764	5 585	10	1 972	39 974	20 620	4 949	7 805	1 600	5 000	−2 000
1905	11 541	3 748	1 820	5 962	11	2 062	42 620	22 167	5 321	8 232	1 650	5 250	−2 000
1906	12 954	4 276	1 960	6 707	11	2 138	45 173	23 728	5 694	8 551	1 700	5 500	−2 100
1907	13 470	4 199	2 101	7 159	11	2 212	47 708	25 299	5 942	8 967	1 750	5 750	−2 000
1908	13 550	4 316	2 203	7 020	11	2 304	49 928	26 884	6 079	9 165	1 800	6 000	−1 900
1909	14 900	4 914	2 539	7 433	14	2 323	52 452	28 478	6 332	9 417	1 850	6 375	−2 000
1910	15 681	5 266	2 409	7 990	16	2 371	54 480	29 532	6 552	9 746	1 900	6 750	−2 100
1911	15 375	5 037	2 443	7 876	19	2 461	56 414	30 591	6 814	9 934	1 950	7 125	−2 100
1912	16 677	5 648	2 588	8 419	22	2 534	58 240	31 574	6 996	10 170	2 000	7 500	−2 100
1913	17 859	6 148	2 569	9 117	25	2 573	60 147	32 524	7 127	10 496	2 125	7 875	−2 100
1914	18 029	6 292	2 670	9 040	27	2 475	61 182	32 561	7 433	10 688	2 250	8 250	−1 900
1915	19 278	6 357	2 882	10 009	30	3 003	65 194	34 789	7 976	11 429	2 375	8 625	−300
1916	23 825	7 064	3 247	13 481	33	3 529	71 249	37 504	9 140	13 105	2 500	9 000	3 000
1917	32 604	8 553	5 498	18 453	100	3 849	80 115	41 209	10 922	15 234	2 875	9 875	3 400
1918	36 507	9 022	5 650	21 226	609	3 661	89 045	44 998	12 854	17 193	3 250	10 750	3 500
1919	41 094	8 480	5 722	26 627	265	3 373	105 967	54 848	16 106	19 763	3 625	11 625	4 600
1920	38 893	6 380	4 245	28 066	202	3 226	103 425	50 048	16 501	20 376	4 000	12 500	6 300
1921	30 060	5 070	2 409	22 458	123	4 076	93 035	43 273	14 395	19 067	3 750	12 550	7 200
1922	32 550	5 366	3 088	24 026	70	4 394	92 812	41 541	15 414	19 757	3 500	12 600	8 200
1923	35 562	5 071	3 327	27 100	64	4 794	95 415	39 128	17 198	22 639	3 400	13 050	8 300
1924	35 392	5 021	3 579	26 721	71	5 054	97 643	37 721	18 280	24 842	3 300	13 500	8 900
1925	36 898	5 386	3 385	28 058	69	4 947	101 618	37 078	19 628	27 812	3 225	13 875	9 700
1926	36 605	5 520	2 905	28 112	68	5 035	105 025	35 692	20 854	31 079	3 150	14 250	10 000
1927	36 824	6 026	3 064	27 666	68	4 913	109 491	35 275	21 871	34 645	3 075	14 625	10 500
1928	36 923	6 593	3 067	27 195	68	4 673	112 542	35 244	23 366	35 932	3 000	15 000	11 700
1929	37 977	6 514	2 973	28 427	63	4 807	113 516	34 930	24 058	36 128	3 100	15 300	12 400
1930	31 190	4 859	2 197	24 071	63	5 071	104 101	31 921	22 831	31 419	2 730	15 200	12 600
1931	24 669	3 555	1 664	19 387	63	4 895	90 540	26 873	20 148	26 049	2 370	15 100	11 100
1932	19 804	2 983	1 201	15 558	62	4 898	79 367	22 057	18 210	22 100	2 000	15 000	9 500
1933	21 897	3 169	1 777	16 888	63	4 744	81 098	22 800	18 655	22 068	2 200	15 375	8 100
1934	23 566	3 478	2 007	17 766	315	9 156	82 563	23 333	18 819	22 261	2 400	15 750	8 100
1935	25 926	5 184	1 968	18 425	349	11 299	82 661	23 947	18 730	21 259	2 600	16 125	6 100
1936	28 939	5 064	2 216	21 381	278	12 690	86 165	24 410	20 366	22 089	2 800	16 500	4 700
1937	30 782	5 033	2 176	23 183	390	14 287	87 852	24 271	21 510	22 441	2 830	16 800	3 700
1938	28 682	5 092	1 906	20 927	757	16 250	87 708	23 568	22 030	22 145	2 865	17 100	3 200
1939	30 445	5 133	2 171	22 144	997	19 624	88 591	23 237	22 896	22 158	2 900	17 400	1 726
1940	33 342	5 325	2 264	24 375	1 378	24 124	92 201	23 923	24 547	22 731	3 000	18 000	793
1941	43 370	7 074	3 190	31 217	1 889	25 011	98 600	26 359	26 666	23 475	3 100	19 000	1 742
1942	50 669	9 642	4 364	33 548	3 115	25 128	104 651	29 603	27 803	24 045	3 200	20 000	2 107
1943	51 954	9 685	5 474	33 972	2 823	24 271	112 113	34 765	29 106	23 942	3 300	21 000	1 956
1944	52 623	9 012	5 679	34 067	3 865	23 105	119 051	39 426	30 672	23 553	3 400	22 000	1 695
1945	52 254	9 742	5 632	34 146	2 734	22 906	128 036	44 508	31 089	24 889	3 600	23 950	1 054
1946	67 946	11 977	6 833	47 492	1 644	23 570	143 241	50 509	34 594	28 438	3 800	25 900	6 447
1947	79 701	13 384	8 745	56 204	1 368	25 856	153 842	54 094	36 738	30 910	4 150	27 950	14 748
1948	87 303	14 657	7 530	62 983	2 133	27 412	159 700	55 746	37 181	32 273	4 500	30 000	16 552
1949	81 055	13 184	5 959	58 076	3 836	27 671	159 955	54 182	38 696	32 777	4 300	30 000	17 585

TABLE W-2

Column 1 – Sum of cols. 2 and 5 of this table and of Table W-1, col. 25.

Column 2 – Sum of col. 3 of this table and Table W-1, cols. 10, 13, and 18.

Column 3 – Sum of col. 4 of this table and Table W-1, cols. 5–9.

Column 4 – Column 4 of Table W-1 without the 20 percent adjustment to cumulated depreciated outlay on one- to four-family homes.

Column 5 – Sum of col. 6 of this table and Table W-1, cols. 20, 22–24.

Column 6 – Column 21 of Table W-1 without the 20 percent adjustment.

ALTERNATIVE ESTIMATE OF NATIONAL WEALTH

Current Prices: 1896 to 1949

(Incorporating Lower Estimate of Residential Real Estate)

$ mill.

End of year	Total national wealth	Reproducible tangible assets			Land	
		Total	Structures		Total	Nonfarm residential
			Total	Nonfarm residential		
	1	2	3	4	5	6
1896	65 756	42 501	25 495	11 521	25 455	3 197
1897	68 703	44 698	26 526	11 681	26 205	3 246
1898	73 227	48 328	28 651	12 302	27 099	3 425
1899	79 324	53 392	30 986	13 043	28 132	3 637
1900	84 479	56 611	32 459	13 215	30 209	3 683
1901	88 741	58 638	33 577	13 305	32 303	3 708
1902	95 212	62 657	35 734	13 923	34 655	3 867
1903	100 601	65 750	37 684	14 451	36 951	4 002
1904	105 343	68 164	39 342	15 004	39 179	4 154
1905	113 177	73 411	42 493	16 127	41 766	4 467
1906	122 489	80 329	45 947	17 299	44 260	4 781
1907	129 418	84 661	48 328	18 098	46 757	4 991
1908	133 055	86 000	49 514	18 530	48 955	5 106
1909	140 161	90 715	51 676	19 291	51 446	5 326
1910	147 190	95 855	53 943	19 980	53 435	5 507
1911	152 722	99 493	56 186	20 812	55 329	5 729
1912	160 073	105 046	58 498	21 403	57 127	5 883
1913	166 595	109 680	60 174	21 850	59 015	5 995
1914	170 332	112 228	61 938	22 819	60 004	6 255
1915	185 994	122 361	67 711	24 541	63 933	6 715
1916	220 129	147 321	80 528	28 173	69 808	7 699
1917	266 431	184 637	97 418	33 688	78 394	9 201
1918	305 033	214 515	113 373	39 659	87 018	10 827
1919	361 199	253 170	137 006	49 684	103 429	13 568
1920	362 307	255 181	139 609	50 961	100 826	13 902
1921	318 049	220 080	121 579	44 550	90 769	12 129
1922	322 925	224 334	125 664	47 766	90 391	12 993
1923	344 563	243 540	136 864	53 458	92 723	14 506
1924	354 330	250 638	142 886	56 960	94 792	15 429
1925	369 944	261 672	150 165	61 360	98 572	16 582
1926	383 839	272 029	157 208	65 426	101 810	17 639
1927	398 209	281 566	164 001	68 782	106 143	18 523
1928	413 931	293 246	172 589	73 653	108 985	19 809
1929	421 982	299 718	176 322	76 030	109 864	20 406
1930	393 813	280 576	169 624	72 294	100 637	19 367
1931	345 754	247 169	152 027	63 802	87 485	17 093
1932	310 162	224 056	142 237	57 680	76 606	15 449
1933	316 893	230 522	148 956	59 162	78 271	15 828
1934	328 410	240 598	152 793	59 779	79 712	15 968
1935	331 475	245 554	153 160	59 600	79 821	15 890
1936	352 139	264 333	162 989	65 108	83 106	17 307
1937	367 880	279 592	169 891	68 748	84 588	18 246
1938	368 512	280 948	171 161	70 468	84 364	18 686
1939	379 104	292 266	175 449	73 247	85 112	19 417
1940	406 434	317 177	186 194	78 505	88 464	20 810
1941	453 748	357 476	203 569	85 258	94 530	22 596
1942	484 986	382 475	216 905	89 001	100 404	23 556
1943	501 771	392 148	224 703	93 331	107 667	24 660
1944	515 846	399 785	230 305	98 676	114 366	25 987
1945	546 890	422 529	246 106	105 655	123 307	26 360
1946	651 791	507 354	288 861	124 590	137 990	29 343
1947	765 547	602 485	337 127	147 772	148 314	31 210
1948	831 494	660 807	361 470	158 892	154 135	31 616
1949	862 515	690 767	378 533	165 247	154 163	32 904

TABLE W-3

Column 1 – Sum of cols. 3, 20, and 26.

Column 2 – Same as col. 1 except that the value of land (col. 20) is constant at the 1929 value throughout the period.

Column 3 – Sum of cols. 4, 11, 14, and 19.

Column 4 – Sum of cols. 5 to 10.

Columns 5 to 10 – Derived by addition of cumulated net saving in 1929 prices to estimated value for 1896, obtained by cumulating expenditures less depreciation for number of years preceding 1896 corresponding to the assumed length of life of asset involved. Fire loss adjustment derived by same procedure and subtracted from the cumulated depreciated capital outlay figures. For details of sources and procedures see Table W-7. Cumulated depreciated outlay on one- to four-family dwellings was increased 20 percent in accordance with the adjustment described in note to Table W-1, col. 4.

Column 11 – Sum of cols. 12 and 13.

Columns 12 and 13 – Same procedure as for cols. 5 to 10.

Column 14 – Sum of cols. 15 to 18.

Column 15 – From Table A-31, col. 5.

Column 16 – From Table A-31, col. 6.

Column 17 – From Table P-19, col. 4.

Column 18 – Table W-1, col. 17 deflated by average of December and January wholesale price indices for all commodities, 1929=100 (*Survey of Current Business, Statistical Supplement*, various issues), except for the period 1935–1949, in which inventories of the federal government, since they consisted mostly of Commodity Credit Corporation stocks, were deflated by wholesale price of farm products (*Survey of Current Business, 1947 Statistical Supplement*, p. 24, and later issues).

Column 19 – From Table W-8, col. 9.

Column 20 – Sum of cols. 21 to 25.

Column 21 – Table W-1, col. 20 deflated by index of value of land per acre on March 1 of following year. (Table A-12, col. 3; *Historical Statistics*, p. 95; and Bureau of Agricultural Economics, *Current Developments in the Farm Real Estate Market*, March 1952, p. 19.)

Column 22 – Obtained by multiplying cumulative depreciated value of one- to four-family dwellings increased by 20 percent and multifamily structures, 1929 prices (see col. 5), by ratio of land as given in Table B-50.

Column 23 – Same procedure as for col. 22. Land-structure ratio for commercial, industrial, public utility, and institutional properties described in note to Table W-1, col. 22. Value of vacant lots obtained by straight line interpolation between benchmark figures, which were themselves obtained by multiplying Table B-51, col. 4 by the 1929 average sales price (Table B-51, col. 5).

Columns 24 and 25 – Table W-1, cols. 23 and 24 deflated by average of December and January wholesale price indices for all commodities (see col. 18).

Column 26 – Table W-1, col. 25 multiplied by the ratio of gross national product in 1929 prices to gross national product in current prices.

W-3
(Part 1)

NATIONAL WEALTH BY TYPE OF ASSET

1929 Prices: 1896 to 1949

$ mill.

End of year	Total national wealth		Reproducible tangible assets										
			Total	Structures							Equipment		
				Total	Nonfarm								
					Residential	Nonresidential	Mining (underground)	Farm	Institutional	Government	Total	Producer durables	Consumer durables
	A [1]	B [2]											
	1	2	3	4	5	6	7	8	9	10	11	12	13
1896	170 399	218 157	108 338	65 235	32 551	20 183	651	6 151	1 883	3 816	26 155	11 707	14 448
1897	171 535	220 621	110 851	67 354	32 764	21 461	679	6 312	2 004	4 134	26 864	11 908	14 956
1898	174 482	224 028	114 269	69 119	32 882	22 487	707	6 493	2 103	4 447	27 543	12 193	15 350
1899	176 522	228 335	118 187	70 843	33 076	23 407	758	6 657	2 192	4 753	28 804	12 743	16 061
1900	179 454	232 560	122 577	73 027	33 088	24 879	815	6 837	2 332	5 076	30 041	13 484	16 557
1901	181 350	235 732	125 455	75 610	33 448	26 339	869	7 041	2 471	5 442	31 364	14 240	17 124
1902	193 362	242 275	131 722	78 803	34 136	28 068	931	7 261	2 638	5 769	33 073	15 260	17 813
1903	200 230	247 561	136 873	81 770	35 131	29 180	1 009	7 461	2 747	6 242	34 937	16 439	18 498
1904	209 148	251 027	140 246	84 355	36 023	30 000	1 076	7 666	2 826	6 764	36 147	17 130	19 017
1905	218 440	257 053	146 181	87 466	37 347	30 964	1 141	7 863	2 920	7 231	38 032	18 163	19 869
1906	223 346	264 164	153 238	91 036	38 772	32 318	1 216	8 061	3 044	7 625	40 595	19 573	21 022
1907	232 485	271 280	159 961	95 295	40 327	34 069	1 308	8 238	3 213	8 140	43 024	21 151	21 873
1908	235 008	274 931	163 664	98 558	41 596	35 038	1 374	8 439	3 331	8 780	43 507	21 553	21 954
1909	240 572	279 785	168 660	102 360	43 295	36 120	1 452	8 684	3 439	9 370	45 005	22 178	22 827
1910	251 303	286 998	175 824	106 125	44 990	37 161	1 528	8 948	3 545	9 953	46 789	23 068	23 721
1911	257 982	291 117	179 902	109 440	46 509	37 926	1 598	9 175	3 626	10 606	47 888	23 574	24 314
1912	265 329	297 784	186 327	113 242	48 166	38 981	1 693	9 442	3 754	11 206	49 638	24 622	25 016
1913	273 986	304 705	193 243	117 666	49 909	40 503	1 819	9 688	3 907	11 840	51 537	25 903	25 634
1914	280 637	309 791	198 034	120 938	51 326	41 213	1 920	9 930	3 984	12 565	52 049	26 317	25 732
1915	288 154	316 846	202 602	123 839	52 749	41 619	2 012	10 168	4 031	13 260	52 307	26 494	25 813
1916	295 924	327 094	208 265	127 031	54 261	42 299	2 183	10 545	4 127	13 616	54 559	27 722	26 837
1917	301 797	333 740	215 129	129 280	54 974	42 833	2 435	11 017	4 190	13 831	57 129	29 521	27 608
1918	305 236	337 094	218 816	129 958	54 879	42 854	2 695	11 383	4 209	13 938	58 315	30 978	27 337
1919	310 764	342 556	223 679	131 851	55 902	42 999	2 846	11 871	4 240	13 993	59 392	31 596	27 796
1920	321 881	349 971	230 208	133 560	56 474	43 680	3 077	12 092	4 195	14 042	60 647	32 398	28 249
1921	328 812	352 930	231 492	135 519	57 663	44 048	3 200	12 028	4 208	14 372	59 793	31 798	27 995
1922	336 610	360 933	238 030	140 405	60 808	44 807	3 347	12 049	4 307	15 087	60 676	31 808	28 868
1923	350 827	373 350	250 494	146 722	64 866	46 017	3 510	12 110	4 420	15 799	63 914	32 927	30 987
1924	363 510	383 693	260 143	154 423	69 776	47 293	3 640	12 146	4 578	16 990	66 459	33 665	32 794
1925	381 089	397 492	273 344	162 986	75 103	48 843	3 804	12 200	4 779	18 257	70 100	34 699	35 401
1926	401 197	411 834	287 271	171 642	80 231	50 896	3 991	12 233	4 988	19 303	74 089	35 904	38 185
1927	417 227	423 398	298 227	180 001	84 651	52 920	4 088	12 353	5 220	20 769	76 588	36 700	39 888
1928	431 141	434 264	307 989	187 524	88 520	54 725	4 139	12 436	5 426	22 278	79 422	37 539	41 883
1929	445 836	445 836	318 737	193 514	90 626	56 771	4 244	12 466	5 612	23 795	82 950	39 138	43 812
1930	450 700	450 520	322 726	197 153	90 749	58 177	4 303	12 320	5 787	25 817	83 443	39 556	43 887
1931	448 203	448 067	320 587	198 493	90 471	58 045	4 223	12 035	5 874	27 845	81 198	38 423	42 775
1932	436 800	438 335	311 452	197 156	89 067	56 910	4 215	11 646	5 844	29 474	76 277	36 046	40 231
1933	421 527	426 992	301 496	194 109	87 402	55 504	4 123	11 297	5 703	30 080	71 964	33 862	38 102
1934	413 182	420 782	295 840	191 200	85 909	54 170	4 094	10 985	5 555	30 487	69 595	32 543	37 052
1935	410 563	419 389	297 140	189 464	85 078	52 864	4 100	10 795	5 421	31 206	69 788	32 199	37 589
1936	412 272	422 420	301 939	189 381	85 029	51 939	4 173	10 657	5 339	32 244	72 853	33 094	39 759
1937	420 264	429 660	310 601	190 331	85 163	51 471	4 337	10 590	5 258	33 512	76 632	34 478	42 154
1938	421 357	430 188	311 649	190 507	85 321	50 578	4 435	10 469	5 181	34 523	76 680	34 325	42 355
1939	424 822	434 560	317 773	191 697	86 332	49 773	4 531	10 421	5 093	35 547	78 794	34 714	44 080
1940	436 623	445 230	329 583	193 650	87 602	49 240	4 657	10 417	5 028	36 706	83 238	36 228	47 010
1941	449 744	460 084	343 457	196 037	89 229	49 092	4 792	10 484	4 977	37 463	89 734	38 835	50 899
1942	452 523	462 945	346 327	194 952	88 621	48 075	4 809	10 424	4 851	38 172	90 050	39 566	50 484
1943	447 015	457 310	340 991	192 086	87 016	46 540	4 856	10 355	4 675	38 644	89 012	39 831	49 181
1944	441 073	451 486	335 448	188 230	85 338	45 238	5 028	10 251	4 518	37 857	88 187	40 604	47 583
1945	435 628	447 063	331 537	185 349	83 959	44 471	5 213	10 111	4 394	37 201	89 446	42 565	46 881
1946	453 392	469 558	349 738	187 531	85 252	45 319	5 358	10 503	4 389	36 710	100 491	47 510	52 981
1947	472 921	493 107	367 813	191 098	87 373	46 178	5 525	11 014	4 425	36 583	113 819	53 462	60 357
1948	497 264	515 913	390 161	196 456	90 296	47 305	5 795	11 532	4 544	36 984	126 228	59 639	66 589
1949	515 686	532 246	405 820	202 477	93 042	48 318	6 051	11 999	4 756	38 311	137 093	64 329	72 764

[1] Estimate of land essentially proportional to relevant structural values.
[2] Value of land in 1929 used for all years.

NATIONAL WEALTH BY TYPE OF ASSET
1929 Prices: 1896 to 1949

$ mill.

End of year	Reproducible tangible assets						Land						Net foreign assets
		Inventories				Monetary gold and silver		Private				Public	
	Total	Private			Public		Total	Agriculture	Nonfarm		Forests		
		Livestock	Crops	Nonfarm					Residential	Nonresidential			
	14	15	16	17	18	19	20	21	22	23	24	25	26
1896	16 115	5 635	2 565	7 895	20	833	66 945	35 249	9 038	13 585	2 564	6 509	−4 884
1897	15 676	5 817	2 408	7 432	19	957	65 617	33 100	9 113	14 072	2 611	6 721	−4 933
1898	16 509	5 998	2 696	7 796	19	1 098	65 157	32 045	9 159	14 260	2 687	7 006	−4 944
1899	17 346	6 266	2 622	8 442	16	1 194	62 890	30 367	9 227	14 663	2 373	6 260	−4 555
1900	18 220	6 450	2 559	9 194	17	1 289	61 597	27 973	9 228	15 152	2 521	6 723	−4 720
1901	17 112	6 518	2 144	8 434	16	1 369	60 321	25 884	9 325	15 737	2 476	6 899	−4 426
1902	18 432	6 625	2 878	8 914	15	1 414	65 790	30 807	9 487	16 412	2 327	6 757	−4 150
1903	18 675	6 707	2 606	9 346	16	1 491	67 372	30 782	9 734	16 880	2 484	7 492	−4 015
1904	18 183	6 719	2 790	8 659	15	1 561	72 824	35 552	9 980	17 247	2 435	7 610	−3 922
1905	19 030	6 723	2 989	9 301	17	1 653	76 090	37 571	10 353	17 664	2 511	7 991	−3 831
1906	19 865	6 762	3 180	9 907	16	1 742	73 885	34 894	10 725	17 816	2 467	7 983	−3 777
1907	19 834	6 721	2 722	10 375	16	1 808	75 908	37 204	11 127	16 482	2 589	8 506	−3 384
1908	19 753	6 626	2 818	10 293	16	1 846	74 780	33 190	11 471	18 896	2 590	8 633	−3 436
1909	19 443	6 506	3 061	9 858	18	1 852	75 490	33 504	11 949	19 341	2 406	8 290	−3 578
1910	20 996	6 577	3 191	11 206	22	1 914	79 008	34 744	12 410	19 773	2 654	9 427	−3 529
1911	20 570	6 484	2 808	11 251	27	2 004	81 568	35 989	12 811	19 914	2 762	10 092	−3 488
1912	21 343	6 513	3 561	11 240	29	2 098	82 248	36 292	13 251	20 155	2 642	9 908	−3 246
1913	21 915	6 687	2 940	12 254	34	2 125	83 984	36 138	13 706	20 644	2 868	10 628	−3 241
1914	23 024	6 999	3 415	12 573	37	2 023	85 549	36 179	14 080	20 867	3 091	11 332	−2 946
1915	23 949	7 246	3 599	13 067	37	2 507	86 011	37 010	14 448	21 006	2 925	10 622	−459
1916	23 575	7 396	2 932	13 217	30	3 100	83 533	36 769	14 844	21 302	2 308	8 310	4 126
1917	25 219	7 601	3 392	14 151	75	3 501	82 760	36 794	15 027	21 396	2 152	7 391	3 908
1918	27 117	7 597	3 312	15 789	419	3 426	82 845	36 884	14 994	21 345	2 234	7 388	3 575
1919	29 216	7 376	3 302	18 378	160	3 220	82 911	37 059	15 279	21 376	2 186	7 011	4 174
1920	32 931	7 201	4 111	21 459	160	3 070	86 613	36 531	15 420	21 628	3 160	9 874	5 060
1921	32 344	7 181	3 211	21 828	124	3 746	89 955	35 763	15 713	22 097	3 769	12 613	6 825
1922	32 907	7 216	3 250	22 377	64	4 042	90 380	35 505	16 556	22 746	3 208	12 365	8 200
1923	35 486	7 063	3 256	25 107	60	4 372	92 180	34 626	17 619	24 445	3 202	12 288	8 153
1924	34 633	6 732	2 960	24 876	65	4 628	94 520	34 292	18 919	26 022	3 003	12 284	8 847
1925	35 731	6 501	3 288	25 880	62	4 527	98 300	34 331	20 317	28 288	2 898	12 466	9 445
1926	36 962	6 396	3 160	27 341	65	4 578	104 066	34 652	21 654	31 126	3 011	13 623	9 860
1927	37 210	6 418	3 090	27 637	65	4 428	108 532	34 583	22 823	34 090	2 960	14 076	10 468
1928	36 855	6 436	3 147	27 206	66	4 188	111 580	34 895	23 837	35 389	2 910	14 549	11 572
1929	37 978	6 514	2 974	28 427	63	4 295	114 703	34 930	24 352	37 021	3 100	15 300	12 396
1930	37 614	6 565	2 752	28 223	74	4 516	114 883	34 697	24 340	34 702	3 219	17 925	13 091
1931	36 573	6 729	3 374	26 384	86	4 323	114 839	34 900	24 268	31 805	3 238	20 628	12 777
1932	33 668	6 989	3 593	22 993	93	4 351	113 168	35 011	23 885	28 708	3 008	22 556	12 180
1933	31 238	7 137	2 968	21 051	82	4 185	109 238	34 545	23 412	28 456	2 857	19 968	10 793
1934	29 914	6 481	1 988	21 069	376	5 131	107 103	33 816	22 978	28 625	2 867	18 817	10 239
1935	31 453	6 450	2 995	21 598	410	6 435	105 877	33 728	22 708	27 918	2 989	18 534	7 546
1936	32 666	6 338	2 056	23 966	306	7 039	104 555	32 986	22 643	27 833	3 060	18 033	5 778
1937	35 688	6 238	3 280	25 774	396	7 950	105 307	32 799	22 627	27 447	3 234	19 200	4 356
1938	35 437	6 352	3 378	24 514	1 193	9 025	105 872	32 285	22 649	26 855	3 456	20 627	3 836
1939	36 393	6 641	3 206	24 919	1 627	10 889	104 965	31 832	22 909	26 369	3 408	20 447	2 084
1940	39 257	6 711	3 365	27 226	1 955	13 438	106 096	32 328	23 244	26 247	3 468	20 809	944
1941	43 780	7 075	3 575	30 768	2 362	13 906	104 363	33 366	23 670	25 661	3 039	18 627	1 924
1942	47 346	7 562	4 224	32 312	3 248	13 979	104 281	34 422	23 476	25 118	2 933	18 332	1 915
1943	46 306	7 880	3 876	32 175	2 375	13 587	104 408	35 116	23 011	24 409	2 970	18 902	1 616
1944	46 181	7 418	3 971	31 802	2 990	12 850	104 290	35 842	22 491	23 439	3 014	19 504	1 335
1945	44 007	7 182	3 909	30 846	2 070	12 735	103 268	35 893	20 946	22 535	3 122	20 772	823
1946	48 131	6 880	4 121	36 098	1 032	13 585	98 537	36 601	20 060	22 362	2 497	17 017	5 117
1947	48 121	6 569	3 573	37 337	642	14 775	94 517	36 550	18 404	21 427	2 345	15 791	10 591
1948	51 746	6 507	4 514	39 673	1 052	15 731	96 054	36 675	17 941	21 576	2 591	17 271	11 049
1949	50 423	6 614	3 901	37 547	2 361	15 827	98 143	36 858	18 452	21 790	2 638	18 405	11 723

TABLE W-4

Columns 1 to 7 – Same sources and procedure as for Table W-2 except that basic figures are taken from Table W-3 instead of Table W-1.

ALTERNATIVE ESTIMATE OF NATIONAL WEALTH

1929 Prices: 1896 to 1949

(Incorporating Lower Estimate of Residential Real Estate)

$ mill.

End of year	Total national wealth		Reproducible tangible assets			Land	
	A [1]	B [2]	Total	Structures		Total	Nonfarm residential
				Total	Nonfarm residential		
	1	2	3	4	5	6	7
1896	163 694	209 217	103 094	59 991	27 307	65 484	7 577
1897	164 786	211 649	105 575	62 078	27 488	64 144	7 640
1898	167 709	215 039	108 976	63 826	27 589	63 677	7 679
1899	169 710	219 317	112 865	65 521	27 754	61 400	7 737
1900	172 642	223 542	117 255	67 705	27 766	60 107	7 738
1901	174 471	226 661	120 080	70 235	28 073	58 817	7 821
1902	186 353	233 099	126 242	73 323	28 656	64 261	7 958
1903	193 033	238 234	131 234	76 139	29 500	65 806	8 168
1904	201 779	241 566	134 481	78 590	30 258	71 220	8 376
1905	210 813	247 391	140 215	81 500	31 381	74 429	8 692
1906	215 440	254 281	147 051	84 849	32 585	72 166	9 006
1907	224 275	261 155	153 532	88 866	33 898	74 127	9 346
1908	226 548	264 610	157 039	91 933	34 971	72 945	9 636
1909	231 778	269 204	161 775	95 475	36 410	73 581	10 040
1910	242 183	276 161	168 683	98 984	37 849	77 029	10 431
1911	248 571	280 050	172 531	102 069	39 138	79 528	10 771
1912	255 595	286 461	178 700	105 621	40 545	80 141	11 144
1913	263 924	293 123	185 357	109 780	42 023	81 808	11 530
1914	270 313	298 002	189 941	112 845	43 233	83 318	11 849
1915	277 571	304 852	194 304	115 541	44 451	83 726	12 163
1916	285 060	314 877	199 744	118 510	45 740	81 190	12 501
1917	290 802	321 419	206 504	120 655	46 349	80 390	12 657
1918	294 261	324 788	210 206	121 348	46 269	80 480	12 629
1919	299 593	330 097	214 916	123 088	47 139	80 503	12 871
1920	310 605	337 428	221 861	124 713	47 627	84 184	12 991
1921	316 688	340 206	222 374	126 491	48 635	87 482	13 240
1922	324 511	347 738	228 531	130 906	51 309	87 780	13 956
1923	337 973	359 558	240 398	136 626	54 770	89 422	14 861
1924	349 737	369 175	249 321	143 601	58 954	91 569	15 968
1925	366 352	382 212	261 760	151 402	63 519	95 147	17 164
1926	385 567	395 847	274 980	159 351	67 940	100 727	18 315
1927	400 864	406 833	285 358	167 132	71 782	105 038	19 329
1928	414 130	417 187	294 608	174 143	75 139	107 950	20 207
1929	428 486	428 486	305 083	179 860	76 972	111 007	20 650
1930	433 341	433 157	309 059	183 486	77 082	111 191	20 648
1931	430 899	430 748	306 964	184 870	76 848	111 158	20 587
1932	419 760	421 223	298 036	183 740	75 651	109 545	20 261
1933	404 812	410 132	288 332	180 945	74 238	105 687	19 861
1934	396 754	404 144	282 898	178 258	72 967	103 617	19 492
1935	394 291	402 867	284 314	176 638	72 252	102 431	19 262
1936	396 010	405 899	289 114	176 556	72 204	101 118	19 206
1937	403 980	413 115	297 752	177 482	72 314	101 872	19 192
1938	405 035	413 610	298 767	177 625	72 439	102 432	19 209
1939	408 296	417 820	304 729	178 653	73 288	101 483	19 427
1940	419 825	428 275	316 324	180 391	74 343	102 557	19 704
1941	432 597	442 852	329 921	182 501	75 693	100 752	20 059
1942	435 485	445 795	332 873	181 498	75 167	100 697	19 892
1943	430 294	440 405	327 782	178 877	73 807	100 896	19 499
1944	424 683	434 823	322 490	175 272	72 380	100 858	19 059
1945	419 688	430 609	318 779	172 591	71 201	100 086	17 764
1946	437 363	452 872	336 748	174 541	72 262	95 498	17 021
1947	456 809	476 063	354 465	177 750	74 025	91 753	15 640
1948	480 759	498 395	376 339	182 634	76 474	93 371	15 258
1949	498 676	514 301	391 571	188 228	78 793	95 382	15 691

[1] Estimate of land essentially proportional to relevant structural values.
[2] Value of land in 1929 used for all years.

TABLE W-5

Column 1 – Sum of cols. 2 and 19.

Column 2 – Sum of cols. 3, 10, 13, and 18.

Column 3 – Sum of cols. 4 to 9.

Columns 4 to 9 – Derived by addition of cumulated net investment, original cost, to estimated value for 1896, obtained by cumulating expenditures less depreciation for number of years preceding 1896 corresponding to the assumed length of life of asset involved. Fire loss adjustment derived by same procedure and subtracted from the cumulated depreciated capital outlay figures. For details of sources and procedures see Table W-7. Cumulated depreciated outlay on one- to four-family dwellings was increased 20 percent in accordance with the adjustment described in note to Table W-1, col. 4.

Column 10 – Sum of cols. 11 and 12.

Columns 11 and 12 – Same procedure as for cols. 4 to 9.

Column 13 – Sum of cols. 14 and 15.

Column 14 – From Table A-31, col. 2.

Column 15 – From Table A-31, col. 3.

Column 16 – From Table P-19, col. 1.

Column 17 – Same procedure as for Table W-1, col. 17.

Column 18 – From Table W-8, col. 8.

Column 19 – Obtained by cumulation of Table K-3, cols. 2, 3, 7, and 8 less Table K-2, col. 1 on basis of benchmark for 1900 ($2,341 million) derived from Table K-6 and Table K-7. From 1940 on, Table K-3, col. 6 is added since government loans, including the United States' contribution to the International Monetary Fund and the International Bank for Reconstruction and Development, may be regarded as investments. World War I loans, however, are omitted since they have been considered as current expenditures of the federal government. Cumulated depreciated construction expenditures on the Panama Canal, original cost (see Table W-7), have been included.

W-5
(Part 1)

NATIONAL WEALTH BY TYPE OF ASSET

Original Cost: 1896 to 1949

$ mill.

End of year	Total national wealth	Reproducible tangible assets							
		Total	Structures						
			Total	Nonfarm		Mining (underground)	Farm	Institutional	Government
				Residential	Nonresidential				
	1	2	3	4	5	6	7	8	9
1896	45 233	47 938	29 641	14 711	9 616	295	2 749	846	1 424
1897	46 569	49 264	30 470	14 773	10 151	306	2 815	894	1 531
1898	48 186	50 833	31 212	14 814	10 608	318	2 892	935	1 645
1899	51 199	53 758	32 021	14 913	11 055	342	2 971	975	1 765
1900	53 843	56 184	33 151	14 949	11 823	371	3 063	1 044	1 901
1901	56 074	58 170	34 414	15 139	12 555	398	3 166	1 110	2 046
1902	59 920	61 881	36 031	15 497	13 446	429	3 282	1 190	2 187
1903	62 451	64 391	37 592	16 028	14 053	469	3 397	1 245	2 400
1904	64 502	66 430	38 932	16 502	14 500	504	3 507	1 286	2 633
1905	68 257	70 090	40 624	17 220	15 052	539	3 624	1 336	2 853
1906	73 244	75 122	42 717	18 041	15 864	582	3 758	1 406	3 066
1907	77 922	79 839	45 272	18 951	16 932	636	3 893	1 500	3 360
1908	80 584	82 421	47 204	19 707	17 543	675	4 029	1 564	3 686
1909	85 035	86 900	49 411	20 674	18 206	719	4 193	1 624	3 995
1910	89 026	91 112	51 658	21 651	18 856	765	4 380	1 684	4 322
1911	91 785	93 885	53 661	22 519	19 365	808	4 545	1 732	4 692
1912	96 940	99 029	55 993	23 488	20 064	866	4 732	1 805	5 038
1913	102 398	104 541	58 664	24 448	21 042	942	4 925	1 894	5 413
1914	105 313	107 360	60 611	25 243	21 516	1 001	5 090	1 940	5 821
1915	110 875	111 778	62 454	26 078	21 830	1 056	5 275	1 971	6 244
1916	123 269	121 804	64 891	27 067	22 449	1 175	5 596	2 038	6 566
1917	139 105	137 396	67 496	27 799	23 229	1 377	6 101	2 111	6 879
1918	149 186	147 496	69 606	28 187	23 803	1 630	6 638	2 165	7 183
1919	162 794	160 347	73 496	29 787	24 661	1 854	7 431	2 247	7 516
1920	173 011	169 456	78 743	31 540	26 579	2 265	8 071	2 281	8 007
1921	171 451	167 335	82 686	33 359	27 668	2 441	8 163	2 351	8 704
1922	183 286	178 376	88 712	36 669	28 937	2 628	8 319	2 488	9 671
1923	199 808	194 823	96 960	41 392	30 788	2 849	8 546	2 662	10 723
1924	213 760	208 196	106 495	46 843	32 729	3 036	8 733	2 870	12 284
1925	230 626	224 388	116 764	52 647	34 953	3 262	8 932	3 128	13 842
1926	245 553	239 009	127 154	58 299	37 700	3 508	9 105	3 396	15 146
1927	258 977	251 983	137 077	63 181	40 352	3 654	9 360	3 680	16 850
1928	272 130	263 943	146 154	67 545	42 819	3 753	9 566	3 941	18 530
1929	285 469	277 000	153 889	70 401	45 502	3 896	9 725	4 191	20 174
1930	284 770	275 524	158 786	71 202	47 318	3 965	9 694	4 425	22 182
1931	277 452	267 763	160 901	71 436	47 574	3 892	9 515	4 550	23 934
1932	265 950	256 040	159 989	70 494	46 821	3 838	9 245	4 546	25 045
1933	260 714	250 502	157 917	69 345	45 869	3 737	9 006	4 458	25 502
1934	258 491	248 671	156 217	68 398	45 021	3 704	8 801	4 366	25 927
1935	259 234	250 922	155 473	67 949	44 207	3 714	8 695	4 285	26 623
1936	264 512	257 408	156 273	68 218	43 740	3 784	8 631	4 253	27 647
1937	271 945	265 718	158 548	68 894	43 800	3 976	8 645	4 232	29 001
1938	272 304	266 518	160 005	69 655	43 407	4 093	8 597	4 218	30 035
1939	279 539	275 250	162 459	71 291	43 098	4 217	8 608	4 194	31 051
1940	272 426	289 594	165 848	73 308	43 083	4 388	8 662	4 193	32 214
1941	315 208	311 445	170 477	76 020	43 575	4 604	8 820	4 215	33 243
1942	325 469	321 614	171 899	76 398	43 167	4 713	8 897	4 154	34 570
1943	325 148	322 371	171 494	75 665	42 166	4 871	9 002	4 031	35 759
1944	324 090	321 690	169 967	74 940	41 407	5 206	9 097	3 933	35 384
1945	326 621	324 737	169 910	74 711	41 366	5 590	9 161	3 881	35 201
1946	371 244	364 993	178 385	78 833	44 006	6 019	10 124	4 016	35 387
1947	429 356	415 392	191 978	85 855	47 184	6 609	11 694	4 269	36 367
1948	483 172	467 803	210 965	95 593	51 177	7 481	13 424	4 734	38 556
1949	518 771	502 168	230 526	104 549	54 792	8 301	14 956	5 387	42 541

NATIONAL WEALTH BY TYPE OF ASSET

Original Cost: 1896 to 1949

$ mill.

End of year	Reproducible tangible assets								Monetary gold and silver	Net foreign assets
	Equipment			Inventories						
					Private					
	Total	Producer durables	Consumer durables	Total	Livestock	Crops	Nonfarm	Public		
	10	11	12	13	14	15	16	17	18	19
1896	10 197	5 139	5 058	7 001	1 981	1 031	3 979	10	1 099	−2 705
1897	10 238	5 168	5 070	7 298	2 355	1 135	3 798	10	1 258	−2 695
1898	10 389	5 280	5 109	7 813	2 603	1 216	3 984	10	1 419	−2 647
1899	10 867	5 573	5 294	9 354	3 028	1 284	5 032	10	1 516	−2 559
1900	11 473	5 981	5 492	9 953	3 117	1 420	5 406	10	1 607	−2 341
1901	12 194	6 390	5 804	9 863	3 213	1 546	5 094	10	1 699	−2 096
1902	13 130	6 936	6 194	10 947	3 399	1 681	5 857	10	1 773	−1 961
1903	14 127	7 512	6 615	10 825	3 365	1 646	5 804	10	1 847	−1 940
1904	14 868	7 888	6 980	10 729	3 370	1 764	5 585	10	1 901	−1 928
1905	15 937	8 447	7 490	11 541	3 748	1 820	5 962	11	1 988	−1 833
1906	17 393	9 227	8 166	12 954	4 276	1 960	6 707	11	2 058	−1 878
1907	18 975	10 151	8 824	13 470	4 199	2 101	7 159	11	2 122	−1 917
1908	19 462	10 399	9 063	13 550	4 316	2 203	7 020	11	2 205	−1 837
1909	20 371	10 819	9 552	14 900	4 914	2 539	7 433	14	2 218	−1 865
1910	21 511	11 414	10 097	15 681	5 266	2 409	7 990	16	2 262	2 086
1911	22 503	11 871	10 632	15 375	5 037	2 443	7 876	19	2 346	−2 100
1912	23 947	12 615	11 332	16 677	5 648	2 588	8 419	22	2 412	−2 089
1913	25 573	13 495	12 078	17 859	6 148	2 569	9 117	25	2 445	−2 143
1914	26 378	13 872	12 506	18 029	6 292	2 670	9 040	27	2 342	−2 047
1915	27 180	14 233	12 947	19 278	6 357	2 882	10 009	30	2 866	−903
1916	29 704	15 508	14 196	23 825	7 064	3 247	13 481	33	3 384	1 465
1917	33 609	17 865	15 744	32 604	8 553	5 498	18 453	100	3 687	1 709
1918	37 901	20 854	17 047	36 507	9 022	5 650	21 226	609	3 482	1 690
1919	42 575	23 045	19 530	41 094	8 480	5 722	26 627	265	3 182	2 447
1920	48 797	25 549	23 248	38 893	6 380	4 245	28 066	202	3 023	3 555
1921	50 734	25 842	24 892	30 060	5 070	2 409	22 458	123	3 855	4 116
1922	52 965	26 268	26 697	32 550	5 366	3 088	24 026	70	4 149	4 910
1923	57 769	27 922	29 847	35 562	5 071	3 327	27 100	64	4 532	4 986
1924	61 525	29 153	32 372	35 392	5 021	3 579	26 721	71	4 784	5 564
1925	66 058	30 686	35 372	36 898	5 386	3 385	28 058	69	4 668	6 238
1926	70 503	32 359	38 144	36 605	5 520	2 905	28 112	68	4 747	6 544
1927	73 465	33 588	39 877	36 824	6 026	3 064	27 666	68	4 617	6 994
1928	76 495	34 862	41 633	36 923	6 593	3 067	27 195	68	4 371	8 187
1929	80 636	36 906	43 730	37 977	6 514	2 973	28 427	63	4 498	8 469
1930	80 790	37 471	43 319	31 190	4 859	2 197	24 071	63	4 758	9 246
1931	77 612	36 358	41 254	24 669	3 555	1 664	19 387	63	4 581	9 689
1932	71 663	34 052	37 611	19 804	2 983	1 201	15 558	62	4 584	9 910
1933	66 259	31 873	34 386	21 897	3 169	1 777	16 888	63	4 429	10 212
1934	63 049	30 698	32 351	23 566	3 478	2 007	17 766	315	5 839	9 820
1935	61 753	30 192	31 561	25 926	5 184	1 968	18 425	349	7 770	8 312
1936	63 157	30 894	32 263	28 939	5 064	2 216	21 381	278	9 039	7 104
1937	65 857	32 363	33 494	30 782	5 033	2 176	23 183	390	10 531	6 227
1938	65 450	32 387	33 063	28 682	5 092	1 906	20 927	757	12 381	5 786
1939	66 703	32 883	33 820	30 445	5 133	2 171	22 144	997	15 643	4 289
1940	70 345	34 617	35 728	33 342	5 325	2 264	24 375	1 378	20 059	2 832
1941	76 753	37 684	39 069	43 370	7 074	3 190	31 217	1 889	20 845	3 763
1942	78 167	39 103	39 064	50 669	9 642	4 364	33 548	3 115	20 879	3 855
1943	78 957	40 060	38 897	51 954	9 685	5 474	33 972	2 823	19 966	2 777
1944	80 363	41 454	38 909	52 623	9 012	5 679	34 067	3 865	18 737	2 400
1945	84 218	44 145	40 073	52 254	9 742	5 632	34 146	2 734	18 355	1 884
1946	99 838	50 976	48 862	67 946	11 977	6 833	47 492	1 644	18 824	6 251
1947	122 640	61 211	61 429	79 701	13 384	8 745	56 204	1 368	21 073	13 964
1948	146 955	73 041	73 914	87 303	14 657	7 530	62 983	2 133	22 580	15 369
1949	168 875	82 842	86 033	79 957	13 184	5 959	56 978	3 836	22 810	16 603

TABLE W-6

Columns 1 to 4 – Same sources and procedure as for Table W-2 except that basic figures are taken from Table W-5 instead of Table W-1.

ALTERNATIVE ESTIMATE OF NATIONAL WEALTH

Original Cost: 1896 to 1949

(Incorporating Lower Estimate of Residential Real Estate)

$ mill.

End of year	Total national wealth	Reproducible tangible assets			End of year	Total national wealth	Reproducible tangible assets		
		Total	Structures				Total	Structures	
			Total	Nonfarm residential				Total	Nonfarm residential
	1	2	3	4		1	2	3	4
1896	42 863	45 568	27 271	12 341	1923	193 384	188 398	90 535	34 967
1897	44 190	46 885	28 091	12 394	1924	206 522	200 958	99 257	39 605
1898	45 801	48 448	28 827	12 429	1925	222 546	216 308	108 684	44 567
1899	48 799	51 358	29 621	12 513	1926	236 680	230 136	118 281	49 426
1900	51 438	53 779	30 746	12 544	1927	249 446	242 452	127 546	53 650
1901	53 641	55 737	31 981	12 706	1928	262 005	253 818	136 029	57 420
1902	57 432	59 393	33 543	13 009	1929	274 952	266 483	143 372	59 884
1903	59 882	61 822	35 023	13 459	1930	274 132	264 886	148 148	60 564
1904	61 861	63 789	36 291	13 861	1931	266 776	257 087	150 225	60 760
1905	65 506	67 339	37 873	14 469	1932	255 410	245 500	149 449	59 954
1906	70 365	72 243	39 838	15 162	1933	250 345	240 133	147 548	58 976
1907	74 900	76 817	42 250	15 929	1934	248 258	238 438	145 984	58 165
1908	77 444	79 281	44 064	16 567	1935	249 059	240 747	145 298	57 774
1909	81 747	83 612	46 123	17 386	1936	254 287	247 183	146 048	57 993
1910	85 589	87 675	48 221	18 214	1937	261 610	255 383	148 213	58 559
1911	88 216	90 316	50 092	18 950	1938	261 841	256 055	149 542	59 192
1912	93 224	95 313	52 277	19 772	1939	268 816	264 527	151 736	60 568
1913	98 535	100 678	54 801	20 585	1940	281 370	278 538	154 792	62 252
1914	101 333	103 380	56 631	21 263	1941	303 703	299 940	158 972	64 515
1915	106 773	107 676	58 352	21 976	1942	313 890	310 035	160 320	64 819
1916	119 020	117 555	60 642	22 818	1943	313 677	310 900	160 023	64 194
1917	134 746	133 037	63 137	23 440	1944	312 719	310 319	158 596	63 569
1918	144 765	143 075	65 185	23 766	1945	315 265	313 381	158 554	63 355
1919	158 127	155 680	68 829	25 120	1946	359 199	352 948	166 340	66 788
1920	168 073	164 518	73 805	26 602	1947	416 165	402 201	178 787	72 664
1921	166 231	162 115	77 466	28 139	1948	468 427	453 058	196 220	80 848
1922	177 565	172 655	82 991	30 948	1949	502 636	486 033	214 391	88 414

TABLE W-7

Part 1

[1] Column references are to Table W-1.
[2] Figures shown are inclusive of fire losses and apply only to depreciation on structures owned by individuals; therefore they must be increased to allow for corporate share (see Table R-29).

Part 2

[3] Converted to calendar year by arithmetic averaging of fiscal-year figures.

Part 3

[4] Derived by dividing nonfarm producer durable expenditures, original cost (see Table P-5, col. 1), by expenditures in 1929 prices (see Table P-6, col. 1), and extrapolating for years prior to 1897 by an index of wholesale prices of all commodities as given in Warren and Pearson, *Gold and Prices*, p. 50.

Part 4

[5] Same procedure as for footnote 4, except farm expenditures used.

Part 5

[6]

Year of life	*Six-year life*	*Nine-year life*	*Twelve-year life*
1st	15.5	10.5	9
2nd	28	21	17
3rd	22	17.5	14.5
4th	16	14	11
5th	10.5	12	10
6th	6	9	9
7th	2	6	8
8th		4	7
9th		4	4.5
10th		2	3
11th			3
12th			3
13th			1

[7] Derived by dividing nonfarm consumer durable expenditures, original cost (see Table Q-5, col. 1), by expenditures in 1929 prices (see Table Q-6, col. 1), and extrapolating for years prior to 1897 by an index of wholesale prices of all commodities as given in Warren and Pearson, *op. cit.*, p. 50 (see note to Table Q-15, col. 2).

Part 6

[8] Same procedure as for footnote 7, except farm expenditures used.

General Note: The sources of the figures used in deriving the estimates for the value of reproducible tangible assets, as well as the length of life assumed, are shown in cols. 1 to 7, source references generally being to tables in Volume I. The arithmetic procedure followed in calculating remaining values is summarized below with a few minor simplifications, e.g. regarding depreciation during the year expenditures are made. (See Goldsmith, "A Perpetual Inventory of National Wealth," *Studies in Income and Wealth*, Volume XIV, pp. 15–16.) Straight line depreciation was followed except in the case of passenger cars, tractors, and musical instruments. Calculations disregard any possible scrap values of assets at end of their useful life.

Part 6 (continued)

V: remaining value
S: saving (expenditures minus depreciation)
E: capital expenditures
L: length of useful life

P_{ci}/P_{cb} = price index in year i of any asset c (1929 = 100)
Subscripts denote year (i: inventory year; j, k: any year; a: 1896; b: 1929) or type of asset, c; superscripts, basis of valuation (o: original cost; b: 1929 prices; i: current year); n the number of tangible assets over which the summation extends. Then:

$$V^o{}_i = V^o{}_a + \sum_{j=a+1}^{i} S^o{}_j \tag{1}$$

where

$$V^o{}_a = \sum_{c=1}^{n} V^o{}_{ca} = \sum_{c=1}^{n} \frac{1}{L_c} \cdot \sum_{k=a-L_c+1}^{a} \left[E_{ck} \cdot (k - a + L_c) \right]$$

and

$$S^o{}_j = \sum_{c=1}^{n} S^o{}_{cj} = \sum_{c=1}^{n} \left(E_{cj} - \frac{1}{L_c} \cdot \sum_{k=j-L_c}^{j-1} E_{ck} \right)$$

$$V^b{}_i = V^b{}_a + \sum_{j=a+1}^{i} S^b{}_j \tag{2}$$

where

$$V^b{}_a = \sum_{c=1}^{n} V^b{}_{ca}$$

$$= \sum_{c=1}^{n} \frac{1}{L_c} \cdot \sum_{k=a-L_c+1}^{a} \left[E_{ck} \cdot \frac{P_{cb}}{P_{ck}} \cdot (k - a + L_c) \right]$$

and

$$S^b{}_j = \sum_{c=1}^{n} S^b{}_{cj}$$

$$= \sum_{c=1}^{n} \left[E_{cj} \cdot \frac{P_{cb}}{P_{cj}} - \frac{1}{L_c} \cdot \sum_{k=j-L_c}^{j-1} \left(E_{ck} \cdot \frac{P_{cb}}{P_{ck}} \right) \right]$$

$$V^i{}_i = \sum_{c=1}^{n} V^i{}_{ci} \tag{3}$$

where

$$V^i{}_{ci} = V^b{}_{ci} \cdot \frac{P_{ci}}{P_{cb}}$$

and

$$V^b{}_{ci} = V^b{}_{ca} + \sum_{j=a+1}^{i} S^b{}_{cj}$$

DERIVATION OF FIGURES USED IN CALCULATING REMAINING VALUE OF DURABLE ASSETS IN TABLES W-1, W-3, AND W-5

Durable asset	Expenditures		Price index used as deflator	Length of life (years)	Depreciation allowances		
	Original cost	1929 prices			Original cost	1929 prices	Replacement cost
	1	2	3	4	5	6	7
STRUCTURES							
Column 4, [1] Nonfarm, Residential							
One- to four-family	1897–1914: R-27, col. 3 1915–1949: R-28, col. 3	Col. 1 divided by col. 3	R-20, col. 1	60	See note to R-4, col. 5 [2]	See note to R-5, col. 5 [2]	See note to R-6, col. 5 [2]
Builders' profits	R-4, col. 2	R-5, col. 2	R-20, col. 1	60	See note to R-4, col. 5 [2]	See note to R-5, col. 5 [2]	See note to R-6, col. 5 [2]
Alterations and additions	R-4, col. 3	R-5, col. 3	R-20, col. 1	30	See note to R-4, col. 5 [2]	See note to R-5, col. 5 [2]	See note to R-6, col. 5 [2]
Dealers' commissions	R-4, col. 4	R-5, col. 4	R-20, col. 1	30	See note to R-4, col. 5 [2]	See note to R-5, col. 5 [2]	See note to R-6, col. 5 [2]
Multi-family	1897–1914: R-27, col. 4 1915–1949: R-28, col. 4	Col. 1 divided by col. 3	R-20, col. 2	50	See note to R-7, col. 2 [2]	See note to R-8, col. 2 [2]	See note to R-9, col. 2 [2]
Fire losses	R-72, col. 1	R-72, col. 2	R-20, col. 1	30	R-72, col. 3	R-72, col. 4	R-72, col. 5
Column 5, Nonfarm, Nonresidential							
Commercial	R-10, col. 1 increased to include corporate expenditures (see R-29, col. 3)	Col. 1 divided by col. 3	R-20, col. 3	40	See note to R-10, col. 2 [2]	See note to R-11, col. 2 [2]	See note to R-12, col. 2 [2]
Industrial	R-13, col. 1 increased to include corporate expenditures (see R-29, col. 4)	Col. 1 divided by col. 3	R-20, col. 3	40	See note to R-13, col. 3 [2]	See note to R-13, col. 4 [2]	See note to R-13, col. 5 [2]
Public utility	R-16, col. 1	R-16, col. 2	R-20, col. 4	50	R-16, col. 3	R-16, col. 4	R-16, col. 5
Fire losses	R-73, col. 1	R-73, col. 2	R-20, col. 3	20	R-73, col. 3	R-73, col. 4	R-73, col. 5
Column 6, Mining (underground)							
Petroleum and oil well drilling	R-14, col. 1	R-14, col. 2	R-20, col. 3	1897–1929: 20 1930–1949: 25	R-14, col. 3	R-14, col. 4	R-14, col. 5
Metal mining	R-15, col. 1	R-15, col. 2	R-20, col. 3	40	R-15, col. 3	R-15, col. 4	R-15, col. 5
Column 7, Farm							
Residential	A-7, col. 3 increased by 55 percent (see note to A-1, col. 3)	A-7, col. 4 increased by 55 percent	A-30, col. 1	60	A-8, col. 4 increased by 55 percent	A-8, col. 5 increased by 55 percent	A-8, col. 6 increased by 55 percent

DERIVATION OF FIGURES USED IN CALCULATING REMAINING VALUE OF DURABLE ASSETS IN TABLES W-1, W-3, AND W-5

Durable asset	Expenditures		Price index used as deflator	Length of life (years)	Depreciation allowances		
	Original cost	1929 prices			Original cost	1929 prices	Replacement cost
	1	2	3	4	5	6	7
Column 7 (continued)							
Nonresidential	A-7, col. 5 increased by 55 percent	A-7, col. 6 increased by 55 percent	A-30, col. 2	45	A-8, col. 7 increased by 55 percent	A-8, col. 8 increased by 55 percent	A-8, col. 9 increased by 55 percent
Fire losses							
Residential	A-50, col. 2	A-51, col. 2	A-30, col. 1	30	A-51, col. 3	A-51, col. 4	A-51, col. 5
Nonresidential	A-50, col. 3	A-51, col. 2	A-30, col. 2	23	A-51, col. 3	A-51, col. 4	A-51, col. 5
Column 8, Institutional	R-17, col. 1	R-18, col. 1	R-20, col. 5	50	R-17, col. 2	R-18, col. 2	R-19, col. 2
Fire losses	Included in R-71, col. 2	Col. 1 divided by col. 3	R-20, col. 8	25	Not shown in Vol. 1	Not shown in Vol. 1	Not shown in Vol. 1
Column 9, Government							
Federal							
Highways	1897–1928: F-11, col. 7		R-20, col. 6	25	1897–1928: Included in F-11, col. 9		
Buildings	1929–1949: F-16, col. 2		R-20, col. 8	50	1929–1949: F-16, col. 1 minus col. 2		
Conservation, rivers, harbors, etc.			R-20, col. 8	80			1897–1928: Included in F-11, col. 10
Fixed assets of government corporations	1897–1928: Annual change in F-4, col. 8	Col. 1 divided by col. 3	R-20, col. 8	50	1897–1928: Annual change in F-4, col. 8 minus col. 9	See note to to F-11, col. 10	1929–1949: Included in F-22, col. 12
R.F.C. civilian plants	1929–1949: Included in F-14, col. 11		R-20, col. 3	40	1929–1949: Included in F-14, col. 11 minus col. 12		
State							
Highways	G-15, col. 2 converted to calendar year [3]		R-20, col. 6	25	G-15, col. 5 converted to calendar year [3]		
Other capital outlay	G-15, col. 3 converted to calendar year [3]	Col. 1 divided by col. 3	R-20, col. 8	50	G-15, col. 6 converted to calendar year [3]	See note to G-13, col. 5	G-13, col. 5 converted to calendar year [3]

DERIVATION OF FIGURES USED IN CALCULATING REMAINING VALUE OF DURABLE ASSETS IN TABLES W-1, W-3, AND W-5

Durable asset	Expenditures		Price index used as deflator	Length of life (years)	Depreciation allowances		
	Original cost	1929 prices			Original cost	1929 prices	Replacement cost
	1	2	3	4	5	6	7
Column 9 (continued)							
Local							
Highways	G-6, col. 2	Col. 1 divided by col. 3	R-20, col. 6	25	G-6, col. 7	See note to G-1, col. 5	Included in G-1, col. 5
Other capital outlay	G-6, col. 6		R-20, col. 8	50	G-6, col. 8		
Fire losses	Included in R-71, col. 2		R-20, col. 8	25	Not shown in Vol. I	Not shown in Vol. I	Not shown in Vol. I
EQUIPMENT							
Column 11, Producer durables							
Nonfarm							
Industrial machinery and equipment	P-5, col. 2	P-6, col. 2	P-10, col. 1	20	P-7, col. 2	P-8, col. 2	P-9, col. 2
Nonresidential furniture and equipment	P-5, col. 5	P-6, col. 5	P-10, col. 4	20	P-7, col. 5	P-8, col. 5	P-9, col. 5
Electrical equipment	P-5, col. 3	P-6, col. 3	P-10, col. 2	30	P-7, col. 3	P-8, col. 3	P-9, col. 3
Ships and boats	P-5, col. 7	P-6, col. 7	P-10, col. 6	30	P-7, col. 7	P-8, col. 7	P-9, col. 7
Railways and transit equipment	P-5, col. 6	P-6, col. 6	P-10, col. 5	28	P-7, col. 6	P-8, col. 6	P-9, col. 6
Professional and scientific equipment	P-5, col. 10	P-6, col. 10	P-10, col. 9	10	P-7, col. 10	P-8, col. 10	P-9, col. 10
Office machinery	P-5, col. 4	P-6, col. 4	P-10, col. 3	8	P-7, col. 4	P-8, col. 4	P-9, col. 4
Business horse-drawn vehicles	P-5, col. 8	P-6, col. 8	P-10, col. 7	8	P-7, col. 8	P-8, col. 8	P-9, col. 8
New passenger cars, business	Sum of P-13, col. 1 and P-14, col. 1	Sum of P-13, col. 2 and P-14, col. 2	P-10, col. 12	6	Sum of P-13, col. 3 and P-14, col. 3	Sum of P-13, col. 4 and P-14, col. 4	Sum of P-13, col. 5 and P-14, col. 5
Used passenger cars (applied to mark-up only)	P-16, col. 3	P-17, col. 1	P-10, col. 12	3	P-16, col. 5	P-17, col. 3	P-17, col. 7
Trucks	P-5, col. 12	P-6, col. 12	P-10, col. 11	6	P-7, col. 12	P-8, col. 12	P-9, col. 12
Aircraft	P-5, col. 9	P-6, col. 9	P-10, col. 8	5	P-7, col. 9	P-8, col. 9	P-9, col. 9
Tools	P-5, col. 11	P-6, col. 11	P-10, col. 10	5	P-7, col. 11	P-8, col. 11	P-9, col. 11
Miscellaneous equipment	P-5, col. 13	P-6, col. 13	P-10, col. 13	5	P-7, col. 13	P-8, col. 13	P-9, col. 13
Fire losses	P-18, col. 1	P-18, col. 2	Equipment index [4]	6	P-18, col. 3	P-18, col. 4	P-18, col. 5

DERIVATION OF FIGURES USED IN CALCULATING REMAINING VALUE OF DURABLE ASSETS IN TABLES W-1, W-3, AND W-5

Durable asset	Expenditures		Price index used as deflator	Length of life (years)	Depreciation allowances		
	Original cost	1929 prices			Original cost	1929 prices	Replacement cost
	1	2	3	4	5	6	7
Column 11 (continued)							
Farm							
Tractors	A-18, col. 1	A-18, col. 2	A-30, col. 4	1909–1919: 5 1920–1929: 10 1930–1949: 15	A-18, col. 3	A-18, col. 4	A-18, col. 5
Machinery	A-16, col. 1	A-16, col. 2	A-30, col. 3	15	A-16, col. 3	A-16, col. 4	A-16, col. 5
Horse-drawn vehicles			A-30, col. 3	8			
Miscellaneous equipment			A-30, col. 3	5			
New trucks	A-19, col. 1	A-19, col. 2	A-30, col. 7	10	A-19, col. 3	A-19, col. 4	A-19, col. 5
Used trucks	A-20, col. 1	A-20, col. 2	A-30, col. 8	5	A-20, col. 3	A-20, col. 4	A-20, col. 5
Used passenger cars	A-29, col. 1	A-29, col. 2	A-30, col. 6	5	A-29, col. 3	A-29, col. 4	A-29, col. 5
Fire losses	A-50, col. 4	A-52, col. 2	Equipment index [5]	6	A-52, col. 3	A-52, col. 4	A-52, col. 5
Government							
Federal							
General government equipment	1897–1928: F-11, col. 8 1929–1949: F-16, col. 9	Col. 1 divided by col. 3	Equipment index [4]	12	1897–1928: Included in F-11, col. 9 1929–1949: F-16, col. 9 minus col. 10	Not shown in Vol. 1	1897–1928: Included in F-11, col. 10 1929–1949: Included in F-22, col. 12
R.F.C. civilian equipment	1929–1949: Included in F-14, col. 11			12	1929–1949: Included in F-14, col. 11 minus col. 12		
Local equipment	G-6, col. 5			12	G-6, col. 9		Included in G-1, col. 5
Fire losses	Included in R-71, col. 3			6	Not shown in Vol. 1		Not shown in Vol. 1

DERIVATION OF FIGURES USED IN CALCULATING REMAINING VALUE OF DURABLE ASSETS IN TABLES W-1, W-3, AND W-5

Durable asset	Expenditures		Price index used as deflator	Length of life (years)	Depreciation allowances		
	Original cost	1929 prices			Original cost	1929 prices	Replacement cost
	1	2	3	4	5	6	7
Column 12, Consumer durables							
Nonfarm							
New furniture	Q-5, col. 2	Q-6, col. 2	Q-16, col. 1	20	Q-7, col. 2	Q-8, col. 2	Q-9, col. 2
Used furniture (applied to mark-up only)	Q-14, col. 4	Q-14, col. 7	Q-16, col. 1	10	Q-14, col. 5	Q-14, col. 8	Q-14, col. 10
Household appliances	Q-5, col. 3	Q-6, col. 3	Q-16, col. 2	12	Q-7, col. 3	Q-8, col. 3	Q-9, col. 3
Books	Q-5, col. 7	Q-6, col. 7	Q-16, col. 6	10	Q-7, col. 7	Q-8, col. 7	Q-9, col. 7
House furnishings	Q-5, col. 4	Q-6, col. 4	Q-16, col. 3	10	Q-7, col. 4	Q-8, col. 4	Q-9, col. 4
China, tableware, jewelry, etc.	Q-5, col. 5	Q-6, col. 5	Q-16, col. 4	10	Q-7, col. 5	Q-8, col. 5	Q-9, col. 5
Luggage, wheel goods, and pleasure craft	Q-5, col. 11	Q-6, col. 11	Q-16, col. 10	10	Q-7, col. 11	Q-8, col. 11	Q-9, col. 11
Ophthalmic and orthopedic products	Q-5, col. 10	Q-6, col. 10	Q-16, col. 7	5	Q-7, col. 10	Q-8, col. 10	Q-9, col. 10
Passenger car accessories	Q-5, col. 9	Q-6, col. 9	Q-16, col. 9	5	Q-7, col. 9	Q-8, col. 9	Q-9, col. 9
Used passenger cars (applied to mark-up only)	P-16, col. 4	P-17, col. 2	P-10, col. 12	1904–1919: 3 1920–1929: 4 1930–1949: 6	P-16, col. 6	P-17, col. 4	P-17, col. 8
Musical instruments	Q-5, col. 6	Q-6, col. 6	Q-16, col. 5	1897–1919: 20 1920–1929: 15 1930–1949: 10	Q-7, col. 6	Q-8, col. 6	Q-9, col. 6
New passenger cars	Q-5, col. 8	Q-6, col. 8	Q-16, col. 8	1899–1919: 6[6] 1920–1929: 9[6] 1930–1949: 12[6]	Q-7, col. 8	Q-8, col. 8	Q-9, col. 8
Fire losses	Q-15, col. 1	Q-15, col. 2	Consumer durables index[7]	6	Q-15, col. 3	Q-15, col. 4	Q-15, col. 5
Farm							
New furniture	A-24, col. 2	A-25, col. 2	Q-16, col. 1	20	A-26, col. 2	A-27, col. 2	A-28, col. 2
Household appliances	A-24, col. 3	A-25, col. 3	Q-16, col. 2	12	A-26, col. 3	A-27, col. 3	A-28, col. 3
Books	A-24, col. 7	A-25, col. 7	Q-16, col. 6	10	A-26, col. 7	A-27, col. 7	A-28, col. 7

DERIVATION OF FIGURES USED IN CALCULATING REMAINING VALUE OF DURABLE ASSETS IN TABLES W-1, W-3, AND W-5

Durable asset	Expenditures		Price index used as deflator	Length of life (years)	Depreciation allowances		
	Original cost	1929 prices			Original cost	1929 prices	Replacement cost
	1	2	3	4	5	6	7
Column 12 (continued)							
House furnishings	A-24, col. 4	A-25, col. 4	Q-16, col. 3	10	A-26, col. 4	A-27, col. 4	A-28, col. 4
China, tableware, jewelry, etc.	A-24, col. 5	A-25, col. 5	Q-16, col. 4	10	A-26, col. 5	A-27, col. 5	A-28, col. 5
Luggage, wheel goods, and pleasure craft	A-24, col. 11	A-25, col. 11	Q-16, col. 10	10	A-26, col. 11	A-27, col. 11	A-28, col. 11
Ophthalmic and orthopedic products	A-24, col. 10	A-25, col. 10	Q-16, col. 7	5	A-26, col. 10	A-27, col. 10	A-28, col. 10
Passenger car accessories	A-24, col. 9	A-25, col. 9	Q-16, col. 9	5	A-26, col. 9	A-27, col. 9	A-28, col. 9
Musical instruments	A-24, col. 6	A-25, col. 6	Q-16, col. 5	1897–1919: 20 1920–1929: 15 1930–1949: 10	A-26, col. 6	A-27, col. 6	A-28, col. 6
New passenger cars	A-24, col. 8	A-25, col. 8	A-30, col. 5		A-26, col. 8	A-27, col. 8	A-28, col. 8
Fire losses	A-50, col. 6	Col. 1 divided by col. 3	Consumer durables index [8]	6	Not shown in Vol. 1	Not shown in Vol. 1	Not shown in Vol. 1
Federal government construction outside continental United States (Panama Canal) added to col. 25	Included in F-11, col. 7	Col. 1 divided by col. 3	R-20, col. 8	80	Included in F-11, col. 9	Not shown in Vol. 1	Included in F-11, col. 10

TABLE W-8

Column 1 – 1896–1933: Same as col. 2.
1934–1949: Col. 2 less devaluation profit of $2,868 million (*Banking and Monetary Statistics*, p. 538).

Column 2 – 1896–1912: *Statistical Abstract*, 1938, p. 231, average of June figures.
1913–1941: *Banking and Monetary Statistics*, p. 536, plus an amount decreasing regularly from $287 million in 1913 to zero in 1933 to take account of difference in 1913 between Federal Reserve and Bureau of the Mint figures (*Banking and Monetary Statistics*, p. 522).
1942–1949: *Federal Reserve Bulletin*, various issues.

Column 3 – 1896–1933: Same as col. 2.
1934–1949: Col. 2 multiplied by 0.5906, the ratio of the old to the new mint price of gold.

Column 4 – 1896–1949: Col. 5 less seigniorage accumulated from 1897 on, as given in Table F-3, col. 5 and Table F-13, col. 5.

Column 5 – 1896–1913: Average of June figures from *Historical Statistics*, p. 275 (cols. N 154, N 155, and N 158).
1914–1941: *Banking and Monetary Statistics*, pp. 409–413.
1942–1949: *Federal Reserve Bulletin*, various issues.

Column 6 – 1896–1949: Col. 5 times ratio of bullion value of silver dollar in given year to that of 1929 (derived from *Historical Statistics*, p. 277, col. N 183 and *Statistical Abstract*, 1950, p. 952) times 1929 ratio of bullion to mint value (0.412/1.290 = 0.32).

Columns 7 to 9 – 1896–1949: Sums of cols. 1 and 4, 2 and 5, and 3 and 6, respectively.

VALUE OF MONETARY GOLD AND SILVER: 1896 to 1949

$ mill.

End of year	Gold			Silver			Total		
	Original cost	Current value	1929 prices	Original cost	Current value	1929 prices	Original cost	Current value	1929 prices
	1	2	3	4	5	6	7	8	9
1896	648	648	648	451	456	185	1 099	1 104	833
1897	779	779	779	479	491	178	1 258	1 270	957
1898	913	913	913	506	523	185	1 419	1 436	1 098
1899	999	999	999	517	542	195	1 516	1 541	1 194
1900	1 080	1 080	1 080	527	563	209	1 607	1 643	1 289
1901	1 159	1 159	1 159	540	588	210	1 699	1 747	1 369
1902	1 221	1 221	1 221	552	610	193	1 773	1 831	1 414
1903	1 288	1 288	1 288	559	624	203	1 847	1 912	1 491
1904	1 343	1 343	1 343	558	629	218	1 901	1 972	1 561
1905	1 417	1 417	1 417	571	645	236	1 988	2 062	1 653
1906	1 471	1 471	1 471	587	667	271	2 058	2 138	1 742
1907	1 542	1 542	1 542	580	670	266	2 122	2 212	1 808
1908	1 630	1 630	1 630	575	674	216	2 205	2 304	1 846
1909	1 639	1 639	1 639	579	684	213	2 218	2 323	1 852
1910	1 695	1 695	1 695	567	676	219	2 262	2 371	1 914
1911	1 786	1 786	1 786	560	675	218	2 346	2 461	2 004
1912	1 844	1 844	1 844	568	690	254	2 412	2 534	2 098
1913	1 871	1 871	1 871	574	702	254	2 445	2 573	2 125
1914	1 799	1 799	1 799	543	676	224	2 342	2 475	2 023
1915	2 283	2 283	2 283	583	720	224	2 866	3 003	2 507
1916	2 800	2 800	2 800	584	729	300	3 384	3 529	3 100
1917	3 098	3 098	3 098	589	751	403	3 687	3 849	3 501
1918	3 088	3 088	3 088	394	573	338	3 482	3 661	3 426
1919	2 908	2 908	2 908	274	465	312	3 182	3 373	3 220
1920	2 826	2 826	2 826	197	400	244	3 023	3 226	3 070
1921	3 545	3 545	3 545	310	531	201	3 855	4 076	3 746
1922	3 800	3 800	3 800	349	594	242	4 149	4 394	4 042
1923	4 101	4 101	4 101	431	693	271	4 532	4 794	4 372
1924	4 341	4 341	4 341	443	713	287	4 784	5 054	4 628
1925	4 227	4 227	4 227	441	720	300	4 668	4 947	4 527
1926	4 305	4 305	4 305	442	730	273	4 747	5 035	4 578
1927	4 178	4 178	4 178	439	735	250	4 617	4 913	4 428
1928	3 926	3 926	3 926	445	747	262	4 371	4 673	4 188
1929	4 054	4 054	4 054	444	753	241	4 498	4 807	4 295
1930	4 349	4 349	4 349	409	722	167	4 758	5 071	4 516
1931	4 202	4 202	4 202	379	693	121	4 581	4 895	4 323
1932	4 240	4 240	4 240	344	658	111	4 584	4 898	4 351
1933	4 036	4 036	4 036	393	708	149	4 429	4 744	4 185
1934	5 370	8 238	4 865	469	918	266	5 839	9 156	5 131
1935	7 257	10 125	5 980	513	1 174	455	7 770	11 299	6 435
1936	8 390	11 258	6 649	649	1 432	390	9 039	12 690	7 039
1937	9 892	12 760	7 536	639	1 527	414	10 531	14 287	7 950
1938	11 644	14 512	8 571	737	1 738	454	12 381	16 250	9 025
1939	14 776	17 644	10 421	867	1 980	468	15 643	19 624	10 889
1940	19 127	21 995	12 990	932	2 129	448	20 059	24 124	13 438
1941	19 869	22 737	13 428	976	2 274	478	20 845	25 011	13 906
1942	19 858	22 726	13 422	1 021	2 402	557	20 879	25 128	13 979
1943	19 070	21 938	12 957	896	2 333	630	19 966	24 271	13 587
1944	17 751	20 619	12 178	986	2 486	672	18 737	23 105	12 850
1945	17 197	20 065	11 850	1 158	2 841	885	18 355	22 906	12 735
1946	17 661	20 529	12 124	1 163	3 041	1 461	18 824	23 570	13 585
1947	19 886	22 754	13 439	1 187	3 102	1 336	21 073	25 856	14 775
1948	21 376	24 244	14 319	1 204	3 168	1 412	22 580	27 412	15 731
1949	21 559	24 427	14 427	1 251	3 244	1 400	22 810	27 671	15 827

Each column is taken from the appropriate column in Tables W-18, W-22, W-25, W-26, W-27, W-29, W-30, W-31, W-39, W-40, W-41, W-42, W-43.

NATIONAL BALANCE SHEET, END OF 1900

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I. Tangible assets														
1. Residential structures	17.4	15.5			1.7		0.3						1.6	0.4
2. Nonresidential structures	17.6	1.1	1.1	0.3	1.6	2.2	10.6	16.1	2.2	0.3		0.2		
3. Land, residential	4.4	4.3	0.3		14.5	1.1	0.1						3.0	1.0
4. Land, nonresidential	26.5	3.3					3.6							
5. Producer durables	6.5	0.1	0.1		1.2	0.9	4.3						0.1	0
6. Consumer durables	6.0	5.2			0.8									
7. Inventories	6.8				1.4	2.6	2.8	2.7	0				0	
8. Livestock	3.1				3.1									
9. Monetary metals	1.8	0.4			0.2		0.2	0.1		0.2			0	1.0
10. Total	90.2	29.8	1.5	0.3	24.5	6.9	21.9	18.9	2.2	0.5		0.2	4.7	2.5
II. Intangible assets														
1. Currency	1.4	0.5	0	0	0.2		0.7	0.1	0.2	0.6		0.1	0	
2. Commercial bank deposits	6.7	1.4			0.4	1.3	3.4	1.8		1.2			0.1	0.1
3. Deposits in other financial institutions	2.6	2.6												
4. Life insurance reserves	1.6	1.4			0.2									
5. Pension and retirement funds, private														
6. Pension and retirement funds, government	0	0												
7. Receivables from business	10.9	0.1				3.7	7.1	3.4	0.4	3.2				
8. Receivables from households	1.9					0.2	1.7	0.6	0	1.0		0.1		
9. Loans on securities	1.3						1.3		0.4	0.8		0.1		
10. Mortgages, nonfarm	4.4	2.3	0.1	0.8			2.1		0.1	1.2		0.8		
11. Mortgages, farm	2.3	1.4	0	0.4	0.1	0.3	0.4		0.1	0.2		0.1		
12. Securities, U.S. Government	1.2	0.6					0.7			0.6		0		
13. Securities, state and local governments	2.0	0.5	0	0.2			0.9		0	0.8		0.1	0.6	
14. Securities, corporate bonds	5.2	3.4	0.4	0.6			1.8		0	1.1		0.7		
15. Securities, preferred stock	13.9	10.7	0	0.2			3.2	2.0	0.9			0		
16. Securities, common stock			0	0.4						0.1		0.1		
17. Equity in unincorporated business	6.3	6.3												
18. Equity in financial nonprofit institutions	0.3	0.2			0.1									
19. Equity in government corporations														

NATIONAL BALANCE SHEET, END OF 1900

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
II. Intangible assets (continued)														
20. Accruals	0.7												0.7	
21. Other intangible assets	6.0	0.1		0.1			5.8	4.2	0.3	1.1		0.2	0.1	
22. Total	68.8	31.6	0.6	2.7	1.0	5.5	29.1	12.1	2.5	11.9		2.5	1.5	0.1
III. Liabilities														
1. Currency	1.2						0.3			0.3				0.9
2. Commercial bank deposits	6.7						6.7			6.7				
3. Deposits in other financial institutions	2.6						2.6			2.2		0.4		
4. Life insurance reserves	1.6						1.6					1.6		
5. Pension and retirement funds, private														
6. Pension and retirement funds, government	0						0					0		
7. Payables to financial intermediaries	4.3	0.6	0.2		0.5	1.6	1.6	1.4	0.1	0		0		
8. Payables to other business	7.6	0.3			0.5	3.7	3.1	2.6	0.5					
9. Payables to households	0.1						0.1		0.1					
10. Borrowing on securities	1.3	0.9					0.4		0.4					
11. Mortgages	6.7	2.9	0.3		2.3	0.8	0.8	7.0	0.8					
12. Bonds and notes	10.4					0	7.1						2.0	1.2
13. Accruals	0.7	0.5			0.1		0.1	0.1						
14. Other liabilities	4.0	0.1			0.1		3.8	1.9	0.6	1.0		0.2		0
15. Total	47.2	5.3	0.5		3.5	6.1	28.1	13.0	2.6	10.3		2.2	2.0	2.2
IV. Equity	111.9	56.2	1.6	3.0	22.0	6.3	22.8	18.0	2.2	2.1		0.5	4.1	0.4
V. Total assets and liabilities	159.0	61.4	2.1	3.0	25.5	12.4	50.9	31.0	4.8	12.4		2.7	6.1	2.6

NATIONAL BALANCE SHEET, END OF 1912

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I. Tangible assets														
1. Residential structures	28.3	24.8			2.9		0.6							
2. Nonresidential structures	34.2	2.0	2.0	0.7	2.7	3.8	19.7	31.6	4.0	0.7	0	0.2	4.8	1.0
3. Land, residential	7.0	6.7	0.5		31.6	1.8	0.3						6.5	1.0
4. Land, nonresidential	51.2	4.2					6.2							
5. Producer durables	13.8	0.1	0.1		2.2	1.4	9.8						0.2	0
6. Consumer durables	13.6	11.7			1.9									
7. Inventories	11.0				2.6	3.1	5.3	5.2	0.1		0		0	
8. Livestock	5.6				5.6									
9. Monetary metals	2.8	0.4			0.2		0.3	0.1		0.2			0	1.9
10. Total	167.6	50.0	2.7	0.7	49.7	10.1	42.2	36.9	4.1	0.9	0	0.2	11.5	4.0
II. Intangible assets														
1. Currency	2.5	0.8			0.3		1.5	0.2		1.3			0	
2. Commercial bank deposits	15.8	5.3	0.1	0.2	1.1	2.0	6.8	3.7	0.4	2.5	0	0.2	0.5	0.1
3. Deposits in other financial institutions	4.5	4.5												
4. Life insurance reserves	4.1	3.7			0.5									
5. Pension and retirement funds, private														
6. Pension and retirement funds, government	0	0												
7. Receivables from business	17.2	0.2				3.9	13.2	5.1	1.1	7.0				
8. Receivables from households	5.6					0.5	5.1	1.9	0.1	2.5		0.6		
9. Loans on securities	2.3						2.3		0.7	1.6		0		
10. Mortgages, nonfarm	7.5	2.7	0.2	1.0			4.8		0.1	2.8		1.9		
11. Mortgages, farm	4.3	2.2	0.1	0.6	0.2	0.5	1.5		0.2	0.7		0.6		
12. Securities, U.S. Government	1.2	0.4					0.8			0.8		0		
13. Securities, state and local governments	4.4	1.5	0.1	0.4			1.8		0.1	1.3		0.4	1.2	
14. Securities, corporate bonds	14.5	9.6	0.8	1.4			5.0		0.1	3.0		2.0		
15. Securities, preferred stock	38.0	30.0	0.1	0.6			7.9	5.0	2.2		0	0.1		
16. Securities, common stock			0.3	1.8						0.3		0.3		
17. Equity in unincorporated business	8.9	8.9												
18. Equity in financial nonprofit institutions	0.6	0.4			0.2									
19. Equity in government corporations	0													0

NATIONAL BALANCE SHEET, END OF 1912

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
II. Intangible assets (continued)														
20. Accruals	1.1												1.1	0.1
21. Other intangible assets	8.2	0.6		0.4	0.2		7.2	5.1	0.6	1.2	0	0.3	0.2	
22. Total	141.0	70.7	1.5	6.3	2.5	6.8	58.0	21.1	5.6	25.0	0	6.3	2.9	0.1
III. Liabilities														
1. Currency	2.5						0.7			0.7				1.7
2. Commercial bank deposits	15.8						15.8			15.8				
3. Deposits in other financial institutions	4.5						4.5			3.7		0.8		
4. Life insurance reserves	4.1						4.1					4.1		
5. Pension and retirement funds, private														
6. Pension and retirement funds, government	0						0					0		
7. Payables to financial intermediaries	10.1	1.5	0.4		1.6	2.8	4.1	3.7	0.3	0.2		0		
8. Payables to other business	10.8	1.1			1.4	4.0	4.4	3.3	1.0					
9. Payables to households	0.2						0.2		0.2					
10. Borrowing on securities	2.3	1.7					0.6		0.6					
11. Mortgages	11.8	4.7	0.5		4.3	1.2	1.6	18.0	1.8					
12. Bonds and notes	23.9	0	0			0	18.2						4.4	1.2
13. Accruals	1.1	0.6			0.2		0.3	0.3						
14. Other liabilities	6.8	0.1			0.2		6.6	3.7	1.3	1.1	0	0.5		0
15. Total	94.1	9.8	0.9		7.7	8.0	61.2	29.0	5.2	21.5	0	5.5	4.4	2.9
IV. Equity	214.5	111.0	3.3	7.0	44.4	8.9	39.0	29.0	4.6	4.4	0	1.1	10.0	1.2
V. Total assets and liabilities	308.6	120.8	4.2	7.0	52.2	17.0	100.2	58.0	9.8	25.9	0	6.5	14.4	4.1

NATIONAL BALANCE SHEET, END OF 1922

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I. Tangible assets														
1. Residential structures	63.2	54.8			6.6		1.8							
2. Nonresidential structures	71.3	4.1	4.1	1.4	5.8	8.2	37.8	66.3	8.4	1.3	0.1	0.3	13.0	2.4
3. Land, residential	15.4	14.5	1.0		41.5	3.5	0.9						11.1	1.5
4. Land, nonresidential	77.4	7.6					12.2							
5. Producer durables	30.8	0.2	0.2		3.3	3.4	23.8						0.1	0
6. Consumer durables	30.9	27.2			3.7									
7. Inventories	27.2				3.1	6.7	17.4	17.1	0.3		0		0	
8. Livestock	5.4				5.4									
9. Monetary metals	4.6	0.4			0.1		0.3	0.1		0.3			0	3.7
10. Total	326.2	108.9	5.2	1.4	69.5	21.8	94.1	83.4	8.7	1.6	0.1	0.3	24.3	7.7
II. Intangible assets														
1. Currency	6.9	2.1			0.6		4.2	0.3		3.9			0	
2. Commercial bank deposits	34.2	15.1	0.2	0.5	2.7	4.5	10.0	5.4	0.9	3.3	0	0.4	1.4	0.5
3. Deposits in other financial institutions	10.5	8.6					1.9			1.9				0
4. Life insurance reserves	8.7	7.8			0.9									
5. Pension and retirement funds, private	0.1	0.1												
6. Pension and retirement funds, government	0.3	0.2			0									
7. Receivables from business	32.7	0.5				5.9	26.3	9.6	2.4	14.2	0	0		
8. Receivables from households	11.1					0.7	10.4	3.9	0.4	4.8	0	1.3		
9. Loans on securities	6.7						6.7	0.4	2.6	3.6		0		
10. Mortgages, nonfarm	16.3	6.3	0.3	1.6			9.9		0.4	5.4		4.2		
11. Mortgages, farm	10.8	4.8	0.2	1.1	0.9	0.9	4.2		0.2	1.5	0.7	1.8		
12. Securities, U.S. Government	23.0	9.9	0.2	0.9	0.4	0.9	11.5	3.1	0.5	6.2	0.2	1.6	0.2	
13. Securities, state and local governments	10.4	5.0	0.2	1.8			3.2	0.3	0	1.8		1.0	2.2	
14. Securities, corporate bonds	23.7	16.1	1.6	3.6			7.8		0.2	4.6	0	3.0		
15. Securities, preferred stock	76.1	55.3	0.2	1.6			20.6	12.0	7.5			0.1		
16. Securities, common stock			0.6	4.7						0.6		0.4		
17. Equity in unincorporated business	22.2	22.2												
18. Equity in financial nonprofit institutions	1.2	0.8			0.4									
19. Equity in government corporations	0.7				0									0.6

NATIONAL BALANCE SHEET, END OF 1922

$ bill.

	Total	Nonfarm				Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds	Farm		Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
II. Intangible assets (continued)														
20. Accruals	4.7												3.2	1.6
21. Other intangible assets	26.6	4.0		0.8	0.5		21.8	13.0	1.3	6.1	0.5	0.9	0.3	0
22. Total	326.8	158.8	3.4	16.6	6.4	12.9	138.4	48.0	16.4	57.9	1.4	14.7	7.4	2.7
III. Liabilities														
1. Currency	6.8						3.1			3.1				3.7
2. Commercial bank deposits	34.2						34.2			34.2				
3. Deposits in other financial institutions	10.5						10.5			8.1		2.4		
4. Life insurance reserves	8.7						8.7					8.7		
5. Pension and retirement funds, private	0.1						0.1					0.1		
6. Pension and retirement funds, government	0.3						0.3					0.3		
7. Payables to financial intermediaries	20.4	2.8	0.6		3.3	4.7	9.6	8.1	0.8	0.5		0.1		
8. Payables to other business	23.0	2.1			2.9	5.6	12.4	10.0	2.5					
9. Payables to households	0.5						0.5		0.5					
10. Borrowing on securities	6.7	4.5					2.2		2.2					
11. Mortgages	27.1	10.0	0.8		10.8	2.2	4.2	24.5	4.4					
12. Bonds and notes	59.5	0.3	0			0.2	25.6				0.6	0.2	10.4	23.0
13. Accruals	4.7	2.4			0.5		1.8	1.8						
14. Other liabilities	19.9	0.1			0.2		19.6	9.2	3.3	6.4	0.2	0.6		0
15. Total	222.4	22.1	1.5		17.7	12.6	132.9	53.6	13.6	52.4	0.8	12.4	10.4	26.7
IV. Equity	430.6	245.6	7.2	18.0	58.2	22.2	99.6	77.9	11.4	7.0	0.7	2.6	21.3	−16.3
V. Total assets and liabilities	653.0	267.7	8.7	18.0	75.9	34.8	232.5	131.5	25.1	59.5	1.5	15.0	31.7	10.4

NATIONAL BALANCE SHEET, END OF 1929

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I. Tangible assets														
1. Residential structures	95.9	84.9			6.4		4.6							
2. Nonresidential structures	93.9	5.6	5.6	1.5	5.9	11.2	48.0	85.5	13.8	2.2	0.1	0.8	20.5	2.7
3. Land, residential	24.1	22.0	1.4		34.9	7.3	2.0						13.2	2.1
4. Land, nonresidential	89.5	13.2					18.7							
5. Producer durables	38.4	0.4	0.4		3.9	4.6	29.0						0.5	0.1
6. Consumer durables	42.2	38.4			3.8									
7. Inventories	31.5				3.0	6.4	22.0	21.5	0.5		0		0.1	
8. Livestock	6.5				6.5									
9. Monetary metals	5.0	0.4			0.1		0.7	0.1		0.6			0	3.9
10. Total	426.9	164.8	7.3	1.5	64.4	29.6	125.1	107.1	14.2	2.8	0.1	0.8	34.3	8.8
II. Intangible assets														
1. Currency	6.5	2.1			0.5		3.9	0.4		3.5			0	
2. Commercial bank deposits	44.8	19.1	0.3	0.9	2.9	4.9	15.3	7.6	1.8	4.5	0	1.5	2.4	0.2
3. Deposits in other financial institutions	17.9	15.5					2.4			2.4				0
4. Life insurance reserves	17.5	15.9			1.7									
5. Pension and retirement funds, private	0.5	0.5												
6. Pension and retirement funds, government	1.5	1.5			0.1									
7. Receivables from business	46.7	1.2				6.0	39.4	17.2	5.5	16.5	0.1	0		
8. Receivables from households	15.3					1.3	14.0	3.8	1.5	5.7	0.1	2.9		
9. Loans on securities	16.3						16.3	2.0	6.0	8.3		0		
10. Mortgages, nonfarm	37.3	13.9	0.5	2.4			23.4		0.6	10.6		12.1		
11. Mortgages, farm	9.6	3.6	0.2	0.6	0.3	0.7	5.1		0.2	1.0	1.2	2.7		
12. Securities, U.S. Government	16.2	4.1	0.1	0.9	0	1.0	10.9	2.5	0.8	5.7	0	1.8	0.3	
13. Securities, state and local governments	16.9	7.7	0.3	3.0			5.6	0.5	0.2	3.0		2.9	3.6	
14. Securities, corporate bonds	38.1	24.3	2.2	6.8			14.0		0.2	6.8	0	7.0		
15. Securities, preferred stock	186.7	138.0	0.3	1.9			48.4	22.1	17.7			0.9		
16. Securities, common stock			1.1	10.7						1.3		6.4		
17. Equity in unincorporated business	27.5	27.5												
18. Equity in financial nonprofit institutions	2.1	1.6			0.5									
19. Equity in government corporations	0.4				0.1									0.4

NATIONAL BALANCE SHEET, END OF 1929

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
II. Intangible assets (continued)														
20. Accruals	7.6												5.3	2.4
21. Other intangible assets	45.3	9.1		1.4	0.7		34.9	20.3	2.5	9.8	0.1	2.3	0.5	0
22. Total	554.8	285.4	4.8	28.5	6.8	13.9	233.6	76.3	37.0	79.0	1.6	39.6	12.2	2.9
III. Liabilities														
1. Currency	6.4						2.6			2.6				3.8
2. Commercial bank deposits	44.8						44.8			44.8				
3. Deposits in other financial institutions	17.9						17.9			11.4		6.5		
4. Life insurance reserves	17.5						17.5					17.5		
5. Pension and retirement funds, private	0.5						0.5					0.5		
6. Pension and retirement funds, government	1.5						1.5					1.5		
7. Payables to financial intermediaries	25.4	5.7	0.8		3.0	4.7	11.9	9.0	2.0	0.8		0.1		
8. Payables to other business	28.6	4.5			2.0	6.1	16.0	11.9	4.1					
9. Payables to households	1.2						1.2		1.2					
10. Borrowing on securities	16.3	11.6					4.8		4.8					
11. Mortgages	46.9	23.3	1.4		9.6	3.4	10.6	} 37.1	} 10.6					
12. Bonds and notes	76.1	1.7	0.3			1.7	39.6				1.2	1.3	16.9	16.2
13. Accruals	7.6	3.6			0.6		3.4	3.2	0.1	0		0		
14. Other liabilities	33.5	0.3			0.2		32.8	13.2	6.8	11.6	0	1.2		0.1
15. Total	324.3	50.8	2.5		15.5	15.9	205.1	74.4	29.5	71.2	1.3	28.7	16.9	20.2
IV. Equity	657.4	399.5	9.6	30.0	55.8	27.5	153.5	109.1	21.7	10.5	0.4	11.8	29.6	−8.5
V. Total assets and liabilities	981.8	450.2	12.1	30.0	71.2	43.5	358.6	183.5	51.3	81.7	1.7	40.5	46.5	11.7

NATIONAL BALANCE SHEET, END OF 1933

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I. Tangible assets														
1. Residential structures	74.3	66.1			4.6		3.5							
2. Nonresidential structures	85.2	4.8	4.8	1.2	4.0	9.8	40.5	67.0	8.4	2.4	0.2	2.4	22.9	3.2
3. Land, residential	18.7	17.0	1.2		22.8	3.5	1.7						13.2	2.2
4. Land, nonresidential	62.4	8.7					12.0							
5. Producer durables	29.2	0.3	0.3		2.6	3.2	22.6						0.5	0.1
6. Consumer durables	25.7	23.8			2.0									
7. Inventories	18.7				1.8	3.1	13.8	13.7	0.1		0		0.1	
8. Livestock	3.2				3.2									
9. Monetary metals	5.1	0.3			0.1		0.8	0		0.8			0	3.8
10. Total	322.4	121.0	6.2	1.2	41.0	19.6	94.9	80.7	8.5	3.2	0.2	2.4	36.6	9.3
II. Intangible assets														
1. Currency	8.1	3.2			0.7		4.1	0.3		3.8			0	
2. Commercial bank deposits	36.2	16.1	0.5	0.8	1.6	3.3	12.0	5.8	0.9	4.2	0	1.1	2.0	1.1
3. Deposits in other financial institutions	18.8	16.0					2.7			2.7				0.1
4. Life insurance reserves	20.9	18.9			2.0									
5. Pension and retirement funds, private	0.7	0.7												
6. Pension and retirement funds, government	3.0	2.7			0.2									
7. Receivables from business	30.2	0.3				3.7	26.2	12.9	3.5	8.3	1.5	0		
8. Receivables from households	11.9					0.7	11.2	1.9	0.8	2.4	0.5	5.7		
9. Loans on securities	5.2						5.2		1.5	3.6		0		
10. Mortgages, nonfarm	33.5	13.6	0.4	2.0			19.9		0.3	9.5		10.1		
11. Mortgages, farm	7.7	2.7	0.2	0.5	0.2	0.5	4.2		0.1	0.8	1.2	2.0		
12. Securities, U.S. Government	23.9	6.0	0.3	2.5	0	0.8	16.8	2.4	0.5	11.8	0.1	2.0	0.2	
13. Securities, state and local governments	19.1	9.5	0.3	3.8			6.6	0.5	0.1	3.5		2.4	3.0	
14. Securities, corporate bonds	37.7	24.6	2.1	5.0			13.2		0	6.2	0	6.8		
15. Securities, preferred stock	101.7	57.1	0.3	1.6			44.6	25.0	14.3		0.2	0.9		
16. Securities, common stock			0.8	6.4						1.1		3.0		
17. Equity in unincorporated business	17.6	17.6												
18. Equity in financial nonprofit institutions	2.3	1.7			0.5									
19. Equity in government corporations	3.1				0.1		0					0		3.0

NATIONAL BALANCE SHEET, END OF 1933

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
II. Intangible assets (continued)														
20. Accruals	5.4												4.3	1.1
21. Other intangible assets	24.0	4.1		1.2	0.9		18.5	10.0	1.6	3.8	0.7	2.3	0.5	0
22. Total	410.7	194.8	4.8	23.8	6.2	9.1	185.2	58.8	23.6	61.9	4.5	36.4	10.2	5.3
III. Liabilities														
1. Currency	7.7						4.0			4.0				3.7
2. Commercial bank deposits	36.2						36.2			36.2				
3. Deposits in other financial institutions	18.9						18.9			13.6		5.3		
4. Life insurance reserves	20.9						20.9					20.9		
5. Pension and retirement funds, private	0.7						0.7					0.7		
6. Pension and retirement funds, government	3.0						3.0					3.0		
7. Payables to financial intermediaries	18.3	6.5	0.5		2.0	2.2	7.6	6.6	0.5	0.3		0.2		
8. Payables to other business	19.4	2.5			0.9	4.1	11.9	7.9	4.0					
9. Payables to households	0.3						0.3		0.3					
10. Borrowing on securities	5.2	4.0					1.1		1.1					
11. Mortgages	41.1	20.1	1.5		7.7	3.0	10.3	} 37.8	} 7.6					
12. Bonds and notes	83.8	1.5	0.3			1.8	37.5				1.5	0.9	19.1	23.9
13. Accruals	5.4	3.7			0.6		1.1	1.0	0.1	0		0		
14. Other liabilities	20.6	0.2			0.2		19.6	10.9	4.0	3.2	0.1	1.3	0.4	0.3
15. Total	281.4	38.6	2.3		11.4	11.1	173.0	64.2	17.6	57.3	1.6	32.3	19.5	27.8
IV. Equity	451.7	277.2	8.8	25.0	35.8	17.6	107.1	75.2	14.5	7.9	3.1	6.5	27.2	−13.2
V. Total assets and liabilities	733.1	315.8	11.1	25.0	47.2	28.6	280.1	139.4	32.1	65.2	4.6	38.8	46.7	14.6

NATIONAL BALANCE SHEET, END OF 1939

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I. Tangible assets														
1. Residential structures	91.2	82.1			4.9		4.2							
2. Nonresidential structures	97.3	5.4	5.4	1.8	4.1	11.5	43.9	69.8	13.8	2.4	1.3	3.1	26.9	5.6
3. Land, residential	22.9	20.8	1.3		23.2	4.2	2.1						14.6	2.8
4. Land, nonresidential	65.7	6.7					14.2							
5. Producer durables	34.2	0.2	0.2		3.5	3.8	26.0						0.5	0.3
6. Consumer durables	32.5	30.0			2.6									
7. Inventories	25.3				2.2	4.1	18.9	18.0	0		0.9		0.1	
8. Livestock	5.1				5.1									
9. Monetary metals	20.8	0.4			0.1		0.1	0.1					0	20.2
10. Total	395.0	145.4	6.9	1.8	45.7	23.6	109.4	87.9	13.8	2.4	2.2	3.1	42.0	28.9
II. Intangible assets														
1. Currency	22.4	4.0	1.0	1.4	0.9		17.5	0.7	1.4	16.8	0.1	2.2	0.1	0.8
2. Commercial bank deposits	54.1	21.2			2.8	5.6	20.3	7.8		8.8			3.5	0.7
3. Deposits in other financial institutions	28.8	16.2					11.9			11.7	0.2	0		
4. Life insurance reserves	29.2	26.6			2.6									
5. Pension and retirement funds, private	1.0	1.0												
6. Pension and retirement funds, government	6.2	6.1			0.1									
7. Receivables from business	26.3	0.4				5.3	20.6	9.2	2.9	7.5	1.1	0		
8. Receivables from households	14.6					1.2	13.4	2.8	1.8	4.3	0.9	3.7		
9. Loans on securities	2.7						2.7		1.0	1.7		0		
10. Mortgages, nonfarm	32.0	11.8	0.3	2.0			20.2		0.3	8.6	2.2	9.0		
11. Mortgages, farm	6.6	1.6	0.1	0.4	0.1	0.3	4.5		0.1	0.6	2.8	1.0		
12. Securities, U.S. Government	47.0	8.2	0.4	3.5	0.2	0.9	37.4	1.4	0.4	23.1	0.9	11.6	0.2	
13. Securities, state and local governments	19.8	8.3	0.4	4.2			8.7	0.3	0.1	4.1	0.3	3.9	2.8	
14. Securities, corporate bonds	32.5	16.9	2.4	7.0			15.7		0	4.8	0.9	10.0		
15. Securities, preferred stock	100.1	73.2	0.4	2.1			26.9	12.0	8.8		0.6	1.0		
16. Securities, common stock			1.4	10.9						0.7		3.8		
17. Equity in unincorporated business	26.1	26.1												
18. Equity in financial nonprofit institutions	2.3	1.7			0.6									4.2
19. Equity in government corporations	4.5				0.2		0					0		

NATIONAL BALANCE SHEET, END OF 1939

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
II. Intangible assets (continued)														
20. Accruals	7.8												5.1	2.7
21. Other intangible assets	18.0	5.8		1.8	1.1		10.4	3.5	0.6	3.5	0.6	2.3	0.6	0
22. Total	482.4	229.3	6.4	33.2	8.7	13.3	210.2	37.7	17.5	96.1	10.6	48.4	12.2	8.4
III. Liabilities														
1. Currency	22.2						5.0			5.0				17.2
2. Commercial bank deposits	54.1						54.1			54.1				
3. Deposits in other financial institutions	29.0						29.0			24.4		4.7		
4. Life insurance reserves	29.2						29.2					29.2		
5. Pension and retirement funds, private	1.0						1.0					1.0		
6. Pension and retirement funds, government	6.2						6.2					6.2		
7. Payables to financial intermediaries	17.4	6.6	0.7		2.2	1.7	6.8	4.8	1.5	0.1	0.2	0.2		
8. Payables to other business	24.6	4.7			1.0	6.0	12.8	9.4	3.4					
9. Payables to households	0.4						0.4		0.4					
10. Borrowing on securities	2.7	1.9					0.8		0.8					
11. Mortgages	38.6	20.0	1.4		6.6	2.4	9.6	} 29.8	} 10.8					
12. Bonds and notes	107.3	0.7	0.2			0.7	39.2				7.8	0.4	19.8	47.0
13. Accruals	7.8	4.3			0.5		2.9	2.7	0.2	0		0		
14. Other liabilities	15.9	0.6			0.2		14.3	4.3	1.4	6.7	0.2	1.7	0.1	0.7
15. Total	356.5	38.8	2.3		10.6	10.8	211.5	51.0	18.5	90.3	8.3	43.5	19.8	65.0
IV. Equity	520.6	335.9	11.0	35.0	43.8	26.1	108.1	74.6	12.8	8.2	4.5	8.0	34.4	–27.6
V. Total assets and liabilities	877.2	374.7	13.3	35.0	54.4	36.9	319.6	125.6	31.3	98.5	12.7	51.5	54.2	37.4

NATIONAL BALANCE SHEET, END OF 1945

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I. Tangible assets														
1. Residential structures	133.6	119.2			9.0		5.4						36.2	9.0
2. Nonresidential structures	131.5	6.4	6.4	1.4	6.8	15.0	58.1	93.5	16.8	1.2	5.5	1.0		
3. Land, residential	31.1	28.0	1.6		44.5	4.8	3.0						17.4	6.5
4. Land, nonresidential	96.9	7.6					16.1							
5. Producer durables	50.3	0.1	0.1		6.3	5.2	37.8				2.5		0.4	0.5
6. Consumer durables	51.0	46.7			4.2									
7. Inventories	42.5				5.6	7.8	28.9	26.3	0		2.6		0.2	
8. Livestock	9.7				9.7									
9. Monetary metals	23.7	1.0			0.2		0	0					0	22.4
10. Total	570.3	209.1	8.1	1.4	86.3	32.8	149.5	119.8	16.8	1.2	10.6	1.0	54.3	38.4
II. Intangible assets														
1. Currency	54.0	20.0			3.5		21.2	1.0	1.9	20.3	0.2	2.4	0.3	
2. Commercial bank deposits	137.9	47.6	2.5	1.8	9.5	15.5	36.0	18.8		12.8			5.6	23.7
3. Deposits in other financial institutions	44.0	26.1					16.0			15.9	0	0		1.9
4. Life insurance reserves	44.3	40.8			3.5									
5. Pension and retirement funds, private	2.9	2.9												
6. Pension and retirement funds, government	25.5	24.9			0.5									
7. Receivables from business	41.0	0.8				8.3	31.0	17.7	2.2	10.4	0.7	0		0.9
8. Receivables from households	11.7					1.0	10.7	2.3	0.9	4.1	1.2	2.3		
9. Loans on securities	8.1						8.1		1.2	6.9		0		
10. Mortgages, nonfarm	33.1	12.0	0.3	1.2			21.1		0.1	8.5	0.9	11.6		
11. Mortgages, farm	4.7	1.5	0.1	0.2	0.1	0.3	2.8		0	0.6	1.5	0.8		
12. Securities, U.S. Government	274.4	57.6	1.4	12.4	4.5	7.0	200.9	15.9	2.5	128.4	1.7	52.5	4.4	
13. Securities, state and local governments	15.9	7.0	0.4	4.5			7.3	0.2	0	4.1	0.5	2.5	1.6	
14. Securities, corporate bonds	25.9	10.3	1.4	3.6			15.7		0	3.8		11.9		
15. Securities, preferred stock	150.8	115.7	0.6	2.5			35.0	18.0	8.3		0.3	1.7		
16. Securities, common stock			2.2	15.5						0.5		6.2		
17. Equity in unincorporated business	51.7	51.7												
18. Equity in financial nonprofit institutions	3.3	2.2			1.1									
19. Equity in government corporations	17.2				0.2		0.1					0.1		16.9

NATIONAL BALANCE SHEET, END OF 1945

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
II. Intangible assets (continued)														
20. Accruals	19.0												6.0	13.0
21. Other intangible assets	30.7	6.5		2.0	2.1		21.7	6.1	0.6	8.0	3.2	3.7	0.4	0
22. Total	987.2	427.6	8.8	43.6	25.1	32.1	427.6	80.0	18.0	224.1	10.1	95.6	18.3	56.5
III. Liabilities														
1. Currency	44.8						24.6			24.6				20.2
2. Commercial bank deposits	137.9						137.9			137.9				
3. Deposits in other financial institutions	43.5						43.5			35.7		7.8		
4. Life insurance reserves	44.3						44.3					44.3		
5. Pension and retirement funds, private	2.9						2.9					2.9		
6. Pension and retirement funds, government	25.5						25.5					25.5		
7. Payables to financial intermediaries	18.6	4.9	0.6		2.6	2.7	8.4	6.9	0.9	0.1	0.1	0.3		
8. Payables to other business	31.7	3.4			0.8	7.7	17.1	15.3	1.8					2.7
9. Payables to households	0.8						0.8		0.8					
10. Borrowing on securities	8.1	4.9					3.2		3.2					
11. Mortgages	37.8	21.2	1.3		4.7	2.3	9.6	27.3	9.6					
12. Bonds and notes	320.3	0.4	0.1			0.4	29.2				1.5	0.4	15.9	274.4
13. Accruals	19.0	7.1			0.5		11.4	10.6	0.4	0.4		0.1		
14. Other liabilities	37.3	0.5			0.5		30.6	8.3	2.0	15.6	1.8	2.8	0.3	5.4
15. Total	772.5	42.5	2.0		9.1	13.1	388.9	68.4	18.7	214.3	3.5	84.0	16.3	302.7
IV. Equity	784.9	594.2	15.0	45.0	102.3	51.7	188.2	131.4	16.1	10.9	17.2	12.6	56.3	−207.8
V. Total assets and liabilities	1 557.5	636.7	17.0	45.0	111.4	64.9	577.1	199.8	34.8	225.2	20.7	96.6	72.5	94.9

NATIONAL BALANCE SHEET. END OF 1949

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I. Tangible assets														
1. Residential structures	209.7	186.6			14.6		8.5						52.4	14.7
2. Nonresidential structures	198.7	9.9	9.9	1.0	11.7	21.9	88.2	158.9	23.4	1.3	7.1	1.5		
3. Land, residential	38.7	34.6	2.5		54.2	5.9	4.1						22.5	7.5
4. Land, nonresidential	121.3	10.1					21.1							
5. Producer durables	104.2	0.5	0.5		15.6	12.7	73.8				3.5		0.7	1.0
6. Consumer durables	99.3	90.8			8.6									
7. Inventories	67.9				6.0	12.8	49.0	45.3	0		3.7		0.1	
8. Livestock	13.2				13.2									
9. Monetary metals	28.4	1.2			0.2		0.1	0.1					0	26.9
10. Total	881.3	333.6	12.8	1.0	124.0	53.1	244.8	204.2	23.4	1.3	14.4	1.5	75.6	50.1
II. Intangible assets														
1. Currency	49.0	18.7			3.2		26.8	1.0		25.8			0.2	
2. Commercial bank deposits	131.1	53.5	3.2	2.0	10.6	15.0	40.1	22.5	2.7	11.2	0.1	3.5	8.8	3.1
3. Deposits in other financial institutions	53.4	35.8					16.6			16.6	0	0		1.0
4. Life insurance reserves	58.8	54.5			4.4									
5. Pension and retirement funds, private	6.8	6.8												
6. Pension and retirement funds, government	38.8	37.9			0.9									
7. Receivables from business	64.0	0.9				13.3	49.7	26.3	4.4	18.3	0.6	0.1		0.1
8. Receivables from households	26.8					2.1	24.6	4.7	4.2	10.5	2.4	2.9		
9. Loans on securities	3.6						3.6		1.0	2.6				
10. Mortgages, nonfarm	60.8	17.9	0.2	0.9			42.9		0.5	17.2	1.3	24.0		
11. Mortgages, farm	5.4	1.7		0.1	0.1	0.3	3.3		0	0.9	1.1	1.2		
12. Securities, U.S. Government	253.3	56.3	1.7	15.0	5.2	5.5	181.2	13.5	2.5	100.4	2.2	62.6	5.2	
13. Securities, state and local governments	21.9	8.9	0.3	5.0			11.4	0.4	0.1	6.6	0.4	3.9	1.5	
14. Securities, corporate bonds	39.5	8.8	1.8	4.0			30.8		0.1	5.3		25.5		
15. Securities, preferred stock	158.8	117.8	0.7	2.4			40.9	17.0	12.8		0.1	2.8		
16. Securities, common stock			2.9	17.6						0.5		7.6		
17. Equity in unincorporated business	68.8	68.8												
18. Equity in financial nonprofit institutions	5.0	3.2			1.7									
19. Equity in government corporations	26.5				0.3		0.1					0.1		26.0

NATIONAL BALANCE SHEET, END OF 1949

$ bill.

	Total	Nonfarm			Farm	Unincorporated business	Corporations						Government	
		Total	Nonfinancial nonprofit institutions	Personal trust funds			Total	Nonfinancial	Finance other than financial intermediaries	Financial intermediaries (corporate and unincorporated)			State and local	Federal
										Banks	Government corporations	Other		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
II. Intangible assets (continued)														
20. Accruals	23.4												8.5	14.9
21. Other intangible assets	39.1	4.0		2.0	3.9		30.3	6.4	1.1	10.7	7.2	5.0	0.8	0
22. Total	1 134.7	495.5	10.9	49.0	30.4	36.2	502.4	91.8	29.3	226.6	15.4	139.2	24.9	45.2
III. Liabilities														
1. Currency	49.2						23.5			23.5				25.7
2. Commercial bank deposits	131.1						131.1			131.1				
3. Deposits in other financial institutions	53.9						53.9			40.7		13.2		
4. Life insurance reserves	58.8						58.8					58.8		
5. Pension and retirement funds, private	6.8						6.8					6.8		
6. Pension and retirement funds, government	38.8						38.8					38.8		
7. Payables to financial intermediaries	34.8	10.6	0.3		5.1	5.1	14.0	9.0	3.3	0.1	1.0	0.6		
8. Payables to other business	51.1	9.3			1.7	11.0	28.4	24.8	3.5					0.7
9. Payables to households	0.9						0.9		0.9					
10. Borrowing on securities	3.6	1.9					1.8		1.8					
11. Mortgages	66.2	40.5	1.6		5.4	4.1	16.1	38.2	16.3					
12. Bonds and notes	316.1	0.3	0.1			0.3	40.3				1.5	0.3	21.9	253.3
13. Accruals	23.4	7.7			0.7		14.9	13.5	0.6	0.7		0.2		
14. Other liabilities	39.3	0.8			0.7		32.6	6.6	2.8	18.1	0.7	4.4	0.4	4.7
15. Total	874.0	71.2	1.9		13.7	20.5	462.0	92.2	29.3	214.2	3.2	123.1	22.3	284.4
IV. Equity	1 142.0	758.0	21.8	50.0	140.8	68.8	285.2	203.9	23.5	13.7	26.5	17.6	78.3	−189.1
V. Total assets and liabilities	2 016.0	829.2	23.7	50.0	154.4	89.4	747.2	296.1	52.8	227.9	29.7	140.7	100.6	95.2

FOREIGN INVESTMENT POSITION OF THE UNITED STATES

Selected Years: 1900 to 1949

$ bill.

	Total	Households				Agriculture	Corporations		State and local governments	Federal government
		Total	Nonfarm	Nonprofit institutions	Personal trust departments		Non-financial	Financial		
	1	2	3	4	5	6	7	8	9	10
					U.S. investment abroad					
1900	0.9	0.1	0.1	–	–	–	0.7	0.1	–	–
1912	3.6	0.6	0.5	–	0.1	–	2.5	0.5	–	–
1922	11.0	4.0	3.6	0.2	0.2	–	5.0	2.0	–	–
1929	21.6	9.1	7.4	0.7	1.0	–	9.0	3.5	–	–
1933	13.1	4.1	3.2	0.4	0.5	–	8.0	1.0	–	–
1939	14.8	5.8	4.9	0.4	0.5	–	7.0	2.0	–	–
1945	19.1	6.5	5.4	0.4	0.7	–	8.0	2.5	–	2.1
1949	33.0	4.0	2.5	0.5	1.0	–	11.0	4.5	–	13.5
					Foreign investment in U.S.					
1900	3.2	0.1	0.1	–	–	0.1	2.6	0.4	–	–
1912	5.6	0.1	0.1	–	–	0.1	4.6	0.8	–	–
1922	2.8	0.1	0.1	–	–	–	2.0	0.7	–	–
1929	9.2	0.3	0.2	–	0.1	–	5.2	3.6	–	0.1
1933	5.0	0.2	0.1	–	0.1	–	3.7	1.0	–	0.1
1939	13.1	0.6	0.2	–	0.4	–	6.8	5.1	–	0.6
1945	18.0	0.5	0.2	–	0.3	–	6.2	7.0	–	4.3
1949	17.7	0.8	0.3	–	0.5	–	6.0	7.0	0.1	3.8

1900, 1912, 1922 – Based on Tables K-6 and K-7.

1929, 1939, 1945 – Based on Sammons, "Foreign Investment Aspects of Measuring National Wealth," in *Studies in Income and Wealth*, Volume XII, pp. 563–567; supplemented for 1945 by U.S. Department of Commerce, *The Balance of International Payments of the U.S., 1940–1945* and *1946–1948*. Cf. also Tables K-6 and K-7.

1933 – Rough estimates.

1949 – Sammons, *op. cit.*, pp. 563–567, data for 1946; supplemented by *The Balance of International Payments of the U.S. 1949–1951*, and rough estimates.

Line I–1 – Nonfarm and farm residential structures. Sum of Table W-1, col. 4 and Table W-27, line 1-1.

Line I–2 – Table W-1, cols. 5, 6, 8, and 9 plus Table W-27, line 1-2.

Line I–3 – Land underlying nonfarm residential structures. In the absence of adequate information on which to base a division of total agricultural land between residential and nonresidential, it was decided to assign the total to nonresidential land. From Table W-1, col. 21.

Line I–4 – TableW-1, cols. 20, 22–24.

Lines I–5 and I–6 – Table W-1, cols. 11 and 12 respectively.

Line I–7 – Table W-1, cols. 15–17.

Line I–8 – Table W-1, col. 14.

Line I–9 – Sum of gold stock (Table W-19, col. 6 excluding gold held by foreigners from Table W-20, col. 5), silver, and minor coin in domestic circulation (Table W-21, col. 1 minus col. 4), and Treasury holdings of silver and minor coin (for 1900–1922, Table F-3, cols. 2, 3, and 4 plus Table F-3, col. 7; for 1929–1949, Table F-13, cols. 2, 3, and 4 plus Table F-13, col 7). Figures for monetary metals differ from those for the national wealth estimates (Table W-1) due to the omission from the latter series of the Treasury's net holdings of silver certificates and the addition of minor coin.

Line I–10 – Sum of lines 1-1 to 1-9.

Lines II to V – Sum of same lines from Tables W-22, W-27, W-29, W-30, W-42, and W-43.

Line II–3 – Does not balance against line III-3 because of differences between the Federal Reserve and Treasury records as to the amount of Treasury funds in Federal Reserve banks.

Line II–12 – Includes direct (federal government) and fully guaranteed (government corporate) securities.

Line II–14 – Includes not fully guaranteed (government corporate) and Federal Land Bank bonds outstanding.

Line II–22 – Also includes the following figures, which represent foreigners' holdings of monetary metals: 1922, $25 million; 1929, $26 million; 1933, $2 million; 1939, $16 million; 1945, $25 million; and 1949, $45 million (from Tables W-20 and W-21).

Line III–1 – Includes currency holdings of foreigners.

NATIONAL BALANCE SHEET; SELECTED YEARS: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures	17 440	28 345	63 177	95 896	74 275	91 184	133 589	209 717
2. Nonresidential structures	17 552	34 176	71 329	93 915	85 160	97 296	131 476	198 710
3. Land, residential	4 392	6 996	15 414	24 058	18 655	22 896	31 089	38 696
4. Land, nonresidential	26 526	51 244	77 398	89 458	62 443	65 695	96 947	121 259
5. Producer durables	6 508	13 750	30 786	38 383	29 206	34 234	50 311	104 172
6. Consumer durables	6 048	13 587	30 940	42 229	25 719	32 514	50 952	99 336
7. Inventories	6 836	11 029	27 184	31 463	18 728	25 312	42 512	67 871
8. Livestock	3 117	5 648	5 366	6 514	3 169	5 133	9 742	13 184
9. Monetary metals	1 805	2 784	4 617	5 031	5 051	20 751	23 694	28 369
10. Total	90 224	167 559	326 211	426 947	322 406	395 015	570 312	881 314
II. Intangible assets								
1. Currency	1 409	2 520	6 899	6 469	8 067	22 396	44 995	48 995
2. Commercial bank deposits	6 716	15 792	34 227	44 842	36 153	54 130	137 875	131 120
3. Deposits in other financial institutions	2 646	4 539	10 544	17 941	18 836	28 848	43 969	53 383
4. Life insurance reserves	1 554	4 142	8 700	17 502	20 862	29 228	44 262	58 819
5. Pension and retirement funds, private			90	500	700	1 050	2 900	6 850
6. Pension and retirement funds, government	5	17	251	1 470	2 956	6 230	25 467	38 849
7. Receivables from business	10 931	17 246	32 652	46 654	30 214	26 339	41 044	64 008
8. Receivables from households	1 892	5 615	11 109	15 272	11 948	14 572	11 730	26 759
9. Loans on securities	1 289	2 297	6 703	16 345	5 152	2 696	8 129	3 634
10. Mortgages, nonfarm	4 414	7 491	16 285	37 294	33 458	32 046	33 146	60 758
11. Mortgages, farm	2 312	4 348	10 786	9 631	7 685	6 586	4 682	5 413
12. Securities, U.S. Government	1 239	1 191	22 995	16 176	23 869	47 001	274 382	253 325
13. Securities, state and local governments	2 014	4 430	10 384	16 873	19 084	19 765	15 913	21 857
14. Securities, corporate bonds	5 151	14 524	23 687	38 099	37 748	32 502	25 886	39 487
15. Securities, preferred stock 16. Securities, common stock	13 902	37 988	76 093	186 685	101 704	100 131	150 803	158 802
17. Equity in unincorporated business	6 331	8 935	22 150	27 536	17 552	26 133	51 724	68 811
18. Equity in financial nonprofit institutions	320	566	1 173	2 145	2 261	2 301	3 311	4 962
19. Equity in government corporations		26	659	450	3 081	4 485	17 226	26 479
20. Accruals	684	1 148	4 739	7 629	5 424	7 759	19 000	23 355
21. Other intangible assets	5 991	8 207	26 630	45 315	23 960	17 968	30 733	39 063
22. Total	68 800	141 022	326 754	554 827	410 718	482 164	987 176	1 134 730

NATIONAL BALANCE SHEET; SELECTED YEARS: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
III. Liabilities								
1. Currency	1 218	2 456	6 786	6 403	7 692	22 177	44 819	49 179
2. Commercial bank deposits	6 716	15 792	34 227	44 842	36 153	54 130	137 875	131 120
3. Deposits in other financial institutions	2 646	4 539	10 547	17 948	18 891	29 036	43 488	53 932
4. Life insurance reserves	1 554	4 142	8 700	17 502	20 862	29 228	44 262	58 819
5. Pension and retirement funds, private			90	500	700	1 050	2 900	6 850
6. Pension and retirement funds, government	5	17	251	1 470	2 956	6 230	25 467	38 849
7. Payables to financial intermediaries	4 275	10 099	20 372	25 361	18 335	17 365	18 609	34 783
8. Payables to other business	7 560	10 824	22 985	28 629	19 391	24 572	31 739	51 112
9. Payables to households	100	200	500	1 200	300	400	850	900
10. Borrowing on securities	1 289	2 297	6 703	16 345	5 152	2 696	8 129	3 634
11. Mortgages	6 726	11 839	27 071	46 925	41 143	38 632	37 828	66 171
12. Bonds and notes	10 356	23 885	59 503	76 062	83 780	107 321	320 280	316 066
13. Accruals	684	1 148	4 739	7 629	5 424	7 759	19 000	23 355
14. Other liabilities	4 043	6 842	19 913	33 522	20 639	15 939	37 305	39 280
15. Total	47 172	94 080	222 387	324 339	281 418	356 533	772 549	874 050
IV. Equity	111 851	214 503	430 578	657 436	451 707	520 647	784 936	1 141 998
V. Total assets and liabilities	159 023	308 583	652 964	981 775	733 124	877 179	1 557 487	2 016 045

GOLD STOCK OF THE UNITED STATES

Selected Years: 1900 to 1949

$ mill.

Year	Gold coin in circulation	Adjustment	Adjusted gold in circulation	Gold held by Treasury	Gold held by Federal Reserve banks and agents	Total stock
	1	2	3	4	5	6
1900	620	0	620	460	–	1 080
1912	610	0	610	1 234	–	1 844
1922	136	158	294	3 284	222	3 800
1929	97	57	154	3 331	569	4 054
1933	24	0	24	3 202	810	4 036
1939	0	0	0	17 644	0	17 644
1945	0	0	0	20 065	0	20 065
1949	0	0	0	24 427	0	24 427

Column 1 – 1900–1912: *Banking and Monetary Statistics*, p. 408; average of June figures.
1922–1933: *Ibid.*, pp. 409–412.

Column 2 – 1900–1949: Interpolated regularly between $287 million in 1913 and zero in 1933 to take account of difference in 1913 between Federal Reserve and Bureau of the Mint figures (see *Banking and Monetary Statistics*, p. 522).

Column 3 – 1900–1949: Sum of cols. 1 and 2.

Column 4 – 1900, 1912: Col. 6 minus col. 3.
1922: Table F-3, col. 1.
1929, 1933: Table F-13, col. 1.
1939–1949: Entire gold stock held by Treasury.

Column 5 – 1922–1933: Col. 6 minus cols. 3 and 4.

Column 6 – 1900–1949: From Table W-8, col. 2.

DISTRIBUTION OF GOLD COIN IN CIRCULATION

W-20

Selected Years: 1900 to 1933

$ mill.

Year	Total gold coin in circulation	Held by:					
		Banks other than Federal Reserve	Corporations	Other nonindividuals	Foreigners	Individuals and miscellaneous	
						Farmers	Others
	1	2	3	4	5	6	7
1900	620	183	46	4	–	115	272
1912	610	232	53	4	–	88	233
1922	294	42	22	2	10	45	173
1929	154	26	16	1	6	21	84
1933	24	0	2	0	0	4	18

Column 1 – From Table W-19, col. 3.

Column 2 – *Annual Report of the Comptroller of the Currency*, various issues; average of June figures.

Columns 3 to 7 – Col. 1 minus col. 2 distributed according to currency holdings as shown in Table L-3.

DISTRIBUTION OF SILVER COIN IN CIRCULATION

W-21

Selected Years: 1900 to 1949

$ mill.

Year	Total	Corporations	Other nonindividual holders	Foreigners	Individuals and miscellaneous	
					Farmers	Other
	1	2	3	4	5	6
1900	171	18	2	–	45	106
1912	274	38	3	–	64	169
1922	399	35	4	15	72	273
1929	455	55	4	20	75	301
1933	418	31	4	2	69	312
1939	590	74	6	16	91	403
1945	1 275	48	13	25	179	1 010
1949	1 484	64	15	45	200	1 160

Column 1 – Sum of standard silver dollars, subsidiary silver, and minor coin in circulation outside of Treasury and Federal Reserve banks.
1900, 1912: *Banking and Monetary Statistics*, pp. 408; average of June figures.
1922–1939: *Ibid.*, pp. 409–413.
1945, 1949: *Federal Reserve Bulletin*, various issues.

Columns 2 to 6 – 1900–1949: Col. 1 distributed according to currency holdings, Table L-3.

Line I– 1 – Cumulated depreciated outlay on one- to four-family and multi-family structures derived according to procedure described in Table W-7 and allocated to individuals and corporations on basis of percentages in Table R-29.

Line I– 2 – Table W-1, col. 8.

Lines I–3 and I–4 – See notes to Table W-1, cols. 21 and 22 and to line I-1. Includes vacant lots.

Lines I–5 and I–6 – Derived according to procedure described in Table W-7.

Line I– 9 – Sum of Table W-20, col. 7 and Table W-21, col. 6. Includes coin held by unincorporated business.

Line I–10 – Sum of lines I–1 to I–9.

Line II– 1 – Table L-3, col. 7 minus holdings of monetary metals (line I-9).

Line II– 2 – Deposit liabilities of operating and closed commercial banks, excluding interbank deposits (see Table W-39, line III-2) minus the sum of deposits of unincorporated business (Table W-29, line II-2), farmers (Table W-27, line II-2), corporations (Table W-30, line II-2), state and local governments (Table W-42, line II-2), the federal government (Table W-43, line II-2), and foreigners (Table L-5, col. 6 plus Table L-6, col. 5). Computations involve understatement of bank deposits since Table U-1, col. 1 includes currency holdings of unincorporated business which it was not possible to segregate from total cash holdings.

Line II– 3 – Deposits in mutual savings banks, postal savings accounts, credit unions, and savings and loan associations. Sum of Table L-28, col. 2, Table L-44, cols. 2 and 3, Table L-40, cols. 2 and 4, Table J-5, col. 2 minus shares of savings and loan associations held by credit unions from Table L-41, col. 3 and Table J-6, col. 1. Individuals' deposits in liquidating mutual savings banks omitted.

Line II– 4 – Reserves of life insurance companies (Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952;* see note to Table W-41) life insurance departments of savings banks (Table V-54, col. 1), fraternal order life insurance companies (Table I-10, col. 1 minus estimates of current liabilities derived from Table I-9, col. 3), and mutual accident and health associations (Table I-14, col. 1) minus holdings of life insurance by farmers (Table A-53, col. 4 plus Table U-6, col. 2) and foreigners (Table I-2, col. 6 multiplied by Table I-3, col. 3 plus Table I-3, col. 8).

Line II– 5 – Table I-15, col. 1.

Line II– 6 – Total assets of government trust funds (Goldsmith, *op. cit.*) less farmers' share (Table W-27, line II-6).

Line II– 7 – Table W-37, line III-9.

Line II–10 – Total nonfarm mortgage debt outstanding on one- to four-family, multi-family, and institutional structures, derived according to procedure described in notes to Tables R-34, R-35, and M-12, using the revised Home Loan Bank Board figures (*Statistical Summary*, 1951, p. 18), divided between individuals and corporations on basis of percentages given in Table R-29.

Line II–11 – Total farm mortgage debt outstanding, as given in Table A-61, col. 1, minus the sum of farm mortgage holdings of farmers (Table M-27, col. 4), of unincorporated business (Table M-27, col. 7), and of corporations (Table W-30, line II-12).

Line II–12 – Total U.S. Government securities outstanding (1900, 1912, *Daily Treasury Statement*, issues of December 31; 1922–1939, *Banking and Monetary Statistics*, pp. 509–12; 1945, 1949, *Treasury Bulletin*, various issues) minus the holdings of farmers (Table A-53, col. 5), unincorporated business (Table U-1, col. 2), corporations (Table W-30, line II-12), state and local governments (Table W-42, line II-12), and foreigners (1929, 1939, Table K-6, line 18; 1945, 1949, *Business News Report*, Office of Business Economics, No. 382, as revised by the Department of Commerce).

Line II–13 – Total state and local government securities outstanding (1900–1929, Table G-21, col. 1 converted to year-end figures by arithmetic averaging, plus col. 2; 1933–1949, Table V-11, col. 3) minus the sum of holdings of corporations (Table W-30, line II-13) and of state and local governments (Table W-42, line II-13).

Line II–14 – Total corporate bonds outstanding (Goldsmith, *The Share of Financial Intermediaries in National Wealth and National Assets, 1900–1949*, National Bureau of Economic Research, Occasional Paper No. 42, Appendix Table A-2) minus the sum of holdings of financial intermediaries (Table W-38, line II-14) and of foreigners (1900–1929, Table K-6, sum of lines 2 and 3; 1933, interpolated between 1929 and 1939; 1939, same source as 1929; 1945, 1949, Department of Commerce, *Business News Report, op. cit.*).

Lines II–15 and II–16 – Total stock outstanding, excluding intercorporate, as given in Goldsmith, *ibid.*, minus holdings of financial intermediaries (Table W-38) and of foreigners (1900–1929, Table K-6, lines 4 and 5; 1933, interpolated as the basis of stock price indices and net purchases; 1939, same source as 1929; 1945, 1949, Department of Commerce, *Business News Report, op. cit.*).

Line II–17 – Table W-29, line IV.

Line II–18 – Equity of mutual savings banks, Postal Savings System, credit unions, and savings and loan associations. Sum of Table L-28, col. 3, Table L-44, col. 5, Table L-40, cols. 5 and 6, and Table J-5, col. 6.

Line II–21 – From Table W-17, col. 2.

Line II–22 – Sum of lines II-1 to II-21.

Line III– 7 – Table W-24, line 1 minus Table W-27, line III-7, excluding loans to farmers' cooperatives.

Line III– 8 – Table W-24, lines 2–4 minus Table W-27, line III-8.

Line III–10 – Includes loans by operating commercial banks (Table L-25, col. 4 minus Table D-8, col. 4), closed commercial banks (Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952*), and unincorporated security brokers and dealers (Table W-37).

Line III–11 – Mortgage debt on one- to four-family and multifamily dwellings, derived according to procedure described in notes to Tables R-34, R-35, and M-12, using the revised Home Loan Bank Board figures (*Statistical Summary*, 1951, p. 18), allocated to corporations and individuals on the basis of Table R-29, cols. 1 and 2, interpolating between decadal percentages. Also includes mortgages on nonprofit institutional property.

Line III–12 – Real estate bonds on multifamily properties (Table R-43, col. 2) allocated by the same procedure as for mortgages. Also includes real estate bonds on nonprofit institutional structures from Table R-43, col. 4.

Line III–13 – Table F-29, col. 1.

Line III–14 – Table W-17, col. 2.

Line III–15 – Sum of lines III-7 to III-14.

Line IV– Line V minus line III-15.

Line V – Line I-10 plus line II-22.

BALANCE SHEET OF NONFARM HOUSEHOLDS; SELECTED YEARS: 1900 to 1949

(Includes Nonfinancial Nonprofit Institutions and Personal Trust Departments)

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures	15 465	24 804	54 844	84 888	66 097	82 089	119 175	186 642
2. Nonresidential structures	1 101	2 035	4 056	5 568	4 766	5 368	6 400	9 864
3. Land, residential	4 286	6 726	14 540	22 018	16 995	20 760	28 040	34 592
4. Land, nonresidential	3 275	4 209	7 564	13 167	8 742	6 667	7 600	10 141
5. Producer durables	90	145	175	372	283	153	128	473
6. Consumer durables	5 217	11 724	27 235	38 423	23 765	29 964	46 714	90 768
9. Monetary metals	378	402	446	385	330	403	1 010	1 160
10. Total	29 812	50 045	108 860	164 821	120 978	145 404	209 067	333 640
II. Intangible assets								
1. Currency	510	752	2 132	2 067	3 207	3 973	19 971	18 708
2. Commercial bank deposits	1 414	5 307	15 146	19 094	16 074	21 151	47 621	53 530
3. Deposits in other financial institutions	2 646	4 539	8 576	15 540	16 030	16 240	26 112	35 768
4. Life insurance reserves	1 375	3 672	7 769	15 851	18 899	26 629	40 772	54 466
5. Pension and retirement funds, private			90	500	700	1 050	2 900	6 850
6. Pension and retirement funds, government	5	17	240	1 356	2 722	6 120	24 948	37 938
7. Receivables from business	100	200	500	1 200	300	400	850	900
10. Mortgages, nonfarm	2 348	2 656	6 338	13 933	13 562	11 828	12 024	17 900
11. Mortgages, farm	1 441	2 192	4 761	3 551	2 741	1 632	1 491	1 674
12. Securities, U.S. Government	576	397	9 906	4 053	6 045	8 220	57 566	56 262
13. Securities, state and local governments	522	1 451	4 983	7 654	9 479	8 324	6 986	8 915
14. Securities, corporate bonds	3 373	9 581	16 123	24 316	24 626	16 896	10 254	8 768
15. Securities, preferred stock 16. Securities, common stock	10 654	30 012	55 320	138 046	57 063	73 181	115 740	117 799
17. Equity in unincorporated business	6 331	8 935	22 150	27 536	17 552	26 133	51 724	68 811
18. Equity in financial nonprofit institutions	240	406	803	1 628	1 746	1 678	2 219	3 223
21. Other intangible assets	100	600	4 000	9 100	4 100	5 800	6 500	4 000
22. Total	31 635	70 717	158 837	285 425	194 846	229 255	427 678	495 512

BALANCE SHEET OF NONFARM HOUSEHOLDS; SELECTED YEARS: 1900 to 1949

(Includes Nonfinancial Nonprofit Institutions and Personal Trust Departments)

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
III. Liabilities								
7. Payables to financial intermediaries	573	1 505	2 827	5 732	6 533	6 601	4 936	10 632
8. Payables to other business	343	1 070	2 057	4 545	2 486	4 693	3 352	9 322
10. Borrowing on securities	908	1 704	4 534	11 579	4 015	1 869	4 946	1 876
11. Mortgages	2 860	4 716	9 968	23 270	20 103	19 996	21 232	40 513
12. Bonds and notes		47	256	1 704	1 536	702	403	294
13. Accruals	508	647	2 395	3 621	3 737	4 347	7 142	7 745
14. Other liabilities	100	100	100	300	200	600	500	800
15. Total	5 292	9 789	22 137	50 751	38 610	38 808	42 511	71 182
IV. Equity	56 155	110 973	245 560	399 495	277 214	335 851	594 234	757 970
V. Total assets and liabilities	61 447	120 762	267 697	450 246	315 824	374 659	636 745	829 152

W-23

CONSUMER CREDIT OUTSTANDING, BY TYPE

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
1. Automobile sale credit	.	.	.	1 318	459	1 497	455	4 699
2. Other sale credit	.	.	.	1 197	663	1 620	816	3 486
3. Repair and modernization	–	–	–	–	–	298	182	887
4. Personal installment loans	.	.	.	643	466	1 088	1 009	2 444
5. Single-payment loans	.	.	.	749	303	787	746	1 532
6. Charge accounts	.	.	.	1 749	1 081	1 414	1 612	2 680
7. Service credit	.	.	.	596	467	518	845	1 376
8. Total	659	1 817	3 469	6 252	3 439	7 222	5 665	17 104

Lines 1 to 4 – 1900–1922: Not estimated.
1929, 1933: *Federal Reserve Bulletin*, August 1948, p. 1,010.
1939–1949: *Federal Reserve Bulletin*, April 1953, pp. 346–347.

Lines 5, 6, 7 – 1900–1949: Same sources as for lines 1–4, except that figures in line 5 for 1929 and 1933 are Federal Reserve Board estimates.

Line 8 – 1900–1922: Table D-1, col. 1. (Includes commercial bank loans to individuals for nonconsumer purposes.)
1929–1949: Sum of lines 1–7.

Line 1 – 1900–1949: Sum of lines 1-a to 1-i.

Line 1–a – 1900–1949: Includes "other loans to individuals," "other loans to farmers," and loans to nonprofit institutions. (Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952*; see note to Table W-41.) Loans to farmers guaranteed by the Commodity Credit Corporation are excluded since these loans are regarded as physical assets.

Line 1–b – 1900–1949: *Ibid.*

Line 1–c – 1900–1949: Table I–2, col. 7.

Line 1–d – 1900–1949: Table V-54, col. 4.

Line 1–e – 1900–1949: Table I–10, col. 12.

Line 1–f – 1900–1949: Goldsmith, *op. cit.*

Line 1–g – 1900–1949: Table J-2, col. 3 plus Table J-6, col. 4.

Line 1–h – 1900–1933: Table L-41, col. 5.
1939–1949: *Federal Reserve Bulletin*, Apr. 1953, pp. 348–349.

Line 1–i – 1900–1949: Goldsmith, *op. cit.*

Line 2 – 1900–1949: Sum of lines 2-a to 2-c.

Line 2–a – 1922–1949: Estimated at 95 percent of total receivables of sales finance companies. Figures for the period 1922–1933 are based on total assets for finance companies as given in Goldsmith, *The Share of Financial Intermediaries in National Wealth and National Assets, 1900–1949*, and on estimates of receivables and assets of a sample of sales finance companies given in Plummer and Young, *Sales Finance Companies and Their Credit Practices*, pp. 39, 59. Receivables for the period 1939–1949 are from *Federal Reserve Bulletin*, Apr. 1953, pp. 348–349.

Line 2–b – 1900, 1912: Rough estimates based on figures for later years.
1922: Nugent, *Consumer Credit and Economic Stability*, p. 115.
1929–1949: Estimated at 85 percent (1929), 87 percent (1933), and 95 percent (1939–1949) of total receivables of small loan companies as given by Federal Reserve Board. Percentages are those suggested by Friend and Natrella, *Individuals' Saving: Volume and Composition*, p. 288.

Line 2–c – 1900–1933: Rough estimates of miscellaneous financial lenders guided by Nugent's figures minus pawnbrokers' loans.
1939–1949: *Federal Reserve Bulletin*, Apr. 1953, pp. 348–349. Covers installment credit loans of "other financial institutions" and single-payment loans of "other financial institutions" minus loans of small loan companies (lines 2-b and 4-b), share loans of savings and loan associations (line 1-g), mutual savings bank loans (line 1-b), and pawnbrokers' loans (line 4-c).

Line 3 – 1900–1949: Sum of lines 3-a to 3-c.

Line 3–a – 1900–1922: Estimated at 40 percent (1900), 55 percent (1912), and 65 percent (1922) of total loans of retail outlets, which were obtained by subtracting from total consumer credit outstanding (Table W-23, line 8) the following: consumer loans of commercial banks (see Goldsmith, *op. cit.*), small loan companies (lines 2-b and 4-b of this table), credit unions (line 1-h), miscellaneous financial lenders (line 2-c), sales finance companies (lines 2-a and 4-a), and service creditors (lines 3-b and 4-c). Percentages for 1900 and 1912 derived by deducting about 1 percentage point for each year from the 1922 ratio as a rough allowance for the change in the share of unincorporated business in the volume of retail trade and presumably in consumer credit granted by retail establishments. The 1922 percentage is based on the relationship of retail credit extended by nonfinancial corporations to total retail credit outstanding.
1929, 1933: Federal Reserve Board figures for charge accounts outstanding (*Federal Reserve Bulletin*, Sept. 1947, p. 1,162) divided by allocating 40 percent to unincorporated business and the remainder to nonfinancial corporations on the basis of the 1949 distribution as given in the *U.S. Census of Business, Retail Trade Credit*, Department of Census Bulletin 2 R 11, Table 11-B, p. 1,104. Figures for installment credit loans outstanding were obtained by subtracting from total retail credit outstanding (derived according to the procedure for 1900–1922) charge account credit outstanding, divided in the proportion of 25 percent to unincorporated business and 75 percent

to nonfinancial corporations, the division being based on statistics given for 1949 in Census Bulletin 2 R 11, cited above.
1939–1949: Figures for charge accounts and installment credit outstanding by retail outlets as given in *Federal Reserve Bulletin*, Apr. 1953, pp. 346–347, split between unincorporated and corporate businesses according to the procedure described for 1929–1933.

Line 3–b – 1900–1912: Rough estimates guided by figures in later years and estimates of consumer debt to medical practitioners as given in Table D-6, col. 6. Includes debt owed to nonprofit institutions, e.g. hospitals.
1922–1949: Estimated at 20 percent of service debt outstanding (*Federal Reserve Bulletin*, Sept. 1949, p. 1,162, and Apr. 1953, pp. 346–347).

Line 3–c – 1900–1949: Accounts payable by farmers from Table W-28, line 6.

Line 4 – 1900–1949: Sum of lines 4-a to 4-e.

Lines 4–a and 4–b – 1900–1949: See lines 2-a and 2-b respectively.

Line 4–c – 1900–1922: Rough estimates.
1929–1933: Nugent, *op. cit.*, p. 115.
1939–1949: Federal Reserve Board estimates.

Lines 4-d and 4–e – 1900–1949: See lines 3-a and 3-b. Debt to medical practitioners, derived according to same procedure as Table D-6, col. 6 using revised Federal Reserve Board statistics, is deducted.

Line 5 – 1900–1949: Sum of lines 1 to 4.

ALLOCATION OF HOUSEHOLD PAYABLES AMONG CREDITORS

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
1. Financial intermediaries	1 090	3 132	6 140	8 673	8 333	8 561	6 967	14 168
a. Commercial banks	930	2 457	4 770	5 613	2 340	4 256	4 030	10 423
b. Mutual savings banks	35	43	50	65	24	18	22	45
c. Life insurance companies	89	588	1 141	2 379	3 769	3 248	1 962	2 239
d. Life insurance departments of savings banks	–	–	–	1	2	3	4	6
e. Fraternal orders	1	6	19	34	43	87	72	75
f. Government trust funds	–	–	–	190	1 683	153	117	124
g. Savings and loan associations	35	38	104	313	156	60	21	29
h. Credit unions	–	–	7	23	20	132	102	438
i. Government lending agencies	–	–	49	55	296	604	637	789
2. Finance other than financial intermediaries	50	100	355	1 500	802	1 776	871	4 219
a. Sales finance companies	–	–	190	1 045	475	1 137	285	2 802
b. Small loan companies	20	30	45	224	214	426	408	897
c. Other companies	30	70	120	231	113	213	178	520
3. Nonfinancial corporations	550	1 892	3 920	3 778	1 881	2 793	2 275	4 668
a. Retail outlets	115	550	1 063	1 968	1 002	1 926	1 481	3 310
b. Service credit	10	30	60	119	93	104	169	275
c. Other	425	1 312	2 797	1 691	786	763	625	1 083
4. Unincorporated business	202	491	694	1 280	740	1 168	1 046	2 137
a. Sales finance companies	–	–	10	55	25	60	15	148
b. Small loan companies	0	0	0	39	32	22	22	47
c. Pawnbrokers	20	30	80	119	87	80	50	80
d. Retail outlets	172	450	572	1 006	550	926	817	1 639
e. Service credit	10	11	32	61	46	80	142	223
5. Total	1 892	5 615	11 109	15 231	11 756	14 298	11 159	25 192

BALANCE SHEET OF NONFINANCIAL NONPROFIT INSTITUTIONS

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
2. Nonresidential structures	1 101	2 035	4 056	5 565	4 766	5 368	6 400	9 864
4. Land, nonresidential	275	509	1 014	1 392	1 192	1 342	1 600	2 466
5. Producer durables	90	145	175	372	283	153	128	473
10. Total	1 466	2 689	5 245	7 329	6 241	6 863	8 128	12 803
II. Intangible assets								
1. Currency 2. Commercial bank deposits 3. Deposits in other financial institutions	20	50	150	265	530	1 035	2 540	3 220
10. Mortgages, nonfarm	65	155	340	475	425	345	280	230
11. Mortgages, farm	40	100	230	160	160	130	95	0
12. Securities, U.S. Government			190	105	265	415	1 410	1 725
13. Securities, state and local governments	35	85	190	265	265	350	375	345
14. Securities, corporate bonds	365	800	1 560	2 180	2 120	2 415	1 410	1 840
15. Securities, preferred stock	35	85	190	265	265	350	565	690
16. Securities, common stock	35	255	570	1 060	795	1 380	2 160	2 875
22. Total	595	1 530	3 420	4 775	4 825	6 420	8 835	10 925
III. Liabilities								
7. Payables to financial intermediaries	200	400	600	800	500	700	600	300
11. Mortgages	270	510	830	1 360	1 510	1 430	1 260	1 560
12. Bonds and notes		6	40	311	298	150	92	70
15. Total	470	916	1 470	2 471	2 308	2 280	1 952	1 930
IV. Equity	1 591	3 303	7 195	9 633	8 758	11 003	15 011	21 798
V. Total assets and liabilities	2 061	4 219	8 665	12 104	11 066	13 283	16 963	23 728

Line I– 2 – 1900–1949: Table W-1, col. 8.

Lines I– 4 – 1900–1949: See notes to Table W-1, col. 22.

Line I– 5 – 1900–1949: See notes to Table W-1, col. 11.

Line I–10 – 1900–1949: Sum of lines I-2 to I-5.

Lines II–1 to II–22 – 1900–1949: From Table X-1 except for 1949 and other small differences which represent earlier preliminary estimates.

Line III – In the absence of adequate information, no estimates were made of payables to businesses and households, accruals, and other liabilities; hence equity figures (line IV) are overstated.

Line III–7 – 1900–1933: Only covers commercial bank loans. Based on movement of total assets.
1939–1949: Federal Reserve Board, money flow worksheets.

Line III–11 – 1900–1929, 1939: Table R-44, col. 1.
1933, 1945, 1949: Obtained by cumulation of Table R-17, col. 3.

Line III–12 – 1900–1949: Table R-43, col. 4.

Line III–15 – 1900–1949: Sum of lines III-7 to III-12.

Line IV – 1900–1949: Line V minus line III-15.

Line V – 1900–1949: Sum of line I-10 and line II-22.

BALANCE SHEET OF PERSONAL TRUST FUNDS ADMINISTERED BY BANKS AND TRUST COMPANIES

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures 2. Nonresidential structures 3. Land, residential 4. Land, nonresidential	300	700	1 350	1 500	1 250	1 750	1 350	1 000
10. Total	300	700	1 350	1 500	1 250	1 750	1 350	1 000
II. Intangible assets								
2. Commercial bank deposits	30	210	540	900	750	1 400	1 800	2 000
10. Mortgages, nonfarm	787	975	1 625	2 367	2 003	2 009	1 175	916
11. Mortgages, farm	413	565	1 075	633	497	441	175	84
12. Securities, U.S. Government			900	900	2 500	3 500	12 375	15 000
13. Securities, state and local governments	150	350	1 800	3 000	3 750	4 200	4 500	5 000
14. Securities, corporate bonds	600	1 400	3 600	6 750	5 000	7 000	3 600	4 000
15. Securities, preferred stock	150	612	1 575	1 890	1 600	2 072	2 520	2 400
16. Securities, common stock	450	1 838	4 725	10 710	6 400	10 878	15 480	17 600
21. Other intangible assets	120	350	810	1 350	1 250	1 750	2 025	2 000
22. Total	2 700	6 300	16 650	28 500	23 750	33 250	43 650	49 000
IV. Equity	3 000	7 000	18 000	30 000	25 000	35 000	45 000	50 000
V. Total assets and liabilities	3 000	7 000	18 000	30 000	25 000	35 000	45 000	50 000

Lines I to V – Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900-1952*. The figures were taken (as those in Tables W-22 and W-24 and several other tables) from an earlier unpublished draft of this report and, hence, differ slightly from those that will be found in the published version.

TABLE W-27

Lines I–1 and I–2 – Derived according to procedure described in Table W-7; the sum of these lines is given in Table W-1, col. 7.

Lines I–3 and I–4 – Table W-1, col. 20.

Lines I–5 and I–6 – Derived according to procedure described in Table W-7.

Line I– 7 – Table W-1, col. 15.

Line I– 8 – Table W-1, col. 14.

Line I– 9 – Table W-20, col. 6 plus Table W-21, col. 5.

Line I–10 – Sum of lines I-1 to I-9.

Line II– 1 – Table A-53, col. 2 minus gold and silver holdings (line I-9).

Line II– 2 – Table A-53, col. 3.

Line II– 4 – Table A-53, col. 4 plus Table U-6, col. 2.

Line II– 6 – Table A-53, col. 8 plus estimate of policy loans on veterans' insurance (line III-7).

Line II–11 – Table A-53, col. 7.

Line II–12 – Table A-53, col. 5.

Line II–18 – Table A-53, col. 6 as revised and brought up to date by Bureau of Agricultural Economics in *Balance Sheet of Agriculture*, 1952, p. 26. Includes, in addition to equity in farmers' cooperatives, farmers' financial interest in production credit associations.

Line II–19 – Farmers' equity in Federal Land Banks from Department of Agriculture, Farm Credit Administration, *Combined Statements of Federal Land Banks*.

Line II–21 – Assets of farm cooperatives (see note to line III-14). No breakdown of total assets of farm cooperatives was made, hence this line is overstated by the amount of tangible assets, cash, and receivables held by farm cooperatives.

Line II–22 – Sum of lines II-1 to II-21.

Line III– 7 – Bank debt (Table A-62, col. 2); consumer loans from commercial banks (estimated at same proportion of total consumer loans to farmers as total consumer loans of commercial banks are to total consumer loans outstanding); loans from government corporations (Table A-62, cols. 3 to 8); life insurance policy loans (Table U-6, col. 2); policy loans on veterans' insurance estimated as percent of total policy loans (Table F-25, cols. 8 to 10 by same procedure as in Table F-28, col. 2); loans to farmers' cooperative organizations by government lending institutions (*Agricultural Finance Review*, Nov. 1950, p. 95).

Line III– 8 – Table A-54, cols. 3 and 4 minus payables by farmers to financial intermediaries (line III-7, excluding loans to farmers' cooperatives).

Line III–11 – Table A-54, col. 2.

Line III–13 – Table A-54, col. 5.

Line III–14 – Table W-17, col. 6 plus other liabilities of farm cooperatives obtained by subtracting from total liabilities loans by government institutions (line III-7). Liabilities of farm cooperatives include: (a) Total liabilities of marketing and purchasing associations derived in the following manner:

1912–1929 – The ratio of liabilities to net worth as given for 1936 in Farm Credit Administration, *A Statistical Handbook of Farmers' Cooperatives*, pp. 154–161, applied to net worth as given in Table A-59, col. 2.

1933 – Same as 1929 on the assumption that net worth remained unchanged during the depression.

1939 – Same procedure as for 1912–1929.

1945, 1949 The ratio of liabilities to net worth for 1946–1947 of a sample group of farm marketing and purchasing associations shown in Koller, *Financing Farmers' Cooperatives* (unpublished manuscript of National Bureau of Economic Research), applied to net worth as given in *Balance Sheet of Agriculture*, 1952, p. 26

(b) Total liabilities of mutual irrigation companies obtained as follows:

1912–1933 – The ratio of liabilities to net worth as given in Farm Credit Administration, *op. cit.* applied to net worth, which was estimated on basis of data on capital investment in cooperative irrigation enterprises in 1910, 1920, and 1930 compiled by the Bureau of Census (see *Statistical Abstract*, 1948, p. 577).

1939–1949 – Same procedure as for 1912–1933. Net worth figures obtained from *Balance Sheet of Agriculture*, 1952, p. 26.

(c) Loans to mutual telephone companies, mutual fire insurance companies, and rural electric cooperatives from *Agricultural Finance Review*, Nov. 1950, p. 95.

Line III–15 – Sum of lines III-7 to III-14.

Line IV – Line V minus line III-15.

Line V – Sum of lines I-10 and II-22.

BALANCE SHEET OF AGRICULTURE
(Including Farm Cooperatives)
Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures	1 692	2 919	6 569	6 377	4 634	4 906	8 975	14 576
2. Nonresidential structures	1 570	2 717	5 822	5 855	4 047	4 092	6 755	11 672
3. Land, residential 4. Land, nonresidential	14 546	31 574	41 541	34 930	22 800	23 237	44 508	54 182
5. Producer durables	1 170	2 240	3 266	3 871	2 572	3 509	6 272	15 643
6. Consumer durables	831	1 863	3 705	3 806	1 954	2 550	4 238	8 568
7. Inventories	1 420	2 588	3 088	2 973	1 777	2 171	5 632	5 959
8. Livestock	3 117	5 648	5 366	6 514	3 169	5 133	9 742	13 184
9. Monetary metals	160	152	117	96	73	91	179	200
10. Total	24 506	49 701	69 474	64 422	41 026	45 689	86 301	123 984
II. Intangible assets								
1. Currency	214	284	561	512	703	889	3 543	3 231
2. Commercial bank deposits	398	1 130	2 661	2 900	1 600	2 800	9 500	10 600
4. Life insurance reserves	179	470	931	1 651	1 963	2 599	3 490	4 353
6. Pension and retirement funds, government			11	114	234	110	519	911
11. Mortgages, farm	140	219	910	318	237	145	120	149
12. Securities, U.S. Government			450	0	0	249	4 498	5 250
18. Equity in financial nonprofit institutions	80	160	370	517	515	623	1 092	1 739
19. Equity in government corporations			40	83	85	203	241	298
21. Other intangible assets		198	498	732	866	1 100	2 068	3 918
22. Total	1 011	2 461	6 432	6 827	6 203	8 718	25 071	30 449
III. Liabilities								
7. Payables to financial intermediaries	517	1 627	3 313	2 982	1 992	2 234	2 602	5 103
8. Payables to other business	459	1 413	2 912	2 013	937	1 044	840	1 702
11. Mortgages	2 312	4 348	10 786	9 631	7 685	6 586	4 682	5 413
13. Accruals	109	191	520	630	620	530	475	699
14. Other liabilities	100	158	173	235	208	234	475	734
15. Total	3 497	7 737	17 704	15 491	11 442	10 628	9 074	13 651
IV. Equity	22 020	44 425	58 202	55 758	35 787	43 779	102 298	140 782
V. Total assets and liabilities	25 517	52 162	75 906	71 249	47 229	54 407	111 372	154 433

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W-28

NOTES AND ACCOUNTS PAYABLE OF AGRICULTURE

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
1. Bank loans	488	1 520	3 088	2 491	913	900	1 034	2 049
2. Consumer credit	53	144	167	462	198	417	339	1 064
3. Policy loans of life insurance companies	10	64	124	231	342	303	224	241
4. Policy loans of veterans' insurance	–	–	–	24	202	17	12	12
5. Loans of government corporations	–	–	49	55	296	604	637	789
6. Other	425	1 312	2 797	1 691	786	763	625	1 083
7. Total	976	3 040	6 225	4 954	2 737	3 004	2 871	5 238

Line 1 – 1900–1949: Table A-62, col. 2.
Line 2 – 1900–1922: Table D-5, col. 3.
1929–1949: Table W-23, lines 1, 2, and 7 multiplied by Table D-5, col. 1. Figures slightly revised.
Line 3 – 1900–1949: Table U-6, col. 2.
Line 4 – 1929–1949: Estimated as percent of total policy loans on veterans' insurance (Table F-25, cols. 8 to 10) by same procedure as in Table F-28, col. 2.
Line 5 – 1922–1949: Table A-62, cols. 3 to 8.
Line 6 – 1900–1949: Line 7 minus sum of lines 1 to 5.
Line 7 – 1900–1949: Table A-54, sum of cols. 3 and 4.

W-29

TABLE W-29

Lines I–2 to I–7 – 1900–1949: Derived according to the procedure described in Tables W-7 and W-22.
Line I–10 – 1900–1949: Sum of lines I-2 to I-7.
Line II– 2 – 1900–1949: Table U-1, col. 1. Includes currency.
Line II– 7 – 1900–1933: Total accounts receivable less consumer debt (line I-8). Total accounts receivable derived from regression equation $Y = 3.2 + .51X$ ($ bill.) fitted to the period 1935–1949 excluding 1942–1945, where X equals entrepreneurial income (excluding agriculture), and Y, accounts receivable. Income figures for 1900 and 1912 taken from Martin, *National Income in the United States, 1799–1938*, p. 39; for 1922, from Kuznets, *National Income*, p. 312 (Table 48) and p. 316 (Table 52); for 1929–1949, from *Survey of Current Business, 1951, National Income Supplement*, p. 157. Figures for accounts receivable and payable for 1935—1949 from sources given in Table U-4, col. 1.
1939–1949: Federal Reserve Board, moneyflow estimates.
Line II– 8 – 1900–1949: Table W-24, line 4.
Line II–11 – 1900–1949: Table M-27, col. 7.
Line II–12 – 1900–1949: Table U-1, col. 2.
Line II–22 – 1900–1949: Sum of lines II-2 to II-12.
Line III– 7 – 1900–1949: Sum of payables to banks (Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952*; see note to Table W-41) multiplied by the ratios given in Table U-5, col. 2, and of short-term loans to business of credit unions and investment holding companies (*ibid.*).
Line III– 8 – 1900–1933: Same procedure as for line II-7. Regression equation $Y = 3.2 + 3.6X$ ($ bill.)
1939–1949: Federal Reserve Board, moneyflow estimates.
Line III–11 – 1900–1949: Total nonresidential mortgage debt outstanding, derived according to procedure described in notes to Tables R-34 and R-35 using the revised Home Loan Bank Board figures (*Statistical Summary*, 1951, p. 18), and Table M-12, col. 3 divided between commercial and industrial debt in the proportion of 3 to 1 (see Table R-10), with each segment split between unincorporated and corporate debt according to the ratios given in Table R-29, col. 3.
Line III–12 – 1900–1929: Table R-10, col. 4 cumulated from 1896.
1933–1949: Estimates based on Table R-43.
Line III–15 – 1900–1949: Sum of lines III-7 to III-12.
Line IV– 1900–1949: Line V minus line III-15.
Line V – 1900–1949: Sum of lines I-10 and II-22.

BALANCE SHEET OF UNINCORPORATED BUSINESS

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
2. Nonresidential structures	2 228	3 843	8 215	11 241	9 799	11 453	15 018	21 856
4. Land, nonresidential	1 124	1 757	3 519	7 335	3 482	4 164	4 765	5 861
5. Producer durables	911	1 419	3 424	4 562	3 204	3 840	5 191	12 654
7. Inventories	2 649	3 115	6 679	6 426	3 092	4 145	7 829	12 763
10. Total	6 912	10 134	21 837	29 564	19 577	23 602	32 803	53 134
II. Intangible assets								
2. Commercial bank deposits	1 280	2 000	4 500	4 900	3 300	5 600	15 500	15 000
7. Receivables from business	3 746	3 871	5 893	6 037	3 725	5 332	8 254	13 263
8. Receivables from households	202	491	694	1 280	740	1 168	1 046	2 137
11. Mortgages, farm	299	468	946	681	508	311	257	318
12. Securities, U.S. Government			900	1 000	800	900	7 000	5 500
22. Total	5 527	6 830	12 933	13 898	9 073	13 311	32 057	36 218
III. Liabilities								
7. Payables to financial intermediaries	1 609	2 821	4 657	4 734	2 230	1 716	2 719	5 092
8. Payables to other business	3 692	3 986	5 566	6 084	4 059	6 000	7 700	11 000
11. Mortgages	801	1 181	2 155	3 412	3 035	2 404	2 310	4 141
12. Bonds and notes	6	41	242	1 696	1 774	660	407	308
15. Total	6 108	8 029	12 620	15 926	11 098	10 780	13 136	20 541
IV. Equity	6 331	8 935	22 150	27 536	17 552	26 133	51 724	68 811
V. Total assets and liabilities	12 439	16 964	34 770	43 462	28 650	36 913	64 860	89 352

TABLE W-30

Lines I–1 to I–5 – Derived according to procedure described in Table W-7. See also notes to Table W-22, lines I-1 to I-5.

Line I–7 – Corporate nonfarm inventories (Table P-19, col. 2 as revised and brought up to date by the Department of Commerce) plus inventories of government corporations (for 1900–1922, Table F-4, col. 7; for 1929–1949, Table F-14, col. 10).

Line I–9 – Table W-20, cols. 2 and 3 plus Table W-21, col. 2.

Line I–10 – Sum of lines I-1 to I-9.

Lines II to V – Sum of Tables W-31, W-35, and W-38.

Line II–2 – Cash of Table W-35 included in commercial bank deposits.

Line III–11 – Derived according to procedure described in notes to Table W-22, line III-11 and Table W-29, line III-11.

Line III–13 – Sum of Table G-22, col. 1 and Table F-26, col. 1 minus the sum of Table F-29, col. 1 and Table A-54, col. 5.

BALANCE SHEET OF CORPORATIONS

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures	283	622	1 764	4 631	3 544	4 189	5 439	8 499
2. Nonresidential structures	10 629	19 723	37 792	47 993	40 504	43 889	58 077	88 219
3. Land, residential	106	270	874	2 040	1 660	2 136	3 049	4 104
4. Land, nonresidential	3 581	6 204	12 174	18 726	12 044	14 227	16 124	21 075
5. Producer durables	4 271	9 774	23 765	29 010	22 553	25 955	37 816	73 771
7. Inventories	2 757	5 306	17 377	22 004	13 799	18 936	28 901	49 049
9. Monetary metals	247	323	321	666	843	74	48	64
10. Total	21 874	42 222	94 067	125 070	94 947	109 406	149 454	244 781
II. Intangible assets								
1. Currency	677	1 473	4 176	3 859	4 114	17 476	21 229	26 817
2. Commercial bank deposits	3 391	6 807	9 992	15 340	12 037	20 307	36 010	40 087
3. Deposits in other financial institutions			1 934	2 355	2 729	11 905	15 953	16 593
7. Receivables from business	7 085	13 175	26 259	39 417	26 189	20 607	31 040	49 745
8. Receivables from households	1 690	5 124	10 415	13 992	11 208	13 404	10 684	24 622
9. Loans on securities	1 289	2 297	6 703	16 345	5 152	2 696	8 129	3 634
10. Mortgages, nonfarm	2 066	4 835	9 947	23 361	19 896	20 218	21 122	42 858
11. Mortgages, farm	432	1 469	4 169	5 081	4 199	4 498	2 814	3 272
12. Securities, U.S. Government	663	794	11 507	10 868	16 805	37 382	200 928	181 157
13. Securities, state and local governments	938	1 829	3 191	5 588	6 564	8 679	7 294	11 401
14. Securities, corporate bonds	1 828	5 043	7 764	14 033	13 172	15 656	15 682	30 819
15. Securities, preferred stock 16. Securities, common stock	3 198	7 876	20 573	48 389	44 591	26 900	35 013	40 903
19. Equity in government corporations					15	41	74	136
21. Other intangible assets	5 807	7 240	21 792	34 935	18 480	10 434	21 665	30 326
22. Total	29 064	57 962	138 420	233 562	185 155	210 201	427 636	502 371
III. Liabilities								
1. Currency	292	715	3 121	2 559	4 016	4 959	24 649	23 483
2. Commercial bank deposits	6 716	15 792	34 227	44 842	36 153	54 130	137 875	131 120
3. Deposits in other financial institutions	2 646	4 539	10 547	17 948	18 891	29 036	43 488	53 932
4. Life insurance reserves	1 554	4 142	8 700	17 502	20 862	29 228	44 262	58 819
5. Pension and retirement funds, private			90	500	700	1 050	2 900	6 850
6. Pension and retirement funds, government	5	17	251	1 470	2 956	6 230	25 467	38 849
7. Payables to financial intermediaries	1 576	4 146	9 575	11 913	7 580	6 814	8 352	13 956
8. Payables to other business	3 066	4 355	12 450	15 987	11 909	12 835	17 147	28 388
9. Payables to households	100	200	500	1 200	300	400	850	900
10. Borrowing on securities	381	593	2 169	4 766	1 137	827	3 183	1 758
11. Mortgages	753	1 594	4 162	10 612	10 320	9 646	9 604	16 104
12. Bonds and notes	7 097	18 176	25 626	39 613	37 517	39 193	29 175	40 282
13. Accruals	67	310	1 824	3 378	1 067	2 882	11 383	14 911
14. Other liabilities	3 840	6 582	19 624	32 850	19 556	14 314	30 563	32 640
15. Total	28 093	61 161	132 866	205 141	172 964	211 542	388 896	461 992
IV. Equity	22 844	39 025	99 621	153 492	107 139	108 066	188 191	285 164
V. Total assets and liabilities	50 937	100 186	232 486	358 633	280 102	319 607	577 089	747 153

Lines I–1 to I–5 – 1900–1949: The residual of capital assets (excluding inventories) of all corporations as shown in Table W-30 and capital assets of financial intermediaries from Table W-38 divided between nonfinancial corporations and financial corporations other than financial intermediaries according to their proportion in total book value (see Tables W-32 to W-36). This procedure was used in the absence of any better method even though it does not make any allowance for a difference between book value and replacement cost in the capital assets of financial intermediaries, and the financial intermediaries group includes noncorporate intermediaries whose very small tangible assets should not be deducted from the total.

Line I– 7 – 1900–1949: Corporate nonfarm inventories (Table P-19, col. 2 as revised and brought up to date by the Department of Commerce) minus inventories of financial corporations other than financial intermediaries from Table W-35, line I-7.

Line I– 9 – 1900–1949: Table W-20, col. 3 plus Table W-21, col. 2.

Line I–10 – 1900–1949: Sum of lines I-1 to I-9.

Line II– 1 – 1900–1949: Table L-3, col. 2 minus gold and silver holdings from line I-9.

Line II– 2 – 1900–1949: Tables W-32, W-33, W-34 respectively minus lines I-9 and II-1 of this table.

Line II– 7 – 1900–1949: Tables W-32, W-33, W-34 respectively minus lines II-8 and II-9 of this table.

Line II– 8 – 1900–1949: From Table W-24, line 3.

Line II– 9 – 1922, 1929: Borrowings of unincorporated brokers and dealers in securities from nonbank groups, derived according to procedure described in notes to Table W-37, line III-10.

Lines II–12 and II–13 – 1900–1949: Total tax exempt investments as given in Tables W-32, W-33, and W-34 divided between U.S. Government and state and local government securities according to the share of each in the total as derived from the statistics given in Table V-73.

Lines II–15 and II–16 – 1900–1949: From Tables W-32, W-33, and W-34.

Line II–21 – 1900–1912: Line II-22 minus sum of lines II-1 to II-16.
1922, 1949: From Tables W-33 and W-34.

Line II–22 – 1900, 1912: Derived from Table W-32.
1922–1949: Sum of lines II-1 to II-21.

Line III– 7 – 1900–1949: Includes commercial bank loans obtained by subtracting from total commercial and industrial loans (Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952*; see note to Table W-41) the following: loans to unincorporated business (Table W-29, line III-7) and to financial corporations other than financial intermediaries (Table W-35). Also includes loans from Federal Reserve, mutual savings banks, investment holding companies, and government lending institutions (Goldsmith, *op. cit.*).

Line III– 8 – 1900–1933: Notes and accounts payable as given in Tables W-32, W-33, and W-34 minus line III-7 of this table.
1939–1949: Same procedure as for 1900–1933 except estimates of term loans were deducted from bonds payable and added to notes and accounts payable since the bank loans (line III-7) probably include term loans. The amount of term debt of nonfinancial corporations to banks was estimated to be 68 percent of total term loans outstanding as derived for 1939 from Jacoby and Saulnier, *Term Lending to Business*, p. 30, and for 1945 and 1949 from Beckhart, *An Analysis of the Business Loans of Commercial Banks in the U.S.*, p. 42.

Lines III–11 and III–12 – 1900–1949: Bonds and mortgages payable as given in Tables W-32, W-33, and W-34, less term loans, derived according to note to line III-8.

Line III–13 – 1900–1949: Total tax accruals (sum of Table G-20, col. 1 and Table F-26, col. 1) minus accruals of nonfarm households (Table F-29, col. 1), farmers (Table A-54, col. 5), and financial corporations (Department of Commerce, *National Income Supplement*, 1951, p. 168, the latter being assumed equal to tax payments during the following year).

Line III–14 – 1900–1949: Line III-15 minus lines III-7 to III–14.

Line III–15 – 1900–1949: Tables W-32, W-33, and W-34.

Line IV – 1900–1949: Line V minus line III-15.

Line V – 1900–1949: Sum of lines I-10 and II-22.

BALANCE SHEET OF NONFINANCIAL CORPORATIONS [1]

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures 2. Nonresidential structures 3. Land, residential 4. Land, nonresidential 5. Producer durables	16 097	31 650	66 300	85 509	66 969	69 835	93 496	158 874
7. Inventories	2 707	5 204	17 082	21 542	13 655	17 959	26 271	45 307
9. Monetary metals	64	91	57	71	33	74	48	64
10. Total	18 868	36 945	83 439	107 122	80 657	87 868	119 815	204 245
II. Intangible assets								
1. Currency	86	169	273	379	317	726	952	1 036
2. Commercial bank deposits	1 850	3 740	5 370	7 550	5 750	7 800	18 800	22 500
7. Receivables from business	3 450	5 108	9 630	17 222	12 919	9 207	17 725	26 332
8. Receivables from households	550	1 892	3 920	3 778	1 881	2 793	2 275	4 668
9. Loans on securities			450	2 000				
12. Securities, U.S. Government			3 110	2 510	2 400	1 410	15 860	13 525
13. Securities, state and local governments			290	490	500	290	240	375
15. Securities, preferred stock 16. Securities, common stock	2 000	5 000	12 000	22 100	25 000	12 000	18 000	17 000
21. Other intangible assets	4 196	5 146	13 000	20 300	10 000	3 500	6 100	6 400
22. Total	12 132	21 055	48 043	76 329	58 767	37 726	79 952	91 836
III. Liabilities								
7. Payables to financial intermediaries	1 433	3 662	8 148	9 014	6 579	4 789	6 876	9 038
8. Payables to other business	2 567	3 338	9 952	11 886	7 921	9 399	15 328	24 846
11. Mortgages	7 000	18 000	24 500	37 100	37 800	29 812	27 296	38 216
12. Bonds and notes 13. Accruals	67	310	1 824	3 229	972	2 671	10 596	13 467
14. Other liabilities	1 933	3 690	9 176	13 171	10 928	4 329	8 304	6 633
15. Total	13 000	29 000	53 600	74 400	64 200	51 000	68 400	92 200
IV. Equity	18 000	29 000	77 882	109 051	75 224	74 594	131 367	203 881
V. Total assets and liabilities	31 000	58 000	131 482	183 451	139 424	125 594	199 767	296 081

[1] Excludes agricultural corporations.

W-32 PRINCIPAL ASSETS AND LIABILITIES OF NONFINANCIAL CORPORATIONS 1900 and 1912

$ bill.

	1900	1912
1. Plant, equipment, and land	16	32
2. Inventories	3	5
3. Cash	2	4
4. Notes and accounts receivable	4	7
5. Government securities	0	0
6. Other investments	2	5
7. Other assets	4	5
8. Total assets	31	58
9. Notes payable	2	4
10. Accounts payable	2	3
11. Bonds	7	17
12. Mortgages	0	1
13. Other liabilities	2	4
14. Total liabilities	13	29
15. Equity	18	29

Line 1 – Estimated replacement cost of structures and equipment calculated on the basis of cumulation and depreciation of expenditures; see Tables W-7 and W-22.

Line 2 – Table P-19, col. 2 minus inventories of financial corporations other than financial intermediaries from Table W-36, line 1-7.

Line 3 – Table L-11, col. 2 minus col. 6.

Line 4 – Rough estimates based on scattered information.

Line 5 – From Table V-73.

Line 6 – Very rough estimates based on relationship in later benchmark years. The figures are intended to include both holdings of marketable nongovernmental securities and holdings of the securities of affiliated corporations which are not wholly or almost wholly owned.

Line 7 – Based on relationship of other to total assets in later benchmark years.

Line 8 – Sum of lines 1 through 7.

Line 9 – From Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952.*

Line 10 – Rough estimates based on relationships at later benchmark years.

Line 11 – From Goldsmith, *The Share of Financial Intermediaries in National Wealth and National Assets, 1900–1949*, National Bureau of Economic Research, Occasional Paper No. 42, Appendix Table A-2.

Line 12 – Rough estimates.

Line 13 – Based on relationship of other liabilities to total liabilities and equity at later benchmark dates

Line 14 – Sum of lines 9 through 13.

Line 15 – Obtained as residual between lines 8 and 14. Comparison with other data on the equity of nonfinancial corporations, all of which either are limited to small groups of corporations or are of doubtful reliability, suggests that the level of the figures may be on the low side.

Column 1 – Lines 1 to 16: *Statistics of Income*, 1924, pp. 49–56. The balance sheets underlying the tabulations are based on "assets and liabilities as of a date no later than June 30, 1924 or earlier than December 31, 1923." (*Ibid.*, p. 1).

Column 2 – Line 1: Increased (like lines 2 to 5 and 10 to 16) by 3 percent to take account of corporations not submitting balance sheets; and moved in accordance with change of cash holdings of all nonfinancial corporations between end of 1922 and end of 1923 as shown in Table L-11, col. 2 minus col. 6.

Lines 2, 4, and 9: Increased by 3 percent and moved in accordance with changes of notes and accounts receivable in 1923 of eighty-four large manufacturing and twenty-seven large trade corporations as shown in *Corporate Financial Data for Studies in Business Finance*, unpublished manuscript, National Bureau of Economic Research, March 1945.

Line 3: Increased by 3 percent and moved in accordance with change in inventories in 1923 of all corporations as shown in Table P-19.

Line 5: From Table V-73.

Line 6: An extremely rough estimate based on relationship of other investments to total assets in 1926 as given in *Statistics of Income*.

Line 7: Estimated on basis of relationship to total assets in 1929.

Line 8: Sum of lines 1 through 7.

Line 10: Increased by 3 percent and moved in accordance with bank loans to corporate business as derived from Table U-5.

Line 11: Increased by 3 percent and moved in accordance with change in straight corporate bonds outstanding in 1923 as calculated by the National Bureau of Economic Research (see Hickman, *The Volume of Corporate Bond Financing since 1900*).

Line 12: Assumed equal to col. 1, line 12.

Lines 13 and 14: Increased by 3 percent and reduced by net sales of preferred and common stock during 1923 as estimated in Tables V-17, V-18, and V-19.

Line 15: Increased by 3 percent and reduced by corporate saving in 1923 as estimated in Table C-1, col. 1.

Line 16: Assumed to bear same proportion to total assets as shown for 1929 in *Statistics of Income*.

Column 3 – Lines 1, 3, 4, 5, 7, 10, and 16: Assumed to be equal to corresponding lines in col. 2, as consolidation should not affect these items.

Line 2: Reduced by about 20 percent in accordance with effect of deconsolidation in 1934 as shown by a comparison of consolidated and unconsolidated reports for 1933 and 1934 in *Statistics of Income*, 1934, Part 2.

Line 6: Reduced by 40 percent from col. 2, line 6 on basis of same sources as for line 2. The remainder still includes and largely consists of securities of other corporations not fully or not almost fully owned.

Line 8: Sum of lines 1 through 7.

Line 9: Reduced by about 30 percent on basis of same sources as in line 2.

Line 11: Reduced by about 10 percent on basis of same sources as in line 2.

Line 12: Arbitrary reduction based on relation in similar items.

Lines 13 to 15: Reduced by about 5 percent (line 13), and 10 percent (lines 14 and 15) on basis of same source as in line 2.

Column 4 – Line 1: Estimate of Table L-11, col. 2 minus col. 6 substituted for that of col. 3, line 1. Increase of $0.5 billion is compatible with the estimate by Alexander (*Changes in the Financial Structure of American Business Enterprise 1900–1940*, unpublished manuscript, National Bureau of Economic Research, Sept. 1943, Table B-2, of small undercoverage in *Statistics of Income*, 1924.

Lines 2, 5 to 7, 12, and 16: Assumed to be the same as corresponding lines in col. 3.

Line 3: Corporate nonfarm inventories as given in Table P-19, col. 2 less inventories of financial corporations other than financial intermediaries from Table W-36.

Line 4: Increased by $5 billion, as Alexander's estimate of undercoverage in *Statistics of Income*, 1924 of between $8.3 and $9.3 billion is regarded as somewhat too high.

Line 8: Sum of lines 1 to 7.

Line 9: Increased by $0.5 billion on basis of Alexander's estimate of undercoverage.

Line 10: Table U-5, col. 1 minus col. 3 substituted for col. 3, line 10.

Line 11: Estimate of Goldsmith, *The Share of Financial Intermediaries in National Wealth and National Assets, 1900–1949*, National Bureau of Economic Research, Occasional Paper No. 42, Appendix Table A-3 (excluding real estate and land bank bonds) substituted for col. 3. Increase of $1.5 billion is compatible with Alexander's estimate of undercoverage.

Lines 13 to 15: Treated as residual in order to preserve equality of lines 8 and 17. This involves an increase of $4.3 billion over col. 3, which compares with Alexander's estimate of an undercoverage of net worth in *Statistics of Income*, 1924 of between $2.3 and $4.5 billion.

W-33 PRINCIPAL ASSETS AND LIABILITIES OF NONFINANCIAL CORPORATIONS
1922 and 1923

$ bill.

	1923	1922		
	Unconsolidated	Unconsolidated	Consolidated	
			Unadjusted	Adjusted
	1	2	3	4
1. Cash	5.2	5.2	5.2	5.7
2. Notes and accounts receivable	18.1	18.0	14.0	14.0
3. Inventories	18.8	17.0	17.0	17.1
4. Fixed assets	68.0	63.0	63.0	68.0
5. Tax exempt securities	.	3.4	3.4	3.4
6. Other investments	.	21.0	12.0	12.0
7. Other assets	.	13.0	13.0	13.0
8. Total assets	.	140.6	127.6	133.2
9. Accounts payable	11.0	11.2	8.0	8.5
10. Notes payable	8.7	8.8	8.8	9.6
11. Bonded debt	23.1	23.0	21.0	22.5
12. Mortgages	2.4	2.4	2.0	2.0
13. Preferred stock	13.1	13.0	12.3	}
14. Common stock	45.2	45.7	41.0	} 79.6
15. Surplus	25.5	24.0	22.0	}
16. Other liabilities	.	11.0	11.0	11.0
17. Total liabilities and net worth	.	140.6	127.6	133.2

PRINCIPAL ASSETS AND LIABILITIES OF NONFINANCIAL CORPORATIONS

Selected Years: 1929 to 1949

$ bill.

	1929	1933	1939 A	1939 B	1945	1949
	1	2	3	4	5	6
1. Cash (in till and deposits in bank)	8.0	6.1	8.6	8.6	19.8	23.6
2. Notes and accounts receivable (net)	23.0	14.8	15.8	12.0	20.0	31.0
3. Inventories	21.2	13.6	17.8	17.8	26.1	45.1
4. Government securities (tax exempt)	3.0	2.9	1.7	1.7	16.1	13.9
5. Other investments	22.1	25.0	21.2	12.0	18.0	17.0
6. Net capital assets (excluding land)	93.6	87.0	82.6	78.1	73.1	112.5
7. Land	6.0	5.0		4.5	3.9	4.8
8. Other assets	20.3	10.0	4.0	3.5	6.1	6.4
9. Total assets	197.3	164.3	151.8	138.2	183.1	254.3
10. Notes payable	20.9	14.5	5.1 [1]	5.1 [1]	4.8 [1]	7.5 [1]
11. Accounts payable			12.0	8.0	15.5	22.1
12. Bonds	37.1	37.8	33.8	30.9	29.2	42.5
13. Mortgages						
14. Other liabilities	16.4	11.9	7.3	7.0	18.9	20.1
15. Preferred stock	16.2	15.6	11.5	11.0	12.0	13.5
16. Common stock	66.1	58.9	52.4	76.2	102.7	148.6
17. Surplus, reserves and undivided profits	40.5	25.5	29.8			

[1] Bonds, notes, and mortgages payable, maturity less than one year.

Columns 1 and 2 – Figures reported in *Statistics of Income*, 1929 and 1933, increased by 2.25 percent and 2.16 percent respectively to take account of corporations not submitting balance sheets. (The step-up ratios are based on the proportion of net income of corporations not submitting balance sheets.) Land (line 7), which is not reported separately in *Statistics of Income* for these years, is estimated to account for a slightly higher proportion of total net capital assets than in 1945 and 1949.

Column 3 – Figures from *Statistics of Income*, 1939, increased by 1.66 percent to take account of corporations not submitting balance sheets. Land estimated as in cols. 1 and 2. This column is based on nonconsolidated balance sheets except in the case of railroads.

Column 4 – Intended to reflect consolidation of wholly or almost wholly owned subsidiaries, i.e. the situation prevailing in 1933 and earlier years. To that end it has been assumed, on the basis of comparison of consolidated and unconsolidated balance sheets for 1933 and 1934 (see *Statistics of Income*, 1934, Part II; also Chudson, *The Pattern of Corporate Financial Structure*, Appendix C), that consolidation, to the extent prevailing in 1933 and before, would reduce notes and accounts receivable by about 20 percent, other investments by nearly 50 percent, notes and accounts payable by about 30 percent, bonds and mortgages by about 7 percent, and preferred stock, other assets, and other liabilities by small amounts. Common stock and surplus is then derived as a residual between total assets and liabilities plus preferred stock. These estimates are obviously very rough and intended primarily to indicate the direction and order of magnitude of the adjustments necessary to make the 1939 figures reasonably comparable to those for earlier years.

Columns 5 and 6 – Figures from *Statistics of Income*, 1946 and 1949, (a) increased by 1.07 percent and 1.48 percent respectively to take account of corporations not submitting balance sheets, and (b) adjusted in lines 2, 5, 10 to 13, and 15 to 17 to reflect the fact that in 1945 and 1949 a number of parent and subsidiary corporations still filed separate, i.e. unconsolidated, returns. The adjustment has been based on the assumption, which necessarily is partly a guess, that the effect of incomplete consolidation in 1945 and 1949 was proportionately about half as large as in 1939. This is derived from the fact that consolidated reports accounted for 58 percent of the total assets of nonfinancial corporations in 1933 but only 27 percent in 1945.

W-35 BALANCE SHEET OF FINANCIAL CORPORATIONS OTHER THAN FINANCIAL INTERMEDIARIES AND OF UNINCORPORATED BROKERS AND DEALERS IN SECURITIES

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures 2. Nonresidential structures 3. Land, residential 4. Land, nonresidential	2 200	4 000	8 406	13 789	8 357	13 751	16 779	23 431
7. Inventories	50	100	265	459	141	40	46	6
10. Total	2 250	4 100	8 671	14 248	8 498	13 791	16 825	23 437
II. Intangible assets								
1. Currency 2. Commercial bank deposits	150	350	887	1 763	885	1 396	1 862	2 691
7. Receivables from business	450	1 100	2 397	5 548	3 460	2 870	2 244	4 365
8. Receivables from households	50	100	355	1 500	802	1 776	871	4 219
9. Loans on securities	400	700	2 650	6 000	1 500	1 000	1 250	1 000
10. Mortgages, nonfarm	66	149	389	627	276	327	130	456
11. Mortgages, farm	116	217	173	154	123	82	20	44
12. Securities, U.S. Government			503	789	514	434	2 514	2 455
13. Securities, state and local governments	50	100	47	154	107	89	38	68
14. Securities, corporate bonds	50	100	200	250	50	50	50	100
15. Securities, preferred stock 16. Securities, common stock	868	2 234	7 484	17 745	14 261	8 843	8 347	12 850
21. Other intangible assets	300	600	1 300	2 486	1 633	598	635	1 081
22. Total	2 500	5 650	16 385	37 016	23 611	17 465	17 961	29 329
III. Liabilities								
7. Payables to financial intermediaries	100	300	800	2 000	500	1 492	936	3 256
8. Payables to other business	499	1 017	2 498	4 101	3 988	3 436	1 819	3 542
9. Payables to households	100	200	500	1 200	300	400	850	900
10. Borrowing on securities	381	593	2 169	4 766	1 137	827	3 183	1 758
11. Mortgages 12. Bonds and notes	850	1 770	4 412	10 586	7 628	10 805	9 588	16 345
13. Accruals				86	68	162	375	626
14. Other liabilities	630	1 310	3 268	6 794	3 982	1 363	1 974	2 834
15. Total	2 560	5 190	13 647	29 533	17 603	18 485	18 725	29 261
IV. Equity	2 190	4 560	11 409	21 731	14 506	12 771	16 061	23 505
V. Total assets and liabilities	4 750	9 750	25 056	51 264	32 109	31 256	34 786	52 766

Sum of Table W-36 and Table W-37.

Lines II–12 and II–13 – Divided between U.S. Government and state and local government securities according to the share of each in total tax exempt securities as derived from the statistics given in Table V-73.

Lines I–1 to I–4 – 1900–1949: Capital assets (replacement cost basis) based on book value figures and obtained according to procedure described in Table W-31. Book value figures derived as follows:

1900, 1912: Rough estimates guided by the growth of corporate holdings of multifamily and commercial structures from 1900 to 1912 as approximated from Tables W-1 and W-5.

1922: *Statistics of Income*, 1924, pp. 49–56.

1929: The 1930 figure for capital assets of stock and bond brokers, real estate, and other finance obtained from the Bureau of Internal Revenue, *Statistics of Income*, *Source Book*, minus capital assets of investment companies as given in Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900 1952* for 1929. (The 1930 Bureau of Internal Revenue figures were used since there was no breakdown of the total finance category for 1929 and since the change from 1929 to 1930 in the total assets of this group was very small.)

1933: From Bureau of Internal Revenue *Source Book*. Capital assets of savings and loan associations should be subtracted since they are included among financial intermediaries, but it was impossible to ascertain the amount included in the Bureau of Internal Revenue figures. However, probably only a small fraction of the capital assets of all savings and loan associations are included in *Statistics of Income* balance sheet tabulations.

1939: Sum of Bureau of Internal Revenue figures from *Statistics of Income*, Part II, 1939, for mortgage companies, security and commodity brokers, commercial credit and finance companies, industrial and personal loan companies, real estate and real estate lessors, other finance companies, and finance not allocable. Also includes capital assets of insurance agents and brokers as given in the Bureau of Internal Revenue, *Source Book*. Capital assets of joint stock land banks, taken from Table V-77, were subtracted. Capital assets of miscellaneous investment and holding companies were derived from a distribution of a rough estimate of total assets of these companies based on the Bureau of Internal Revenue figure, which was not used since it appeared to be greatly affected by the unconsolidated method of reporting in 1939.

1945, 1949: Sum of Bureau of Internal Revenue figures from *Statistics of Income* for long- and short-term credit agencies, investment trusts and investment holding companies, security and commodity brokers, real estate and real estate lessors, insurance agents and brokers, other finance companies, and finance not allocable minus joint stock land banks from Table V-77 and investment companies from Goldsmith, *op. cit.*

Line I– 7 – 1900, 1912: Rough estimates based on 1922 figures.
1922–1949: Same sources and procedures as for the derivation of capital assets (book value) as given in lines I-1 to I-4.

Line I–10 – 1900–1949: Sum of lines I-1 to I-7.

Lines II–1 and II–2 – 1900–1949: Same sources and procedures as line I-7.

Line II– 7 – 1900–1949: Total notes and accounts receivable derived according to line I-7, minus line II-8.

Line II– 8 – 1900–1949: Table W-24, line 2.

Line II–10 – 1900–1949: Holdings of nonfarm mortgages by mortgage companies from Table M-20, col. 2.

Line II–11 – 1900–1949: Table M-20, col. 7.

Lines II–12 and II–13 – 1900–1922: Rough estimates guided by tax exempt investments outstanding and holdings by financial corporations other than financial intermediaries in later years.
1929–1949: Same sources and procedures as for the derivation of capital assets (book value) as given in lines I-1 to I-4.

Lines II–15 and II–16 – 1900–1949: Total other investments as derived according to line I-7 minus lines II-10 and II-11.

Line II–21 – 1900–1949: Same sources and procedures as for line I-7.

Line II–22 – 1900–1949: Sum of lines II-1 to II-21.

Line III– 7 – 1900–1933: Rough estimates based on movements of corporate debt to commercial banks (Goldsmith, *op. cit.*) and of total assets of financial corporations other than financial intermediaries.

1939: Figure for bank debt of finance companies from Kaysen, *Industrial and Commercial Debt—A Balance Sheet Analysis, 1939*, unpublished manuscript, National Bureau of Economic Research, p. 21, plus estimate of term loans (15 percent of four-fifths of total term loans outstanding; see Table W-31, line III-7).

1945, 1949: Based on Federal Reserve Board estimate (*Federal Reserve Bulletin*, 1947, p. 259) of business loans by member banks in late 1946 to sales finance companies.

Line III–8 – 1900–1949: Notes and accounts payable derived according to line I-7, minus lines III-7 and III-10.

Line III–10 – 1900–1949: Loans on securities by financial intermediaries (Table W-39, line II-9), security brokers and dealers (Table W-37), and nonfinancial corporations (Table W-31) minus the sum of borrowing on securities by individuals (Table W-22) and by security brokers and dealers (Table W-37).

Line III–11 and III–12 – 1900–1949: Bonds and mortgages payable derived according to line I-7 minus term loans (see note to line III-7).

Line III–13 – 1929–1949: Department of Commerce, *National Income Supplement*, 1951, p. 168. Assumed to equal payments during following year.

Line III–14 – 1900–1949: Other liabilities derived according to line I-7, minus line III-13.

Line III–15 – 1900–1949: Sum of lines III-7 to III-14.

Line IV– 1900–1949: Line V minus line III-15.

Line V – 1900–1949: Sum of line I-10 and line II-22.

BALANCE SHEET OF FINANCIAL CORPORATIONS OTHER THAN FINANCIAL INTERMEDIARIES

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures 2. Nonresidential structures 3. Land, residential 4. Land, nonresidential	2 200	4 000	8 406	13 789	8 357	13 751	16 779	23 431
7. Inventories	50	100	265	459	141	40	46	6
10. Total	2 250	4 100	8 671	14 248	8 498	13 791	16 825	23 437
II. Intangible assets								
1. Currency 2. Commercial bank deposits	100	250	587	1 163	685	1 146	1 512	2 341
7. Receivables from business	450	1 100	2 397	5 548	3 460	2 870	2 244	4 365
8. Receivables from households	50	100	355	1 500	802	1 776	871	4 219
10. Mortgages, nonfarm	66	149	389	627	276	327	130	456
11. Mortgages, farm	116	217	173	154	123	82	20	44
12. Securities, U.S. Government 13. Securities, state and local governments	50	100	500	843	571	473	1 902	2 223
15. Securities, preferred stock 16. Securities, common stock	818	2 134	7 234	17 095	14 161	8 693	8 147	12 450
21. Other intangible assets	300	600	1 300	2 486	1 633	598	635	1 081
22. Total	1 950	4 650	12 935	29 416	21 711	15 965	15 461	27 179
III. Liabilities								
7. Payables to financial intermediaries	100	300	800	2 000	500	1 492	936	3 256
8. Payables to other business	499	1 017	2 498	4 101	3 988	3 436	1 819	3 542
10. Borrowing on securities	81	93	219	566	137	127	1 933	1 008
11. Mortgages 12. Bonds and notes	850	1 770	4 412	10 586	7 628	10 805	9 588	16 345
13. Accruals				86	68	162	375	626
14. Other liabilities	630	1 310	3 268	6 794	3 982	1 363	1 974	2 834
15. Total	2 160	4 490	11 197	24 133	16 303	17 385	16 625	27 611
IV. Equity	2 040	4 260	10 409	19 531	13 906	12 371	15 661	23 005
V. Total assets and liabilities	4 200	8 750	21 606	43 664	30 209	29 756	32 286	50 616

TABLE W-37

Lines II–1 and II–2 – 1900–1929: Rough estimates based on assumption that ratio of cash to customers' debit balances or to brokers' borrowings was somewhat lower than during the thirties.
1933–1945: Assumed to be slightly above figures for New York Stock Exchange members carrying margin accounts (see *Banking and Monetary Statistics*, pp. 501ff; *Federal Reserve Bulletin*, various issues).
1949: Value for 1947 (derived from Securities and Exchange Commission, *Survey Series*, Release 141) moved in accordance with relevant figures for New York Stock Exchange members carrying margin accounts.

Line II– 9 – Customers' and partners' debt balances:
1900–1912: Rough estimates.
1922–1949: Estimated at approximately 10 percent in excess of figures for New York Stock Exchange members carrying margin accounts on basis of relationship in 1946–1947.

Lines II–12 to II–16 – 1900–1949: Rough estimates. Only reliable basis is information for 1946–1947 in Securities and Exchange Commission's tabulations.

Line II–22 – 1900–1949: Sum of lines II-1 to II-16.

Line III– 9 – 1900–1929: Rough estimates.
1933–1949: Slightly above figures for customers' credit balances of New York Stock Exchange members carrying margin accounts, since 1946–1947 data indicate total for all unincorporated brokers and dealers to be only a little higher than for members.

Line III–10 – 1900–1929: Bank loans to all brokers and dealers in securities (see Table D-8) reduced by an increasing proportion (5 percent in 1900, 20 percent in 1929) to take account of firms in corporate form. Loans from others which were substantial only in 1922 and 1929, obtained from Table D-9, col. 4, were similarly reduced to exclude corporate firms.
1933, 1939, 1945: Estimated at approximately 10 percent in excess of borrowings by New York Stock Exchange members carrying margin accounts.
1949: Assumed to be slightly in excess of borrowings of all New York Stock Exchange members (*The Exchange*, Jan. 1950).

Line III–15 – 1900–1949: Sum of lines III-9 and III-10.

Line IV– 1900–1949: Line V minus line III-15.

Line V – 1900–1949: Line II-22.

BALANCE SHEET OF UNINCORPORATED BROKERS AND DEALERS IN SECURITIES

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
II. Intangible assets								
1. Currency 2. Commercial bank deposits	50	100	300	600	200	250	350	350
9. Loans on securities	400	700	2 650	6 000	1 500	1 000	1 250	1 000
12. Securities, U.S. Government. 13. Securities, state and local governments			50	100	50	50	650	300
14. Securities, corporate bonds	50	100	200	250	50	50	50	100
15. Securities, preferred stock 16. Securities, common stock	50	100	250	650	100	150	200	400
22. Total	550	1 000	3 450	7 600	1 900	1 500	2 500	2 150
III. Liabilities								
9. Payables to households	100	200	500	1 200	300	400	850	900
10. Borrowing on securities	300	500	1 950	4 200	1 000	700	1 250	750
15. Total	400	700	2 450	5 400	1 300	1 100	2 100	1 650
IV. Equity	150	300	1 000	2 200	600	400	400	500
V. Total assets and liabilities	550	1 000	3 450	7 600	1 900	1 500	2 500	2 150

TABLE W-38

Sum of Tables W-39, W-40, and W-41.

Line II– 2 – Cash of government corporations and other financial intermediaries added to commercial bank deposits.

Line III–13 – Department of Commerce, *National Income Supplement*, 1951, p. 168. Assumed to be equal to tax payments during following year. Figures include only income and excess profits tax liability of financial corporations. Property tax liability was omitted because of insufficient data on which to base estimates, but amounts involved are negligible.

BALANCE SHEET OF FINANCIAL INTERMEDIARIES

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures 2. Nonresidential structures 3. Land, residential 4. Land, nonresidential 5. Producer durables	573	943	1 663	3 102	4 979	6 810	10 230	13 363
7. Inventories		2	30	3	3	937	2 584	3 736
9. Monetary metals	183	232	264	595	810	0	0	0
10. Total	756	1 177	1 957	3 700	5 792	7 747	12 814	17 099
II. Intangible assets								
1. Currency	591	1 304	3 903	3 480	3 797	16 750	20 277	25 781
2. Commercial bank deposits	1 391	2 717	3 735	6 027	5 402	11 111	15 348	14 896
3. Deposits in other financial institutions			1 934	2 355	2 729	11 905	15 953	16 593
7. Receivables from business	3 185	6 967	14 232	16 647	9 810	8 530	11 071	19 048
8. Receivables from households	1 090	3 132	6 140	8 714	8 525	8 835	7 538	15 735
9. Loans on securities	889	1 597	3 603	8 345	3 652	1 696	6 879	2 634
10. Mortgages, nonfarm	2 000	4 686	9 558	22 734	19 620	19 891	20 992	42 402
11. Mortgages, farm	316	1 252	3 996	4 927	4 076	4 416	2 794	3 228
12. Securities, U.S. Government	663	794	7 894	7 569	13 891	35 538	182 554	165 177
13. Securities, state and local governments	888	1 729	2 854	4 944	5 957	8 300	7 016	10 958
14. Securities, corporate bonds	1 778	4 943	7 564	13 783	13 122	15 606	15 632	30 719
15. Securities, preferred stock	37	59	132	880	1 186	1 557	1 999	2 969
16. Securities, common stock	293	583	957	7 664	4 144	4 500	6 667	8 084
19. Equity in government corporations					15	41	74	136
21. Other intangible assets	1 311	1 494	7 492	12 149	6 847	6 336	14 930	22 845
22. Total	14 432	31 257	73 992	120 217	102 777	155 010	329 723	381 206
III. Liabilities								
1. Currency	292	715	3 121	2 559	4 016	4 959	24 649	23 483
2. Commercial bank deposits	6 716	15 792	34 227	44 842	36 153	54 130	137 875	131 120
3. Deposits in other financial institutions	2 646	4 539	10 547	17 948	18 891	29 036	43 488	53 932
4. Life insurance reserves	1 554	4 142	8 700	17 502	20 862	29 228	44 262	58 819
5. Pension and retirement funds, private			90	500	700	1 050	2 900	6 850
6. Pension and retirement funds, government	5	17	251	1 470	2 956	6 230	25 467	38 849
7. Payables to financial intermediaries	43	184	627	899	501	533	540	1 662
12. Bonds and notes			876	2 539	2 409	8 222	1 895	1 825
13. Accruals				63	27	49	412	818
14. Other liabilities	1 277	1 582	7 180	12 885	4 646	8 622	20 285	23 173
15. Total	12 533	26 971	65 619	101 206	91 161	142 057	301 771	340 531
IV. Equity	2 654	5 465	10 330	22 710	17 409	20 701	40 763	57 778
V. Total assets and liabilities	15 187	32 436	75 948	123 918	108 569	162 757	342 536	398 306

BALANCE SHEET OF THE BANKING SYSTEM

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures 2. Nonresidential structures 3. Land, residential 4. Land, nonresidential 5. Producer durables	342	682	1 293	2 170	2 426	2 417	1 158	1 268
9. Monetary metals	183	232	264	595	810	0	0	0
10. Total	525	914	1 557	2 765	3 236	2 417	1 158	1 268
II. Intangible assets								
1. Currency	591	1 304	3 903	3 480	3 797	16 750	20 277	25 781
2. Commercial bank deposits	1 250	2 532	3 303	4 494	4 240	8 814	12 795	11 242
3. Deposits in other financial institutions			1 934	2 355	2 729	11 653	15 914	16 568
7. Receivables from business	3 185	6 967	14 196	16 505	8 303	7 451	10 385	18 325
8. Receivables from households	965	2 500	4 820	5 678	2 364	4 274	4 052	10 468
9. Loans on securities	825	1 578	3 577	8 313	3 632	1 690	6 876	26 34
10. Mortgages, nonfarm	1 215	2 832	5 382	10 648	9 476	8 620	8 494	17 177
11. Mortgages, farm	172	674	1 521	1 022	832	639	550	941
12. Securities, U.S. Government	618	784	6 185	5 740	11 809	23 094	128 367	100 436
13. Securities, state and local governments	761	1 313	1 831	2 965	3 539	4 117	4 074	6 647
14. Securities, corporate bonds	1 119	2 990	4 603	6 764	6 231	4 781	3 759	5 253
16. Securities, common stock	146	325	556	1 257	1 128	745	490	473
21. Other intangible assets	1 069	1 152	6 089	9 754	3 844	3 459	8 031	10 698
22. Total	11 916	24 951	57 900	78 975	61 925	96 087	224 064	226 643
III. Liabilities								
1. Currency	292	715	3 121	2 559	4 016	4 959	24 649	23 483
2. Commercial bank deposits	6 716	15 792	34 227	44 842	36 153	54 130	137 875	131 120
3. Deposits in other financial institutions	2 224	3 715	8 108	11 414	13 579	24 382	35 705	40 735
7. Payables to financial intermediaries	40	170	534	765	304	63	54	104
13. Accruals				34	5	26	360	656
14. Other liabilities	1 029	1 117	6 423	11 621	3 247	6 712	15 646	18 070
15. Total	10 301	21 509	52 413	71 235	57 304	90 272	214 288	214 168
IV. Equity	2 140	4 356	7 044	10 504	7 859	8 235	10 934	13 743
V. Total assets and liabilities	12 441	25 865	59 457	81 740	65 161	98 504	225 223	227 910

Includes Federal Reserve banks, operating and closed commercial banks, mutual savings banks, and the Postal Savings System. Figures are from Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952*; see note to Table W-41, except in following instance:

Line II–1 – Monetary metals held by banks other than Federal Reserve banks as given in Table W-20, col. 2, deducted from line II-1 and added to line I-9.

BALANCE SHEET OF GOVERNMENT CORPORATIONS AND CREDIT AGENCIES

Selected Years: 1912 to 1949

$ mill.

	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets							
1. Residential structures 2. Nonresidential structures 3. Land, residential 4. Land, nonresidential	20	79	117	159	1 256	5 495	7 107
5. Producer durables						2 528	3 514
7. Inventories	2	30	3	3	937	2 584	3 736
10. Total	22	109	120	162	2 193	10 607	14 357
II. Intangible assets							
1. Currency 2. Commercial bank deposits	3	8	23	49	96	202	118
3. Deposits in other financial institutions					250	21	2
7. Receivables from business		34	130	1 501	1 069	657	649
8. Receivables from households		49	96	488	878	1 208	2 356
10. Mortgages, nonfarm					2 242	915	1 251
11. Mortgages, farm		651	1 200	1 245	2 801	1 451	1 127
12. Securities, U.S. Government		152	26	109	888	1 683	2 153
13. Securities, state and local governments				50	296	484	409
14. Securities, corporate bonds		2	13	45	862		
15. Securities, preferred stock	2			249	572	304	131
21. Other intangible assets	1	476	110	735	596	3 161	7 168
22. Total	6	1 372	1 598	4 471	10 550	10 086	15 364
III. Liabilities							
7. Payables to financial intermediaries					235	143	1 003
12. Bonds and notes		643	1 238	1 500	7 809	1 532	1 519
14. Other liabilities	2	179	30	52	214	1 792	720
15. Total	2	822	1 268	1 552	8 258	3 467	3 242
IV. Equity	26	659	450	3 081	4 485	17 226	26 479
V. Total assets and liabilities	28	1 481	1 718	4 633	12 743	20 693	29 721

Lines I–1 to I–5 – 1900–1949: Derived according to procedure described in Table W-7.

Line I– 7 – 1912–1922: Table F-4, col. 7.
1929–1949: Table F-14, col. 10.

Line I–10 – 1900–1949: Sum of lines I-1 to I-7.

Lines II and III – 1900–1949: Derived from data for government lending agencies, including Federal Land Banks, given in Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952*; see note to Table W-41. Loans to farmers' cooperatives have been classified as loans to households since Table W-27 includes assets of cooperatives. Line II-12 includes obligations fully guaranteed by the U.S. Government, which amounted in 1933 to $180 million, in 1939 to $5,704 million, in 1945 to $567 million, and in 1949 to $30 million.

Line IV– 1900–1949: Line V minus line III-15.

Line V– 1900–1949: Line I-10 plus line II-22.

TABLE W-41

Includes operating and closed savings and loan associations, credit unions, joint stock land banks, life insurance companies, fraternal life insurance companies, fire and marine insurance companies, casualty and miscellaneous insurance companies, mutual health and accident companies, life insurance departments of savings banks, private pension funds, government trust funds, management investment companies, bank holding companies, and investment holding companies. Derivation of figures given in Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952,* Appendix A. Figures shown there incorporate later revisions and hence differ slightly from preliminary figures used in this study. The totals in this table further differ from those in *Financial Intermediaries...* by including a breakdown of balance sheet items of bank holding and investment holding companies among the assets of financial intermediaries, and by excluding finance companies, mortgage companies, and security brokers and dealers from the category of financial intermediaries (Table W-38) and including them in the group "financial corporations other than financial intermediaries" (Table W-36).

The figures for the different balance sheet items of bank holding and investment holding companies are very rough estimates derived from the balance sheets for individual companies in Moody's *Manual of Investments.* Derivation of total assets of these groups is described in *Financial Intermediaries...*, Table A-28. Distribution of assets of bank holding companies was based on the composition of assets of six companies (Transamerica Corporation, First Bank Stock Company of Minneapolis, First Security Corporation of Ogden, Marine Midland Corporation, Northwest Bancorporation, and Wisconsin Bankshares Corporation) whose assets together account for more than 75 percent of total assets. For investment holding companies, distribution was derived from same sources and by same procedure as total assets.

BALANCE SHEET OF FINANCIAL INTERMEDIARIES OTHER THAN THE BANKING SYSTEM AND GOVERNMENT CORPORATIONS

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures								
2. Nonresidential structures								
3. Land, residential	231	241	291	815	2 394	3 137	1 049	1 474
4. Land, nonresidential								
5. Producer durables								
10. Total	231	241	291	815	2 394	3 137	1 049	1 474
II. Intangible assets								
1. Currency								
2. Commercial bank deposits	141	182	424	1 510	1 113	2 201	2 351	3 536
3. Deposits in other financial institutions						2	18	23
7. Receivables from business			2	12	6	10	29	74
8. Receivables from households	125	632	1 271	2 940	5 673	3 683	2 278	2 911
9. Loans on securities	64	19	26	32	20	6	3	
10. Mortgages, nonfarm	785	1 854	4 176	12 086	10 144	9 029	11 583	23 974
11. Mortgages, farm	144	578	1 824	2 705	1 999	976	793	1 160
12. Securities, U.S. Government	45	10	1 557	1 803	1 973	11 556	52 504	62 588
13. Securities, state and local governments	127	416	1 023	1 979	2 368	3 887	2 458	3 902
14. Securities, corporate bonds	659	1 953	2 959	7 006	6 846	9 963	11 873	25 466
15. Securities, preferred stock	37	57	132	880	937	985	1 695	2 838
16. Securities, common stock	147	258	401	6 407	3 016	3 755	6 177	7 611
19. Equity in government corporations					15	41	74	136
21. Other intangible assets	242	341	927	2 285	2 268	2 281	3 738	4 979
22. Total	2 516	6 300	14 720	39 644	36 381	48 373	95 573	139 199
III. Liabilities								
3. Deposits in other financial institutions	422	824	2 439	6 534	5 312	4 654	7 783	13 197
4. Life insurance reserves	1 554	4 142	8 700	17 502	20 862	29 228	44 262	58 819
5. Pension and retirement funds, private			90	500	700	1 050	2 900	6 850
6. Pension and retirement funds, government	5	17	251	1 470	2 956	6 230	25 467	38 849
7. Payables to financial intermediaries	3	14	93	134	197	235	343	555
12. Bonds and notes			233	1 301	909	413	363	306
13. Accruals				29	22	23	52	162
14. Other liabilities	248	463	578	1 234	1 347	1 696	2 847	4 383
15. Total	2 232	5 460	12 384	28 705	32 305	43 527	84 016	123 121
IV. Equity	514	1 083	2 627	11 756	6 469	7 981	12 603	17 556
V. Total assets and liabilities	2 746	6 543	15 010	40 460	38 775	51 510	96 620	140 675

TABLE W-42

Lines I–1 to I–5 – 1900–1949: Derived according to procedure described in Table W-7.

Line I–7 – 1900–1949: See notes to Table W-1.

Line I–9 – 1900–1949: Table W-20, col. 4 plus Table W-21, col. 3. Estimates are overstated in that they include holdings of coin by some financial intermediaries, e.g. savings and loan associations, which were not segregated from total cash holdings on their balance sheets.

Line I–10 – 1900–1949: Sum of lines I-1 to I-9.

Line II–1 – 1900–1949: Table L-3, col. 3 minus line I-9 of this table.

Line II– 2 – 1900–1949: Cash of state and local governments (Table G-17, col. 2 converted to calendar year by arithmetic averaging plus Table G-8, col. 2) minus holdings of currency and monetary metals (lines I-9 and II-1 of this table).

Lines II–12 and II–13 – 1900–1949: Table G-17, cols. 3, 4, and 5 converted to calendar year plus Table G-8, cols. 3, 4, and 5 minus security holdings of state and local trust funds as given in Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952;* see note to Table W-41.

Line II–20 – 1900 -1949: Table G-20, col. 1.

Line II–21 – 1900–1949: Same procedure as for lines II-12 and II-13.

Line II–22 – 1900–1949: Sum of lines II-1 to II-21.

Line III–12 – 1900–1929: Table G-21, col. 1 converted to calendar year plus col. 2.
1933–1949: Table V-11, col. 3.

Line III–14 – 1900–1949: Table G-21, col. 1 converted to calendar year plus Table G-7, col. 10 minus line III-12 of this table.

Line III–15 – 1900–1949: Sum of lines III-12 and III-14.

Line IV– 1900–1949: Line V minus line III-15.

Line V– 1900–1949: Sum of lines I-10 and II-22.

BALANCE SHEET OF STATE AND LOCAL GOVERNMENTS

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures	1 574	4 825	13 042	20 540	22 876	26 863	36 244	52 364
2. Nonresidential structures								
3. Land, residential	3 000	6 500	11 100	13 200	13 150	14 600	17 450	22 500
4. Land, nonresidential								
5. Producer durables	61	154	121	505	483	476	405	659
7. Inventories	10	20	40	60	60	60	150	100
9. Monetary metals	6	7	6	5	4	6	13	15
10. Total	4 651	11 506	24 309	34 310	36 573	42 005	54 262	75 638
II. Intangible assets								
1. Currency	8	11	30	31	43	58	252	239
2. Commercial bank deposits	131	495	1 426	2 443	2 049	3 475	5 567	8 778
12. Securities, U.S. Government			232	255	219	250	4 390	5 156
13. Securities, state and local governments	554	1 150	2 210	3 631	3 041	2 762	1 633	1 541
20. Accruals	684	1 083	3 169	5 271	4 317	5 075	5 981	8 468
21. Other intangible assets	84	169	312	520	492	601	428	761
22. Total	1 461	2 908	7 379	12 151	10 161	12 221	18 251	24 943
III. Liabilities								
12. Bonds and notes	2 014	4 430	10 384	16 873	19 084	19 765	15 913	21 857
14. Other liabilities					417	54	343	405
15. Total	2 014	4 430	10 384	16 873	19 501	19 819	16 256	22 262
IV. Equity	4 098	9 984	21 304	29 588	27 233	34 407	56 257	78 319
V. Total assets and liabilities	6 112	14 414	31 688	46 461	46 734	54 226	72 513	100 581

Lines I–1 and I–2 – 1900–1949: Derived according to procedure outlined in Table W-7. These figures differ from those in Table W-1 as they exclude structures of government corporations.

Lines I–3 and I–4 – 1900–1949: See notes to Table W-1, col. 24.

Line I–5 – 1900–1949: See Table W-7.

Line I–9 – 1900–1922: Table W-19, col. 4 plus Table F-3, cols. 2, 3, 4, and 7.
1929–1949: Table W-19, col. 4 plus Table F-13, cols. 2, 3, 4, and 7.

Line I–10 – 1900–1949: Sum of lines I-1 to I-9.

Line II– 2 – 1900–1922: Table F-3, col. 10. These figures include deposits in Federal Land Banks, in foreign depositories, and the Philippine Treasury, as well as deposits in commercial banks, but it was not possible to segregate the amounts, which are probably small.
1929–1933: Table F-13, col. 10.
1939–1949: Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952;* see note to Table W-41.

Line II– 3 – 1900–1949: Includes deposits in Federal Reserve banks (for 1900–1922, Table F-3, col. 9; for 1929–1949, Table F-13, col. 9) and cash and deposits of Exchange Stabilization Fund on deposit with Federal Reserve banks (for 1939–1949, Table F-15, col. 2). Figures differ from those given in Federal Reserve bank records as of the same date.

Line II– 7 – 1945, 1949: Prepayments made to businesses by the federal government in the course of its procurement programs. (Table F-17, col. 2 cumulated, assuming 1939 value to be zero.)

Line II–19 – 1912–1949: Total equity of government corporations as given in Table W-40, line IV, minus equity owned by private interests from Table W-27, line II-19 and Table W-41, line II-19.

Line II–20 – 1912–1949: Table F-26, col. 1.

Line II–21 – 1922: Unclassified general fund assets from Table F-3, col. 8.
1929-1949: Table F-13, col. 8.

Line II–22 – 1900–1949: Sum of lines II-2 to II-21.

Line III– 1 – 1900–1922: Table F-5, cols. 1 to 6.
1929–1949: Table F-18, cols. 1 to 6.

Line III– 8 – 1945–1949: Accounts payable by government to businesses that have delivered goods on credit. (Table F-21, col. 3 cumulated, assuming 1939 value to be zero.)

Line III–12 – 1900–1922: Table F-7, col. 1.
1929–1949: Gross public debt (Table F-19, col. 1) minus U.S. Government bond holdings by foreigners (for 1929 and 1939, Table K-6, line 18; for 1933, assumed to be the same as for 1929; for 1945–1949, Department of Commerce, *Business News Reports*, Office of Business Economics, No. 382).

Line III–14 – 1900–1949: Interest accruals as estimated in Table F-27, col. 4 are not included in this statement partly because of the extreme difficulty in apportioning the amounts among holder groups and partly since no estimates of interest accruals were made for other issuers of bonds. Includes deposits of Postal Savings System with Treasury and uncollected general fund liabilities (for 1900–1922, Table F-5, cols. 7 and 8; for 1929–1949, Table F-18, cols. 7 and 8); deposits of individuals in certain Treasury accounts, e.g. deposits of military overseas personnel (for 1945 and 1949, Table F-21, col. 2 cumulated assuming 1940 value to be zero).

Line III–15 – 1900–1949: Sum of lines III-1 to III-14.

Line IV– 1900–1949: Line V minus line III-15.

Line V– 1900–1949: Line I-10 plus line II-22.

BALANCE SHEET OF THE FEDERAL GOVERNMENT

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
I. Tangible assets								
1. Residential structures 2. Nonresidential structures	450	1 033	2 402	2 718	3 168	5 631	8 982	14 735
3. Land, residential 4. Land, nonresidential	1 000	1 000	1 500	2 100	2 225	2 800	6 500	7 500
5. Producer durables	5	18	35	63	111	301	499	972
9. Monetary metals	1 014	1 900	3 727	3 879	3 801	20 177	22 444	26 930
10. Total	2 469	3 951	7 664	8 760	9 305	28 909	38 425	50 137
II. Intangible assets								
2. Commercial bank deposits	102	53	502	165	1 093	797	23 677	3 125
3. Deposits in other financial institutions			34	46	77	703	1 904	1 022
7. Receivables from business							900	100
19. Equity in government corporations		26	619	367	2 981	4 241	16 911	26 045
20. Accruals		65	1 570	2 358	1 107	2 684	13 019	14 887
21. Other intangible assets			3	2	20	17	47	13
22. Total	102	144	2 728	2 938	5 278	8 442	56 458	45 192
III. Liabilities								
1. Currency	926	1 741	3 665	3 844	3 676	17 218	20 170	25 696
8. Payables to other business							2 700	700
12. Bonds and notes	1 239	1 191	22 995	16 176	23 869	47 001	274 382	253 325
14. Other liabilities	3	2	16	137	258	737	5 424	4 701
15. Total	2 168	2 934	26 676	20 157	27 803	64 956	302 676	284 422
IV. Equity	403	1 161	−16 284	−8 459	−13 220	−27 605	−207 793	−189 093
V. Total assets and liabilities	2 571	4 095	10 392	11 698	14 583	37 351	94 883	95 329

III. Household Balance Sheets, Early 1950

1. *Character of the estimates*

The main shortcoming of the national and group balance sheets is the high degree of aggregation which they involve, i.e. the large number and often nonhomogeneous character of the economic units included in a group. This deficiency is particularly pronounced for nonfarm households, which at the end of the period numbered nearly fifty million spending units and accounted for approximately 40 percent of the total assets and 60 percent of total net worth of all groups. Fortunately this limitation can be overcome to a large extent with the help of balance sheet data of a stratified probability sample of approximately 3,500 households (including slightly over 400 farm households), interviewed early in 1950 for the Federal Reserve Board's *Survey of Consumer Finances.* [16]

Before being used to complement the estimates in the national balance sheet and the combined balance sheet for all households of Table W-16, these sample balance sheets must be completed by assigning specific values to a number of cases where the *Survey* operates with bracket values or even open size classes, and by filling in occasional slight gaps in the basic data; and must be "blown up," i.e. converted into figures covering all spending units in the United States. Both the assignment of values and the process of blowing up sample averages involve often elaborate and at some points rather risky procedures. They must, therefore, be described in detail for the benefit of those readers who want to understand the derivation thoroughly and want to evaluate the margins of error attaching to the various manipulations which the raw sample data necessarily have to undergo. Such a description is provided in Sections 2 and 3, which may be omitted by the general reader. [17]

The blown-up results of the *Survey* of early 1950 cannot be expected to agree precisely with the balance sheet figures for households at the end of 1949. Some of the more important reasons are:

(a) *Survey* data exclude persons living in institutions (hotels, hospitals, asylums, cantonments, prisons, etc.) and transients. These groups, generally covered by balance sheet data, are estimated to represent approximately 3 percent of the total population of the continental United States. While nothing is known about the average assets of the excluded population, it may be assumed that the proportionate understatement of total assets of individuals resulting from this omission from the *Survey* is slightly less than their relative importance in the number of spending units.

[16] For a description of the methods of the *Survey* see, e.g., *Federal Reserve Bulletin*, 1950, pp. 795–809; for some results of the 1950 balance sheet inquiry cf. *ibid.*, 1950, pp. 1,584–1,611.

[17] The blow-up of the original data was carried through by the Consumer Credit and Finances Section of the Division of Research and Statistics of the Board of Governors of the Federal Reserve System. Sections 2 and 3 are essentially the work of John Frechtling of the Board and Bertram Rifas of the Saving Study staff. The statisticians of the Board of Governors are not responsible for any subsequent manipulation of the data or for their interpretation in this study.

(b) Some assets or liabilities are not covered by the *Survey*. The most important of these are: currency; state, local, corporate, and foreign bonds; privately held mortgages; equity in government trust funds; personal trust funds; and consumer durable goods other than automobiles. The excluded assets accounted at the end of 1949 for slightly over one-fifth of total household assets as estimated from over-all data (see Table W-44).

(c) The dates of the two estimates are not exactly the same—December 31, 1949 for the combined balance sheet, January-February 1950 for *Survey* data. The discrepancies due exclusively to this time difference may be regarded as quite small.

(d) The *Survey* figures are subject to sampling error. Any pronounced skewness in the universe increases the sampling errors when drawing a sample of approximately 3,500 units from a universe of 52 million. The sampling error for data such as the percent of the population owning stock worth $25,000 or more is not so much affected by skewness in the parent population as are data such as the value of stock owned by these large stockholders or the aggregate value of stock held by the population. [18]

(e) The total number of spending units used in obtaining aggregates from the *Survey* is also subject to a sampling error. *Survey* aggregates are derived by multiplying average holdings per spending unit of liquid assets, stock, etc. by the estimate of the total number of spending units in the population. This estimate is derived by multiplying the Census estimate of occupied dwelling units by the average number of spending units per occupied dwelling unit falling in the *Survey*'s sample. Thus, if in the population an average of 1.3 spending units lived in each occupied dwelling unit while the *Survey* found an average of 1.25 spending units per dwelling unit, the aggregate number of spending units based on the *Survey* estimate would be understated, and all aggregates would also be understated by the same proportion.

(f) Certain categories of assets are known to be substantially understated in the reports to the *Survey*. Liquid assets are the most notable case in which such understatement has persisted year after year.

[18] An example may illustrate this point. Let us assume that 10 percent of all owners of an asset held more than $25,000 of the asset and that the value of their holdings accounted for 60 percent of the aggregate value of the asset. Let us assume further that holdings above $25,000 differ widely in value. The sample may draw the correct proportion of spending units with assets of $25,000 or more, and if this asset is not very widely held there will be, say, forty cases to represent the segment of the population in this group. If only one of these forty cases reports $1 million worth of the asset while in the population the correct proportion is five out of forty, the aggregate amount of the asset owned by this top group will be underestimated. Furthermore, the proportion of the asset owned by the top asset group will also be understated. Because such substantial variations in the proportion of the very topmost asset holders appearing in the sample may be expected in a relatively small sample, an occurrence such as that outlined above is probably not uncommon in the *Survey of Consumer Finances* when it is dealing with assets like common stock, value of unincorporated businesses, and investment in real estate which vary widely in value and are held by few respondents.

Column 1 – Methods of the blow-up of the *Survey of Consumer Finances* sample balance sheet data to cover all spending units are covered in the text discussion.

Lines 1, 4, 12, 14, 15, 17, 18: Not covered by the *Survey*.

Line 2: Includes checking accounts and various forms of savings accounts, e.g. accounts in banks, postal savings, and shares in savings and loan associations and credit unions.

Line 3: Accrued value of U.S. Government bonds in series A to F, and face value of other U.S. Government bonds.

Line 5: Comprises stock in both publicly and closely held corporations.

Line 6: Interest in proprietorships and partnerships, excluding interest in privately held corporations. Figures are net of debt.

Line 7: Includes owner-occupied nonfarm homes and owner-occupied real estate of spending units living on farms but deriving less than half of their income from farm operations.

Line 8: Homes, machinery, equipment, and trucks of farm operators who owned their farms.

Line 9: Real estate other than owner-occupied homes. Hence it covers summer cottages and all rental farm and nonfarm real estate.

Line 10: Livestock and crops of farm operators. Does not include livestock and crop inventories owned by respondents who were classified as nonfarmers.

Line 11: Automobiles.

Line 13: Reserve value of life insurance with private life insurance companies and fraternal orders. Reserves against accident and health policies, annuities, and supplementary contracts are presumably not included.

Line 16: Comprises total assets of government pension funds (other than social security funds), assets of private independent contributory pension funds, and reserves behind insured contributory pension plans.

Line 19: Sum of lines 1 to 18.

Line 20: Mortgage debt on owner-occupied nonfarm homes.

Line 21: Mortgage debt on real estate not occupied by owner.

Line 22: Net increase in debt during 1949 as a result of purchases of automobiles and other durable goods including farm equipment, or as a result of home repairs; debts (other than charge account balances) outstanding on purchases of other sorts made during 1949 and on all purchases made prior to 1949; and "other" debts to persons, businesses, or financial institutions. Also includes mortgage debt on farm real estate.

Line 23: Sum of lines 20 to 22.

Line 24: Line 19 minus line 23.

Column 2 – Line 1: Table L-3, col. 5.

Line 2: Includes deposits in commercial and mutual savings banks, Postal Savings System, savings and loan associations, and credit unions. Obtained as the sum of Table L-5, col. 7, Table L-6, col. 6, Table L-28, col. 2, Table L-44, cols. 2 and 3, Table L-40, cols. 2 and 4, Table J-5, col. 2, and Table J-6, col. 1 minus the sum of cash of unincorporated business (Table U-1, col. 1), private nonprofit institutions (Table W-25), and personal trust departments (Table W-26). The coverage of Saving Study and *Survey* data is substantially the same; the large difference between the two figures is primarily the result–as is the smaller difference in line 3–of understatement of the *Survey* figure (see *Federal Reserve Bulletin*, Dec. 1950, p. 1,593).

Line 3: Total U.S. Government securities outstanding (*Treasury Bulletin*, May 1950, p. 31) minus the sum of holdings of federal agencies and trust funds (*ibid.*), corporations (Table W-30, line 11-12, excluding

the holdings of federal trust funds and the Postal Savings System since they are included in the figures of federal agencies and trust funds), unincorporated business (Table U-1, col. 2), personal trust departments (Table W-26, line II-12), private nonprofit institutions (Table W-25, line II-12), and foreigners (*Business News Reports*, Office of Business Economics, No. 382, as revised by Department of Commerce).

Line 4: Total state, local, and corporate bonds outstanding (Goldsmith, *The Share of Financial Intermediaries in National Wealth and National Assets, 1900–1949*, National Bureau of Economic Research, Occasional Paper No. 42, Appendix Table A-2) minus the holdings of corporations, personal trust departments, private nonprofit institutions, state and local sinking funds, and foreigners (figures obtained from sources listed under line 3).

Line 5: Same sources and procedures as for line 4. The difference between Saving Study and *Survey* figures seems to be partly the result of substantial underreporting for sampling errors in the *Survey* data. Also, since the distribution of the holdings of corporate stock is highly skewed, the sampling error inherent in the *Survey* figure is large.

Line 6: Table W-22, line II-17.

Line 7: Owner-occupied nonfarm homes estimated at 75 percent of the value of all individually owned one- to four-family dwellings (estimation derived according to procedure described in Table W-7) on the basis of the distribution of one- to four-family dwellings in number (owned, 61 percent; rented, 39 percent) as given in 1950 *Census of Housing*, Preliminary Reports, Feb. 17, 1951, p. 1, weighted by average value of rented and owner-occupied dwelling units (for 1949 value of rented dwelling unit, taken to be 60 percent of value of owner-occupied dwelling unit by extrapolation of 1930 and 1940 figures) and allowing for the fact that rented houses include those owned by corporations (estimated in Table R-28 at 5 percent of total).

Owner-occupied real estate of spending units living on farms but deriving less than one-half of their income from farm operations estimated to be about 20 percent of total value of owner-occupied farm homes.

Line 8: Total value of owner-occupied farms, $61 billion, consists of the following components:

Homes of farm operators	$ 9 billion
Farm machinery and equipment	10 billion
Farm land	34 billion
Nonresidential farm buildings	8 billion

Value of homes owned by farm operators obtained by subtracting from total value of farm homes (Table W-27, line I-1) the value of rented farm homes (estimated to be slightly above one-fourth of total value of farm homes on the basis of the statistics for 1945 given in *Statistical Abstract*, 1948, pp. 606–609) and the value of farm homes owned by nonfarmers as estimated in line 7.

Figures for value of farm machinery, farm land, and nonresidential farm buildings on owner-occupied farms obtained by multiplying the total value of these items as given in Table W-27, lines I-2 to I-5, by 62.8 percent. (Percent based on data given in Table A-14, col. 6.)

Line 9: Total other real estate, $108 billion, consists of the following components:

Rented nonfarm homes	$52 billion
Rented farm homes	4 billion
Rented farm machinery and equipment	6 billion
Rented farm land	20 billion
Rented nonresidential farm buildings	4 billion
Multi-family residences and land	14 billion
Vacant lots and privately owned forest land	8 billion

Rented nonfarm homes estimated at 25 percent of the total value of nonfarm homes according to procedure described in line 7. Rented farm real estate and machinery figures derived according to procedure described in line 8. Values of multi-family residences and land, vacant lots, and privately owned forest land obtained or described in Tables W-7 and W-22.

The Saving Study figure, in order to be comparable in coverage with the *Survey* figure, probably should include some portion of the value of commercial structures which appears under line 6. Also the Saving Study figure includes the value of farm machinery and equipment owned by farm operators renting their farms, which is omitted from the *Survey* data. No explanation has been found for the considerable difference remaining between the two estimates after adjustment for differences in scope.

Line 10: Table A-31, col. 1. *Survey* figure is slightly smaller partly because no direct information on value of any livestock and crops of farm owners who were not classified as farm operators was obtained.

Lines 11 and 12: Sources and derivation of figures given in Table W-7. The lower value for cars, compared with *Survey* figure, is due to a shortfall of depreciated original cost used in the Saving Study, compared with National Automobile Dealers' Association average retail prices for the eastern region, which underlie the *Survey* estimates. The most appropriate value of cars probably lies between the two estimates, for the *Survey* figure is overstated due to the fact that the average retail price usually is higher than the value which could be realized by the owner of the car, while the Saving Study figure appears to be understated because of excessive depreciation allowances.

Line 13: Sum of the reserves of life insurance companies (obtained by subtracting from total reserves of life insurance companies as given in Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952*, Table A-8 [see note to Table W-41], reserves behind insured pension plans as reported in Institute of Life Insurance, *Tally*, Aug. 1950), life insurance departments of savings banks (Table V-54, col. 1), fraternal life insurance companies (Goldsmith, *Financial Intermediaries in the Saving and Investment Process, 1900–1952*), and mutual accident and health associations (Table I-14, col. 1); minus the life insurance holdings of foreigners (Table I-2, col. 6 multiplied by Table I-3, col. 3 plus Table I-3, col. 8).

The difference between the Saving Study and *Survey* figures is largely accounted for by the fact that the Saving Study figure includes special reserves and surplus of life insurance companies in individuals' assets while the *Survey* figure is restricted to reserves. Also the latter excludes reserves on supplementary contracts ($4.0 billion) and has attempted to eliminate as far as possible reserves against accident and health policies.

Line 14: Includes individuals' investment in social security funds (*Treasury Bulletin*, Aug. 1950, p. 10) and workmen's compensation funds (Table G-19, col. 11).

Line 15: Derived from data given in *Annual Report of the Secretary of the Treasury*, 1951, p. 823.

Line 16: Includes the reserve value of Federal Civil Service Retirement and Disability Fund (estimate derived from data given in *ibid.*, 1951, p. 823), Railroad Retirement Account (*Treasury Bulletin*, Aug. 1950, p. 10), state and local government employees retirement funds (Table G-19, col. 6), private pension funds (Table I-16, col. 1), and pension plans insured by life insurance companies (see line 13).

Saving Study figures cover total assets of pension and retirement funds, while the *Survey* data are based on individuals' contributions and exclude noncontributory funds.

Line 17: Holdings of nonfarm and farm mortgages as estimated in Tables W-22 and W-27 minus the sum of the holdings of personal trust departments, private nonprofit institutions, and unincorporated business (figures obtained from sources listed under line 3).

Line 18: Table W-26, line v.

Line 19: Sum of lines 1 to 18.

Line 20: Includes mortgage debt on owner-occupied one- to four-family nonfarm homes, estimated to be 80 percent of total mortgage debt outstanding on one- to four-family nonfarm dwellings owned by individuals. Percentage derived from *Census of Housing* data which were adjusted for fact that corporate-owned properties would be rented. Mortgage debt outstanding derived according to the procedure described in notes to Table W-22, line II-10; also includes mortgage debt on owner-operated farms, estimated to be 62.8 percent (derived from Table A-14, col. 6) of the total (Table W-27, line II-10).

Line 21: Mortgage debt on rented one- to four-family and farm homes obtained according to procedure described for line 20. For mortgage debt on multifamily residences see Table W-22.

Line 22: Line 23 minus the sum of lines 20 and 21. Includes consumer debt, loans on securities, policy loans, and farm nonconsumer debt. The Saving Study figure includes $11 billion in the form of charge account debt and tax accruals not covered in the *Survey* estimate. The *Survey* figure includes debt to persons which is not covered in the Saving Study data.

Line 23: Sum of Table W-22, line III-15 and Table W-27, line III-15 minus Table W-25, line III-15.

Line 24: Line 19 minus line 23.

Columns 3, 4, 5 – Derived from cols. 1 and 2.

COMPARISON OF LEVEL AND STRUCTURE OF HOUSEHOLD ASSETS [1] OF SURVEY OF CONSUMER FINANCES AND SAVING STUDY

End of 1949

Item	Amounts ($ bill.)		Shares (percent of total)		
	Survey of Consumer Finances	Saving Study	Survey of Consumer Finances	Saving Study	
				Total	Comparable items
	1	2	3	4	5
1. Currency	n.c.	23	.	2.4	.
2. Deposits with financial institutions	54	96	8.8	10.1	12.8
3. U.S. Government securities	35	47	5.7	4.9	6.3
4. Other bonds	n.c.	7	.	0.7	.
5. Corporate stock	62	94	10.1	9.9	12.5
6. Interest in unincorporated business	59	69	9.6	7.2	9.2
7. Homes	175	158	28.5	16.6	21.1
8. Farm real estate	57	61	9.3	6.4	8.1
9. Other real estate	71	108	11.6	11.3	14.4
10. Livestock and crops	16	19	2.6	2.0	2.5
11. Cars	30	23	4.9	2.4	3.1
12. Other consumer durables	n.c.	76	.	8.0	.
13. Life insurance reserves	44	54	7.2	5.7	7.2
14. Social security funds	n.c.	13	.	1.4	.
15. Federal trust funds other than social security, civil service, and railroad retirement funds	n.c.	16	.	1.7	.
16. Other pension and retirement funds	10	21	1.6	2.2	2.8
17. Mortgages held by individuals	n.c.	17	.	1.8	.
18. Personal trust funds	n.c.	50	.	5.3	.
19. Total assets	613	952 [2]	100.0	100.0	100.0
20. Owner-occupied nonfarm real estate debt	36	33	5.9	3.5	4.4
21. Non-owner-occupied nonfarm real estate debt	11	9	1.8	1.2	1.2
22. Other debt	19	39	3.1	3.9	5.2
23. Total liabilities	66	81	10.8	8.5	10.8
24. Total net worth	547	871	89.2	91.5	89.2

[1] The universe of the Survey is about 3 percent smaller than that of the Saving Study on account of the exclusion from the Survey sample of members of the armed forces and other persons living on military reservations, residents in hospitals or other institutions (penal, educational, religious, etc.), and residents in hotels, large boarding houses, and tourist camps.

[2] Sum of items covered by Survey 750.

(g) Other errors and biases have undoubtedly been introduced in processing the raw *Survey* data. They are discussed in the following section.

(h) The estimates of the combined balance sheets are likewise subject to many types of errors which have been discussed throughout the Study. [19]

The results of the two approaches are compared in Table W-44, and the more important differences are explained in the notes thereto. For the categories covered by both approaches the estimates of the combined balance sheet are one-fifth above those derived from *Survey* figures. Most of the difference is concentrated in liquid assets and corporate stock. The entire difference, of course, cannot be regarded as an understatement on the part of the blown-up *Survey* data as some of the figures may be, and probably are, overstated in the combined balance sheet.

The figures are thus sufficiently similar for us to regard the breakdowns provided by the *Survey* figures for groups of households of different wealth, income, occupation, or age as compatible with or supplementary to the totals of the combined balance sheet of all households. In using the two sets of figures together adjustments must, however, be made for the differences in coverage and in results, if not quantitatively then at least by way of rough allowances in interpretation.

2. *Estimating procedures for individual balance sheet items* [20]

The data presented are derived from the same basic materials as those shown in the article on "The Distribution of Assets, Liabilities and Net Worth of Consumers, Early 1950" published in the *Federal Reserve Bulletin* of December 1950. In the blow-up described here, two additional assets, life insurance reserves and reserves of contributory pension funds, have been included as balance sheet items entering into total assets and net worth. Furthermore, because dollar figures, rounded in most cases to the nearest hundred dollars, rather than brackets have been used in the computations, it has been possible to prepare estimates for aggregates of total and individual assets, and for distributions of these aggregates among various classifications of spending units.

The values of the various balance sheet items were obtained in three different ways. In one group are items which were reported in the sample returns in specific dollar amounts; in a second, items whose values were reported in rather broad brackets; and in a third, items whose values were not reported on the original returns but had to be estimated on the basis of related information reported by respondents. The estimation of the balance sheet of any spending unit could thus involve problems of three types. The most general problem was the treatment of cases in which the basic reports necessary for estimation of the value of one or more of the balance sheet items were not obtained. The second problem involved the assignment of dollar values to items whose values had been reported only in brackets. The third problem was the derivation of asset values from related data.

[19] See particularly Volume II, Chapter III.

[20] This section may be omitted by readers not interested in the technique of the estimates.

a. *Items reported in dollar amounts.* The following were reported in this way:

(1) Owner-occupied nonfarm homes. Respondents owning their own homes were requested to estimate their values. In those cases in which this estimate was not obtained, an amount equal to the average value of owner-occupied homes within each income group of home-owners was assigned. Homes purchased during 1949 were valued at their purchase prices.

To check the accuracy of respondents' valuations, arrangements were made with three organizations of real estate appraisers to make independent estimates at a subsample of addresses covered by the survey. The average valuations of the owners and of the independent appraisers were very close to each other although the variation on individual houses was often fairly large. In about one-third of the cases (unweighted), the valuation by the survey respondent was within 10 percent of the valuation made by the professional appraiser, and an additional one-third were within 11 to 30 percent. There apparently was a tendency for owners of higher-priced homes to value them somewhat higher than the appraiser and for the owners of lower-valued homes to value them at somewhat less than the professional appraisal.

(2) Owner-occupied farms and farm machinery.

(3) Livestock and crops. The methods used in processing these two classes of assets were quite similar to those used for nonfarm homes. All farm-operating spending units (in general, units headed by persons deriving one-half or more of their incomes from farm operations) were asked the value of livestock and crops on hand at the time of the interview. Farm operators who owned their farms were asked to estimate the values of farms purchased prior to 1949. Farms purchased in 1949 were valued at their purchase prices. It should be noted that in estimating values of farms purchased prior to 1949, respondents were directed to include buildings, land, machinery, and equipment; but, in obtaining the price of farms purchased in 1949, only land and buildings were specifically included. The omission of machinery and equipment from the value of farms purchased in 1949 should have only a slight effect on the estimate of the aggregate value of farms and equipment because of the low frequency of farm purchases in 1949 relative to farm ownership. A more serious omission was the failure to obtain the value of any equipment owned by farm operators renting their farms. (About 3.3 percent of the sample, or slightly more than one-third of all farm-operating units, rented their farms.)

The distinction between farm-operating and other spending units may have affected the estimates of specific assets in two ways. In the first place, the owner-occupied real estate of spending units living on farms but deriving less than half of their incomes from farm operations would be entered under nonfarm homes. It is an open question whether spending units living on farms but not classed as farm operators reported the value of farm land, tools, and equipment as part of the value of their homes. The second effect of the distinction between farm and nonfarm spending units was the failure to obtain the value of any livestock and crops owned by farm owners not classed as farm operators. This resulted from the use of

the nonfarm questionnaire when interviewing members of this group. Both of these effects were probably slight in magnitude since the real estate involved was probably low in value and the farm operations too small to involve either large amounts of equipment or large inventories of livestock and crops.

For those spending units reporting the ownership of a farm and/or livestock and crops but not their values, assignments based on the average of values reported by owners of the asset within each income group of farm operators were made.

(4) Liquid assets. The liquid assets of each spending unit were composed of its checking accounts, various forms of savings accounts (accounts in banks, postal savings, and shares in savings and loan associations and credit unions), U.S. Government bonds in series A to F, and other U.S. Government bonds. Dollar amounts of each of these components were obtained from each respondent unit. For A to F bonds, the report was obtained in terms of the face value of the bonds.

Because the amount (face value) of bonds purchased during 1949 had been ascertained in the questionnaire, it was possible to enter such purchases at 0.75 times their face value. No information was available as to the age of the other A to F bonds owned by spending units so that it was assumed that the average ages of bonds held by various spending units were equal. Therefore, the face value of all bonds purchased prior to 1949 was multiplied by 0.81, the ratio of redemption to face value of bonds purchased prior to 1949 based on Treasury estimates.

After processing the savings bond information, the various components listed above were summed to obtain the total liquid assets of the spending units. For spending units in which the values of one or more of the components of liquid assets were not ascertained, values based on spending unit composition, housing status, income, occupation, and place of residence were assigned. The assignments were made for each component and then summed. Experience with several surveys has indicated that assigned values of total liquid assets tend to be higher when assignments are first made of individual components than when total liquid assets are assigned directly.

The variables taken into account in the liquid asset assignments were greater in number than those used in dealing with other assets. This more involved technique was part of the yearly survey program and was applied to information obtained in greater detail than was the case for most of the other items involved in the computation of consumers' balance sheets.

(5) Debt. Debt items were reported in dollar amounts in the interview under the following classifications: mortgage debt on owner-occupied farms and nonfarm homes; mortgage debt on other real estate; net increase in debt during 1949 as a result of automobile, durable goods, and home repair transactions; net increase in debt through purchase in 1949 of farm equipment; other debts outstanding on consumers' purchases of goods and services of other sorts and on purchases prior to 1949 (other than charge accounts); and any other debts of the spending units to persons, businesses, or financial institutions. These items had already been summed and their total rounded to the nearest hundred dollars in the editing and coding of the schedules.

For respondents not reporting the amount of their debts, assignments were based on the average debt of debtor units within income groups. Separate assignments were made for the farm and nonfarm groups. There is no doubt that the farm debts include many obligations arising from farm operations rather than from consumption or home-ownership. In contrast, the value of the spending unit's business interest was obtained only as a net figure. Certain business debts undoubtedly do appear in total nonfarm debt, but their relative importance is probably much less than in the case of total debt of the farm population. [21]

b. *Items reported in dollar brackets.* The following were reported in this way:

(1) Real estate other than owner-occupied farm or nonfarm homes.

(2) Business interests in proprietorships, partnerships, and privately held corporations.

(3) Stock in publicly held corporations.

The procedures used in assigning dollar values to the above three classes of assets were basically the same so that their initial stages may be discussed simultaneously. The brackets in which these items were reported are found in the table on page 112. For assets reported in brackets of less than $25,000, dollar values—shown in column 2 of this table—were assigned without reference to any data other than the bracket value. The assigned values are means (to the nearest $100) of segments of a cumulative distribution which is assumed to be a linear function of the logarithm of the asset value. The mean of such a segment is $(a-b)/(Lna-Lnb)$, where a and b are the upper and lower limits of the segment. A logarithmic function was chosen rather than a simple linear distribution because it was believed that the frequency distribution would have been skewed if exact values rather than brackets had been reported. In addition, the probable rounding in reporting would tend to throw values about the bracket limits into the upper rather than the lower bracket. Since the assets involved would very seldom be worth as little as $1, $200 was taken as the lower limit of the reporting bracket "under $500," and $300 was used for the bracket "under $1,000."

For assets bracketed at $25,000 or more, specific values were assigned through examination of the original answers by the respondents. A few respondents volunteered specific dollar figures which were entered along with the correct bracket by the interviewer. The more common method of assigning specific values was to capitalize the income reported as being derived from the asset. The schedules, especially those questions relating to the comparative income rates and the financial positions of the spending unit at the time of the interview and a year previously, were checked to determine if the 1949 income was to any extent atypical.

The assignment of values by the procedures described above yielded value-to-earning ratios similar to those cases in which the respondent had provided a more exact estimate of his stock or real estate holdings. The method implicitly assumes that the asset under consideration had been held for the entire year. In

[21] In the 1952 *Survey*, respondents were asked to distinguish between business and nonbusiness debt. Approximately 12 percent of farm operators and 3 percent of self-employed businessmen reported that all their nonmortgage debts were for business purposes.

REPORTING BRACKETS AND ASSIGNED DOLLAR VALUES FOR STOCK, BUSINESS INTEREST, AND REAL ESTATE OTHER THAN OWNER-OCCUPIED HOME OR FARM

Bracket	*Assignment*	*Assets so reported*
Under $500	$300	Stock
Under $1,000	$600	Business interest and other real estate
$500–$999	$700	Stock
$1,000–$4,999	$2,500	Stock, business, other real estate
$5,000–$24,999	$12,400	Stock, business, other real estate
$25,000–$99,999	By examination	Stock, business
$25,000 and over	By examination	Other real estate
$100,000 and over	By examination	Stock, business

several cases, this was evidently not true and some adjustment had to be made on a very tenuous basis because there was no indication as to the time of the acquisition.

Specific details of the procedures used for each class of assets for holdings of over $25,000 were as follows:

(1) Real estate other than owner-occupied farm or nonfarm homes. Rental income other than that from roomers and boarders was capitalized at ten times net earnings. A serious limitation to this procedure arose through the treatment of mortgages and mortgage payments in the questionnaire. Both the bracket value of the property and the dollar amount of the mortgage outstanding were obtained, but only the rental income net of expenses, the instructions to interviewers specifically mentioning mortgage payments as admissible expenses. In assigning dollar values by capitalization of income, however, attempts were made to adjust for the portion of the mortgage payment which represented amortization of the principal. In several cases the capitalized value fell below the lower boundary of the reported bracket value of $25,000, even though the effects of mortgage payments on net rental income were taken into account. In such cases assets were assigned a value of $25,000. Summer cottages—when noted—were entered at $3,000 to $5,000.

(2) Unincorporated businesses and privately held corporations. In valuing these assets, a capitalization ratio of twelve times earnings was used. The most difficult question arising involved separating income from capital and that from personal services. The questionnaire did not attempt to distinguish between drawings from unincorporated businesses which could be considered income from management and earnings representing return on capital. Even among privately held corporations, examination of the schedules led to the impression that the distinction between salaries and dividends had little relation to returns on capital and for personal services. In arriving at the income figure which could be capitalized to obtain the value of the business interest, a rough adjustment was made to take account of the relative importance of the owner's personal services to the business. Thus, incomes from sales organizations were assumed to have lower capital components than incomes from manufacturing plants.

(3) Stock in publicly held corporations. A ratio of sixteen times earnings was used in capitalizing dividend income. In a few cases, a lower capitalization ratio was used because the respondents mentioned a high element of risk in their in-

vestments. If capitalization of dividend incomes resulted in values less than the lower limit of the bracket, as rarely happened, the lower bracket limit was assigned.

The reporting of dividends, interest, and royalty incomes as a combined figure made for difficulty in ascertaining the income which should be capitalized to arrive at the value of the stock. For spending units holding government bonds, total interest, royalty, and dividend income was reduced by 2½ percent of the reported value of these bonds to obtain the income figure serving as a basis of estimate for the value of stock holdings.

The final task in valuing real estate, stock, and business interests was to assign values to those cases for which even the bracket value was not ascertained. This was done by inspection of the schedules. For most of these cases, it was deemed sufficient to throw them into the correct brackets and then to follow the procedures outlined above. For a very few, the income from the asset was large enough to warrant use of the procedure employed for assets reported at bracket values of $25,000 or more.

c. *Assets without direct information on value.* For automobiles purchased before 1949, life insurance reserves, and pension fund reserves, the survey interview did not obtain any estimate of the value of the asset. While the survey's experience with respondents' estimates of house values suggested that they could have given fairly good estimates of the values of their cars, the same optimism could not be voiced for estimates of reserve values of life insurance policies and of pension funds. As a result, any estimate of the value of the last two assets depended necessarily on collateral information of types more familiar to respondents. In valuing automobiles, direct estimates by respondents would possibly have minimized both the error and the amount of time involved in processing. However, such estimates had not been included in the 1950 *Survey* questionnaire, so that substitute estimates had to be derived from related data.

(1) Automobiles. Automobiles purchased in 1949 or prior to the interview in early 1950 were valued at the reported purchase price. Obviously, this procedure neglects depreciation between the purchase and the interview.

For cars purchased prior to 1949, values based on make and model year were assigned. These values were obtained through use of National Automobile Dealers' Association average retail prices for the eastern region and were computed for four-door sedans of the next to lowest price line. The use of average retail prices somewhat overstates the value which could be realized by the present owner of the car.

The use of values derived for the eastern area eliminates geographical differences. Such differences would probably be apparent in estimates given by respondents. Although the use of price data relating to several regions in combination with the sample points of the survey would have given some weight to locational differentials, the gain in accuracy was not considered great enough to justify the complicated procedures involved.

In some cases, the sole information about a spending unit's car was the fact of ownership. These cars were assigned the average value of cars owned within each farm and nonfarm income group.

(2) Reserve value of life insurance. The basic information upon which estimates of the reserve value of life insurance were based was obtained through the following questions:

Do you (respondent and spending unit) carry any life insurance? (Yes) (No)

What type of policy is it (are they)?

(If cannot say) Is it the kind of policy you can borrow on?

How much did you put into life insurance payments (premiums) altogether (entire spending unit) during 1949?

Would you tell me approximately how much the policy (policies) provide in case of death?

That the limited time devoted to insurance in the survey interview imposed limitations on estimates of life insurance reserves is evident. Some of the more important deficiencies follow:

(a) Failure to couple policies with individuals and to obtain the ages of individual beneficiaries.

(b) Failure to obtain the duration for which the policy had been held.

(c) Spotty reporting of the various types of policies held. This possibly would have been remedied by more detailed probing although the level of knowledge as to terms of the various policies appeared rather low.

(d) Failure to distinguish between the face value and premiums paid on reserve- and on nonreserve-type policies, when the spending unit held both types.

The first step in the actual calculation was the segregation of all nonholders of insurance (about 23 percent of all spending units) and those reporting holding only nonreserve-type policies (1½ percent of all spending units).

Two methods for assigning reserve values were then investigated. The first was to apply reserve-to-premium ratios, varying with the age of the head of the spending unit, to total premiums reported by each age group. Such ratios, based on actuarial calculations taking account of the relative proportions of endowment, limited payment life, and straight life policies, were furnished by a large insurance company (see the table below).

RATIOS USED IN COMPUTATION OF RESERVE VALUE OF LIFE INSURANCE

Age groups (head of spending unit)	*Reserve value to premium*	*Reserve value to face value*
18–24	1.5	0.05
25–34	2.5	0.09
35–44	5.5	0.16
45–54	9.0	0.31
55–64	14.0	0.46
65 and over	20.0	0.65

The second method consisted of applying reserve-to-face-value ratios to the

total face value of life insurance held within each age group. These ratios also varied with age. One of the few companies keeping the necessary statistics furnished such ratios based on estimates derived from their own accounts. The age groups used by this company did not coincide with the age groups coded by the survey, so that it was necessary to adjust the original data. For the age groups below 65, a ratio was determined by a simple average of the overlapping age groups (i.e. for survey groups aged 25 to 34, the ratio used was obtained by averaging the insurance company's ratios for the 20–29 and 30–39 groups). For the survey group over 65, the ratio used was a weighted average of the company data. The weights used were rough approximations of the relative number of each of the groups (65–69, 69–79, and 79 and over) in the population, as reported by the Bureau of the Census.

The alternative methods were initially applied to estimates of total premium payments and total face value of policies held by the six age groups of respondent spending units distinguished by the *Survey*. In making these preliminary calculations, nonreserve policies were not excluded since, as noted previously, the fraction of insurance which can be eliminated for this reason by the use of survey findings is quite small. When using reserve-to-premium ratios, it was a simple matter to apply the ratios to aggregate premium payments within age groups. In applying the reserve-to-face-value ratio, however, it was necessary to estimate the numbers of holders of various face values of insurance by plotting the cumulative distribution function of amounts of insurance within each age group on a semi-logarithmic scale. This procedure was necessitated by the coding of the face value of insurance in class intervals rather than dollar amounts. The class intervals were of varying size so that it was impossible to apply a simple multiplicative factor to the sums of the codes to obtain aggregate face value. From the cumulative distribution function, aggregates were derived by using linear approximations for the various portions of each curve and multiplying the estimated number of persons represented by any linear segment by the mean of the segment. This mean was of the form $(a\text{-}b)$ $(Lna\text{-}lnb)$ where a and b are the upper and lower bounds, respectively, of an interval. This procedure is the same as that used in assigning values to brackets for stock, businesses, and other real estate.

The aggregate value of insurance reserves obtained by using reserve-to-premium ratios was approximately $40 billion, that obtained by using reserve-to-face value ratios $56 billion. The latter figure was considered as being far too high since the elimination of reserves against accident and health policies, annuities, and supplementary contracts—all forms which presumably were not picked up through the *Survey*'s insurance questions—from aggregate reserves against policies at the end of 1949 results in an estimate, based on *Spectator* data covering all legal reserve companies, of $38 billion for reserves assignable to policies considered here. Even the estimate derived by use of the reserve-to-premium ratios was probably too high, since in both methods it was impossible in many cases to eliminate nonreserve-type policies. While the apparent overstatement resulting from use of reserve-to-face value ratios was greater than that from the use of the reserve-to-

premium ratios, the former method had the advantage of including paid-up policies not covered by the latter, avoiding the danger inherent in the use of reserve-to-premium ratios alone of seriously understating the share of reserves properly attributable to the older age groups. Averaging of estimates derived from both methods obviously suffered from overstatement of the aggregate because of the known bias of the reserve-to-premium ratios, and also from complexity of necessary machine operations. It should be noted that any method was certain to overstate the share of the younger groups if the assumption that they held most of the nonreserve policies is correct.

The method finally chosen was to segregate all policies for which face values but not premiums were reported. As could be expected, these were predominantly policies held by the age groups fifty-five to sixty-four and sixty-five and over. These were handled by applying the reserve-to-face-value ratio for the appropriate age groups. All other cases were estimated by applying the reserve-to-premium ratio for the appropriate age group.

There remained the group of cases for which only the presence of insurance was reported and the group for which the ownership of insurance was not ascertained. The few cases in which both face value and premium were unknown were given reserve values based on averages within strata determined by age and income. The group for which ownership was not ascertained—only six cases—was first divided at random in line with the over-all ratio of owners to nonowners and then those assumed as being owners were handled on the same basis as the previous group of unknown premium and face value.

The value of aggregate life insurance reserves resulting from the above procedures was $44 billion. The final *Survey* estimate of reserves held against life insurance policies is thus approximately 16 percent greater than the outside estimate of reserves held against policies containing an investment element. In part, the overstatement results from the inability to exclude all term policies; in part, from the use of the age of the head of the spending unit when assigning reserves to policies on other members of the unit. Rough estimates based on aggregate premium payments made by each age group and on the aggregate face value of policies within age groups indicate that an assumption that the average age of all the insured persons in the spending unit was two to three years less than the age of the head would result in a 25 percent decrease in estimates of reserves, and would suffice to reduce the total to the level of outside control figures. The percentage distribution of reserves among age groups, however, would not be significantly affected by such an assumption.

(3) Reserve value of pension and retirement funds. The only survey information directly related to pension and retirement funds was obtained in answer to the following question:

Did any of your income in 1949 go into a retirement or pension fund—not counting social security? (Yes) (No) (If yes) How much went into it?

Such desirable information as the length of time for which the respondent had been contributing, the magnitude, if any, of his employer's contribution, and

participation in plans wholly financed by the employer was not obtained. Furthermore, the coding of the contributions had been carried out only in brackets.

Outside information, such as the ratios used in the life insurance estimates, seems to be nonexistent for pension and retirement funds, except for estimates of aggregate reserves of the various types of these funds. The only method which appeared feasible was to derive a reserve-to-payment ratio from the estimate of the total aggregate reserves attributable to contributory funds and a *Survey* estimate of total contributions.

The *Survey* distribution of spending units according to the amounts (in brackets) of their pension and retirement fund contribution served as a basis for estimating total payments. The expansion was carried out by multiplying the assumed mean of each contribution bracket by the estimated number of spending units falling within each bracket. The assumed bracket means were derived in the same manner as those used in valuing stock, business, other real estate, and face values of life insurance. The expansion was completed by adjusting for those cases in which the amount of payment was not ascertained. The final estimate of contributions amounted to $1.1 billion.

The next step was the calculation of the total assets of contributory pension funds by combining total assets of government pension funds (other than social security funds), assets of private independent contributory pension funds, and reserves behind insured contributory pension plans.

Government pension funds presented very little trouble, for it may be assumed that all plans required employee contributions, so that the total assets as shown in published sources could be included in the estimates. Assets of federal civil service and railroad retirement funds, amounting to $5.9 billion at the end of 1949, were taken from the *Treasury Bulletin*, July 1950. Assets of state and local government retirement funds and of private independent pension funds at the end of 1949 were taken from Tables G-19 and I-16, respectively, of this study. [22] Reserves behind insured pension plans were reported at $4.5 billion at the end of 1949 in Institute of Life Insurance, *Tally*, August 1950. The total assets of all pension funds were therefore estimated at $21.5 billion at the end of 1949.

Part of the assets of private insured and private independent pension funds

[22] Assets of state and local government employees retirement funds, as estimated in Table G-19, amounted to $4.2 billion at the end of 1949. This figure was derived by adding employer and employee contributions and fund income less benefits as taken from *Survey of Current Business*, July 1947 and July 1950, to figures for 1941 published in U.S. Bureau of the Census, *Retirement Systems for State and Local Government Employees: 1941*, State and Local Government Special Study No. 17, Table 15.

Total assets of private independent pension funds were estimated in Table I-16 by the same methods as were used for state and local government employees retirement fund assets. A 1940 total was obtained from an unpublished Federal Reserve Board estimate. The annual fund increases were based on estimated incomes, assuming a given rate of return; employer contributions from National Income Division data underlying *Survey of Current Business* tables, adjusted for contributions for group life insurance; employee contributions taken as a percentage of employer contributions; and roughly estimated benefit payments. The estimated total assets of these plans amounted to $6.9 billion at the end of 1949.

belong to noncontributory funds and hence were excluded from the calculations. On the basis of very limited information on the types of private pension funds, it was assumed that one-half of these assets belong to contributory funds. Hence, the total assets behind public and private contributory funds were estimated at about $15.8 billion at the end of 1949. The components of this total consist of $5.9 billion for federal civil service and railroad retirement funds, $4.2 billion for state and local government funds, $3.5 billion for contributory private independent funds, and $2.2 billion for contributory private insured funds.

Comparison of the estimated $15.8 billion of assets of contributory funds and the estimated $1.1 billion of payments by consumers in 1949 to these funds indicated that contributions may have been considerably underreported. The 1949 contributions of employees to public funds alone amounted to $950 million as shown in the *Survey of Current Business*. Therefore, for the public funds, a ratio of approximately ten to one between assets and employee contributions was indicated. If this ratio held for the private contributory funds, the total employees' contributions for all funds would have amounted to $1.4 billion or 25 percent more than the *Survey* estimate. However, this discrepancy may just as easily be explained as resulting from an overestimate of the assets of private contributory pension funds or as an understatement of the ratio of assets to employees' contributions in private funds.

The final decision was to apply a ratio of nine to one to the reported payments of spending units. As a result, the total individuals' equity in retirement funds allocated to the spending units amounts to only $10 billion, although, as calculated above, total assets of all pension funds amount to $21 billion and those of contributory funds to $15.8 billion. The unallocated $11 billion belongs to individuals who participate in noncontributory plans, retired individuals no longer contributing, and individuals who failed to report all or part of their contributions to pension plans.

Some consideration was given to varying the ratio according to the age of the head of the spending unit in order to adjust for variations in the period for which contributions had been made. However, because of the rapid expansion of pension and retirement funds it was felt that the age of the head was probably not closely correlated with the period for which contributions had been made. In addition, the facts that wages increased considerably in the decade before 1949 and that wages and salary income increase with age up to about fifty years indicate that reserve values based on the most recent payments would be higher than is proper.[23]

Since the spending unit's contributions had been coded only in brackets, only the following few values of pension fund reserves could be used:

1949 contributions	*Assumed reserve value*
$ 1–$ 49	$ 100
50– 99	600
100– 199	1,300
200– 499	2,900
500– 999	6,500
1,000 or over	12,000

[23] Anyone wishing to make adjustments for the age of the head can do so fairly easily on the basis of the distribution of total pension fund reserves by the age of the head of the spending unit as shown in Table W-52.

Reserve values were assigned on the basis of income when only the fact, not the amount of premium payments, had been reported.

3. *Limitations of the estimates*

Attention has already been called to certain limitations inherent in the estimating procedures for specific items. Some additional observations are in order relating to the reliability of the estimates and to the consistency of the various methods used. Again it must be emphasized that the estimates described here represent but initial steps in the derivation of balance sheets for groups of spending units, and that possibly their greatest value lies in pointing out difficulties which must be resolved if we are to obtain data which are consistent and of uniform reliability. In part, inconsistencies and variations in reliability were the result of the use of a questionnaire which was designed with other objectives having priorities higher than balance sheet information. In part, they may have resulted from choices made in processing the basic information. Finally, and unavoidably, they resulted from the inherent limitations of a survey involving persons who do not customarily think in terms of reserve values, present market value, and other terms which the economist finds useful in his analysis. It will be interesting to see whether the results of the second attempt in the same direction, the blow-up of balance sheet information obtained by the *Survey* early in 1953, will yield figures in closer agreement with independent control totals, particularly for liquid assets and for stock. [24]

The most tenuous assumptions were those used in estimating the reserve values of pension funds. At the same time, the aggregate value of these reserves is a comparatively minor item—$10 to 16 billion in contrast with total reported assets of individuals of over $600 billion. A more serious bias is the chronic underreporting of liquid assets. Thus, the *Survey*'s estimate of aggregate liquid assets held by all spending units was about $92 billion in early 1950 in comparison with external estimates of $128 billion of liquid assets of the types covered by the *Survey*. The external estimates may also be in error, but it is obvious that the *Survey* aggregate is substantially on the low side. [25] The aggregate value of nonfarm homes is probably free of biases of the sort affecting the liquid asset aggregate. Confidence in the aggregate is also increased by the results of the checks made by the three groups of appraisers. The aggregate value of stocks in publicly held corporations is almost certainly too low. Some of these stocks may have been reported under privately held corporations which accounted for about 25 percent of the value of business interests. Reporting on an original cost basis could also account for divergence of the blown-up *Survey* figure from outside over-all estimates. The percentage of spending units reporting owning stocks in early 1950 was less than in early 1948. This is, of course, at variance with the impression gained from out-

[24] Up to this time (Dec. 1954) these figures have not been published.

[25] See "The Distribution of Assets, Liabilities and Net Worth of Consumers, Early 1950," *Federal Reserve Bulletin*, Dec. 1950, pp. 1,592ff.

side sources. The sequence of questions relating to stock was somewhat more elaborate in 1948 than in 1950 and this suggests that the estimated aggregate value of stocks may be low primarily because a number of respondents did not report their stock holdings in 1950 rather than because of undervaluation of admitted holdings or because of a failure to obtain a sufficiently large sample of very high income units.

This is by no means a complete summary of possible checks on the reliability of the estimated aggregates. It should be noted, however, that for pension funds —and to a lesser extent for life insurance reserves—the procedures of arriving at the estimates already have made use of aggregates from external sources. While this procedure seems unavoidable, it does raise the problem of the consistency of estimates based on respondents' valuations, on outside data relating to individual units (i.e. automobiles), on outside data relating to aggregates (pension funds), on valuations made by examination of the schedules (stock, business, and other real estate), or on a combination of several methods.

Another question of consistency is raised by the various methods used to assign values when only the presence, not the value, of the item was known. Thus, many more variables were considered in assigning values to cases in which the amount of liquid assets was unknown. As noted previously, this more complex procedure was the legacy of the continuing *Survey* program. A more extensive list of determining variables would probably have been superior in assigning values to other items. Home ownership and age would be useful in assigning unknown debt values. The comparatively small number of cases owning certain assets, e.g. stock, argued against attempts to use very fine classifications in making assignments, for the variability within cells would probably produce larger errors than the use of larger cells. In addition, for items reported in brackets, use of several determining variables would hardly be consistent with the rough approximation used in assigning values within known brackets. Although in all cases of unknown stock, business, and other real estate values the complete schedules were examined, the dominant element in assigning values was income. For other assets, income was explicitly used in making assignments.

The necessity of assigning values varied considerably among the various items. Table W-45 shows the relative weights of cases of unknown values for each item used in the estimating procedures. From this table it is evident that assignments to unknown values were much more important for business interests than for other items. The relative weights of cases for which the fact of ownership or debt was unknown are seen to be very small. The failure to make assignments for such cases except in the life insurance field should not have a serious effect on the final estimates.

Allied to questions of methods used in assigning values to unknown cases are those of biases within the distributions of the aggregates. Such questions need a more thorough examination than is possible here. However, certain suggestions along these lines have already been made for life insurance and pension funds.

OWNERSHIP AND ACTIVITY STATUS OF SPENDING UNITS WITH RESPECT TO BASIC INFORMATION FOR COMPUTATION OF BALANCE SHEETS

Percentage distribution of spending units

	All cases	Owns or participates		Does not own or participate	Ownership or participation not ascertained
		Magnitude ascertained	Magnitude not ascertained		
	1	2	3	4	5
Total debt	100	50.3	1.1	48.3	0.3
Liquid assets	100	66.5	2.7	30.6	0.2
Nonfarm home	100	36.7	2.6	38.3	[1])
(Farm operators and related secondaries				22.4)	
Owner-occupied farm	100	5.8	0.3	3.4	[1])
(Nonfarm spending units				90.5)	
Livestock and crops	100	8.6	0.3	0.5	0.1
(Nonfarm spending units				90.5)	
Real estate other than owner- occupied farm or nonfarm home	100	15.7	0.2	84.0	0.1
Unincorporated business or privately held corporation	100	8.4	1.1	90.5	[1])
Stock in publicly held corporation	100	6.7	0.1	92.7	0.5
Automobile	100	54.5	0.7	44.5	0.3
Retirement fund payments	100	11.5	0.7	87.6	0.2
Life insurance					
Premiums paid—1949	100	74.7	2.2	23.0	0.1
Face value—early 1950	100	72.7	4.2	23.0	0.1
(Premiums and face value unknown)			0.5		

[1] Less than 0.05 percent.

BALANCE SHEET STRUCTURE OF HOUSEHOLDS OF DIFFERENT INCOME

Early 1950

$ bill.

Money income (1949) before taxes	Liquid assets	Car	House	Farm	Livestock and crops	Life insurance	Other real estate	Stock	Business	Retirement fund	Total assets	Debt	Net worth
	1	2	3	4	5	6	7	8	9	10	11	12	13
Under $1,000	5.5	1.2	10.5	12.1	2.7	2.0	3.5	0.4	1.2	[1]	39.0	4.7	34.3
$1,000 to $1,999	8.0	2.4	16.0	7.5	2.4	2.8	6.1	0.5	1.4	[1]	47.0	4.2	42.8
$2,000 to $2,999	13.7	4.3	25.2	7.9	2.2	5.8	7.9	1.4	2.9	0.6	72.0	10.8	61.2
$3,000 to $3,999	12.6	5.9	31.9	5.9	1.7	6.7	10.1	3.4	3.4	2.5	84.0	13.4	70.6
$4,000 to $4,999	9.9	4.6	27.1	2.0	1.3	5.9	5.9	2.0	4.6	2.6	66.0	9.9	56.1
$5,000 to $7,499	16.0	6.4	33.2	10.7	2.1	8.6	13.9	2.1	11.8	2.1	107.0	12.8	94.2
$7,500 and over	22.6	5.6	28.2	11.3	1.9	11.3	20.7	32.0	52.6	1.9	188.0	9.4	178.6
All spending units [2]	91.4	30.2	174.7	57.2	15.5	43.0	70.3	42.3	78.5	10.4	613.0	64.3	548.7

[1] Less than $0.05 billion.

[2] Includes items for spending units whose income was not ascertained.

BALANCE SHEET STRUCTURE OF HOUSEHOLDS BY OCCUPATION OF HEAD

Early 1950

$ bill.

Occupation	Liquid assets	Car	House	Farm	Livestock and crops	Life insurance	Other real estate	Stock	Business	Retirement fund	Total assets	Debt	Net worth
	1	2	3	4	5	6	7	8	9	10	11	12	13
Professional and semiprofessional	11.0	3.0	17.7	[1]	[1]	5.5	8.5	7.9	4.3	3.0	61.0	6.1	54.9
Managerial	6.0	2.0	14.8	[1]	[1]	3.6	4.8	2.4	5.2	1.2	40.0	4.8	35.2
Self-employed	15.5	4.6	27.9	[1]	[1]	9.3	17.0	14.0	66.6	[1]	155.0	9.3	145.7
Clerical and sales	9.8	3.9	21.1	[1]	[1]	4.9	4.9	2.0	1.0	2.0	49.0	8.8	40.2
Skilled and semiskilled	13.0	7.8	47.0	[1]	[1]	7.8	7.0	0.9	0.9	2.6	87.0	15.7	71.3
Unskilled and service	3.9	1.6	11.0	[1]	[1]	2.5	2.8	0.5	[1]	0.7	23.0	3.2	19.8
Farm operator	9.7	3.9	[1]	57.2	15.5	2.9	6.8	1.0	[1]	[1]	97.0	11.6	85.4
Retired	13.8	1.1	15.4	[1]	[1]	3.3	11.6	9.9	[1]	[1]	55.0	1.1	53.9
All other	8.7	2.3	19.8	[1]	[1]	3.2	6.9	3.7	0.5	0.9	46.0	3.7	42.3
All groups	91.4	30.2	174.7	57.2	15.5	43.0	70.3	42.3	78.5	10.4	613.0	64.3	548.7

[1] Less than $0.05 billion.

BALANCE SHEET STRUCTURE OF HOUSEHOLDS BY AGE OF HEAD

Early 1950

$ bill.

Age	Liquid assets	Car	House	Farm	Livestock and crops	Life insurance	Other real estate	Stock	Business	Retirement fund	Total assets	Debt	Net worth
	1	2	3	4	5	6	7	8	9	10	11	12	13
18 to 24	1.6	1.9	2.3	0.5	0.7	0.3	0.9	0.1	0.4	0.2	9.0	1.8	7.2
25 to 34	9.7	7.6	23.5	4.8	2.1	3.1	6.2	0.7	9.0	2.1	69.0	18.6	50.4
35 to 44	16.9	7.8	41.6	13.0	3.9	8.2	13.0	6.5	16.9	2.6	130.0	19.5	110.5
45 to 54	23.2	6.2	43.4	14.0	4.6	13.2	14.0	10.8	21.7	3.1	155.0	14.0	141.0
55 to 64	17.4	4.4	36.2	13.0	2.9	11.0	21.8	10.2	26.1	1.4	145.0	5.8	139.2
65 and over	18.8	2.0	27.7	10.9	1.0	7.5	14.8	12.9	3.0	[1]	99.0	4.0	95.0
All ages	91.4	30.2	174.7	57.2	15.5	43.0	70.3	42.3	78.5	10.4	613.0 [2]	64.3	548.7

[1] Less than $0.05 billion.
[2] Includes items for spending units whose age was not ascertained.

BALANCE SHEET STRUCTURE OF HOUSEHOLDS OF DIFFERENT NET WORTH
Early 1950

$ bill.

Net worth	Liquid assets	Car	House	Farm	Livestock and crops	Life insurance	Other real estate	Stock	Business	Retirement fund	Total assets	Debt	Net worth
	1	2	3	4	5	6	7	8	9	10	11	12	13
Negative	0.1	0.4	0.5	[1]	0.2	0.4	0.2	[1]	[1]	0.1	2.0	9.8	-7.8
— $50 to + $50	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
$100 to $400	0.3	0.4	0.3	[1]	0.1	0.8	[1]	[1]	[1]	[1]	2.0	0.8	1.2
$500 to $900	0.6	1.2	0.6	[1]	0.2	1.1	[1]	[1]	[1]	0.2	4.0	1.3	2.7
$1,000 to $1,900	2.2	2.5	3.0	0.2	0.2	2.0	0.2	[1]	0.1	0.6	11.0	3.5	7.5
$2,000 to $4,900	6.5	4.6	14.8	1.9	0.8	4.6	1.9	0.4	0.8	1.9	38.0	9.1	28.9
$5,000 to $9,900	12.6	5.5	41.1	3.2	2.4	6.3	3.2	0.8	1.6	2.4	79.0	14.2	64.8
$10,000 to $24,900	24.3	8.1	66.4	11.3	3.2	11.3	17.8	3.2	13.0	3.2	162.0	14.6	147.4
$25,000 to $59,900	21.6	5.4	29.7	20.2	4.0	6.8	24.3	5.4	16.2	1.4	135.0	8.1	126.9
$60,000 and over	19.8	1.8	18.0	19.8	3.6	10.8	25.2	32.4	48.6	[1]	180.0	5.4	174.6
All spending units	88.0	29.9	174.4	56.6	14.7	44.1	72.8	42.2	80.9	9.8	613.0	66.8	546.2

[1] Less than $0.05 billion.

DISTRIBUTION BY OWNERS' INCOME OF SELECTED BALANCE SHEET ITEMS

Early 1950

Percent

Money income (1949) before taxes	Liquid assets	Car	House	Farm	Livestock and crops	Life insurance	Other real estate	Stock	Business [1]	Retirement fund	Total assets	Debt	Net worth	1949 income
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Under $1,000	6	3	6	22	19	4	5	1	1	[2]	6	7	6	2
$1,000 to $1,999	9	9	9	13	15	6	9	1	2	2	8	6	8	9
$2,000 to $2,999	15	15	14	14	14	13	12	4	4	9	12	16	11	16
$3,000 to $3,999	15	18	19	10	12	16	14	7	5	26	14	20	13	19
$4,000 to $4,999	11	15	16	3	8	14	8	5	6	24	11	15	11	15
$5,000 to $7,499	18	22	19	18	13	21	19	6	15	23	17	20	17	19
$7,500 and over	26	16	16	19	18	25	30	75	65	16	31	14	33	20
Not ascertained	[2]	2	1	1	1	1	3	1	2	[2]	1	2	1	[2]
All cases														
In percent	100	100	100	100	100	100	100	100	100	100	100	100	100	100
In $ billion	91	30	175	57	16	43	70	42	79	10	613	64	549	170

[1] Includes closely held corporations.
[2] No cases reported or less than 0.5 percent.

DISTRIBUTION BY OCCUPATIONAL GROUPS OF SELECTED BALANCE SHEET ITEMS

Early 1950

Percent

Occupation	Liquid assets	Car	House	Farm	Livestock and crops	Life insurance	Other real estate	Stock	Business [1]	Retirement fund	Total assets	Debt	Net worth	1949 income
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Professional and semi-professional	12	11	10	[2])	[2])	13	12	18	5	27	10	9	10	11
Managerial	7	6	8	[2])	[2])	8	7	5	7	11	7	8	6	21
Self-employed	17	15	16	[2])	[2])	21	24	35	85	2	25	15	27	
Clerical and sales	11	14	12	[2])	[2])	12	7	4	1	21	8	14	7	13
Skilled and semiskilled	15	26	27	[2])	[2])	19	10	2	1	23	14	24	13	28
Unskilled and service	4	5	6	[2])	[2])	5	4	1	[2])	6	4	5	4	10
Farm operator	10	13	[2])	100	100	6	10	2	[2])	[2])	16	17	15	7
Retired	15	3	9	[2])	[2])	8	16	24	[2])	1	9	2	10	10
All other	9	7	12	[2])	[2])	8	10	9	1	9	7	6	8	
All cases	100	100	100	100	100	100	100	100	100	100	100	100	100	100

[1] Includes closely held corporations.
[2] No cases reported or less than 0.5 percent.

DISTRIBUTION BY AGE GROUPS OF SELECTED BALANCE SHEET ITEMS
Early 1950

Percent

Age	Liquid assets	Car	House	Farm	Livestock and crops	Life insurance	Other real estate	Stock	Business [1]	Retirement fund	Total assets	Debt	Net worth	1949 income
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
18 to 24	2	7	1	1	5	1	1	[2]	1	2	2	3	1	7
25 to 34	11	25	14	9	14	7	8	2	12	22	11	29	9	23
35 to 44	19	26	24	22	29	19	18	16	21	27	21	29	20	26
45 to 54	27	22	24	25	27	30	20	26	28	29	25	22	26	22
55 to 64	19	13	20	23	18	25	31	26	34	15	24	10	25	15
65 and over	21	6	16	20	7	17	21	29	4	3	16	6	18	7
Not ascertained	1	1	1	[2]	[2]	1	1	1	[2]	2	1	1	1	[2]
All cases	100	100	100	100	100	100	100	100	100	100	100	100	100	100

[1] Includes closely held corporations.
[2] No cases reported or less than 0.5 percent.

DISTRIBUTION BY OWNERS' NET WORTH OF SELECTED BALANCE SHEET ITEMS
Early 1950

Percent

Net worth	Liquid assets	Car	House	Farm	Livestock and corps	Life insurance	Other real estate	Stock	Business [1]	Retirement fund	Total assets	Debt	Net worth
	1	2	3	4	5	6	7	8	9	10	11	12	13
Negative	[2]	1	[2]	[2]	1	1	[2]	[2]	[2]	1	[2]	13	-1
Zero	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	[2]	0
$ 100 to $ 400	[2]	1	[2]	[2]	[2]	2	[2]	[2]	[2]	[2]	[2]	1	[2]
$ 500 to $ 900	1	4	[2]	[2]	1	3	[2]	[2]	[2]	2	1	2	1
$ 1,000 to $ 1,900	3	8	2	[2]	2	4	[2]	[2]	[2]	5	2	5	1
$ 2,000 to $ 4,900	7	16	8	4	5	10	2	1	1	20	6	14	5
$ 5,000 to $ 9,900	14	19	24	6	17	15	4	2	2	24	13	22	12
$10,000 to $24,900	27	27	38	20	25	25	25	8	17	31	26	22	27
$25,000 to $59,900	25	15	18	35	29	16	34	13	19	14	22	13	23
$60,000 and over	23	9	10	35	20	24	35	76	61	3	30	8	32
All cases	100	100	100	100	100	100	100	100	100	100	100	100	100

[1] Includes closely held corporations.
[2] No cases reported or less than 0.5 percent.

W-54 DISTRIBUTION OF SPENDING UNITS BY INCOME WITHIN ASSET GROUPS
Early 1950

Percent

Money income (1949) before taxes	Total assets							
	Under $400 [1]	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,900	$60,000 and over
	1	2	3	4	5	6	7	8
Under $1,000	32	16	13	11	14	7	6	3
$1,000 to $1,999	40	26	19	16	14	12	6	2
$2,000 to $2,999	18	32	33	26	22	15	12	5
$3,000 to $3,999	7	18	22	25	23	22	12	4
$4,000 to $4,999	2	5	9	12	12	18	12	6
$5,000 to $7,499	1	3	4	7	12	20	21	17
$7,500 and over	[2]	[2]	[2]	1	2	5	24	62
Not ascertained	1	[2]	[2]	2	1	1	4	1
All cases	100	100	100	100	100	100	100	100

[1] Includes zero assets.
[2] Includes negative and zero net worth.

W-55 DISTRIBUTION OF SPENDING UNITS BY SAVING WITHIN ASSET GROUPS
Early 1950

Percent

Saving (1949)	Total assets							
	Under $400 [1]	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,900	$60,000 and over
	1	2	3	4	5	6	7	8
Positive savers								
$2,000 and over	[2]	[2]	[2]	2	2	5	22	50
$1,000 to $1,999	[2]	[2]	3	4	7	16	16	16
$ 500 to $ 999	1	5	8	12	15	23	11	7
$ 200 to $ 499	5	11	14	20	19	16	13	1
$ 100 to $ 199	9	10	11	10	7	5	5	2
$ 1 to $ 99	28	25	15	12	11	8	4	4
Zero savers	21	7	3	3	4	1	1	[2]
Negative savers								
$ 1 to $ 99	16	10	10	7	6	2	1	[2]
$100 to $499	15	19	20	13	15	7	8	4
$500 and over	5	13	16	17	14	17	19	16
All cases	100	100	100	100	100	100	100	100

[1] Includes zero assets.
[2] No cases reported or less than 0.5 percent.

DISTRIBUTION OF SPENDING UNITS BY INCOME WITHIN NET WORTH GROUPS W-56

Early 1950

Percent

Money income (1949) before taxes	Net worth									
	Negative	Zero	$100 to $400	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,900	$60,000 and over
	1	2	3	4	5	6	7	8	9	10
Under $1,000	21	45	21	16	10	12	13	7	6	4
$1,000 to $1,999	34	36	42	20	19	13	14	13	7	2
$2,000 to $2,999	23	12	24	33	32	25	18	16	13	5
$3,000 to $3,999	13	4	10	19	23	24	24	20	14	3
$4,000 to $4,999	6	1	1	9	10	15	12	18	10	4
$5,000 to $7,499	3	[1]	2	3	5	9	16	18	23	18
$7,500 and over	[1]	[1]	[1]	[1]	[1]	1	2	7	23	63
Not ascertained	[1]	2	[1]	[1]	1	1	1	1	4	1
All cases	100	100	100	100	100	100	100	100	100	100

[1] No cases reported or less than 0.5 percent.

DISTRIBUTION OF SPENDING UNITS BY SAVING WITHIN NET WORTH GROUPS W-57

Early 1950

Percent

Saving (1949)	Net worth									
	Negative	Zero	$100 to $400	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,900	$60,000 and over
	1	2	3	4	5	6	7	8	9	10
Positive savers										
$2,000 and over	[1]	[1]	[1]	[1]	[1]	1	2	7	23	52
$1,000 to $1,999	2	[1]	1	1	3	6	9	16	17	15
$ 500 to $ 999	3	[1]	1	7	8	15	17	20	11	7
$ 200 to $ 499	10	2	5	12	15	21	19	15	12	1
$ 100 to $ 199	5	5	13	9	13	10	6	6	4	2
$ 1 to $ 99	13	22	34	22	17	11	10	8	4	4
Zero savers	8	43	7	6	2	3	4	1	1	[1]
Negative savers										
$ 1 to $ 99	16	14	17	7	9	7	5	3	1	[1]
$100 to $499	24	11	16	21	16	13	13	7	8	3
$500 and over	19	3	6	15	17	13	15	17	19	16
All cases	100	100	100	100	100	100	100	100	100	100

[1] No cases reported or less than 0.5 percent.

W-58 DISTRIBUTION OF NUMBER OF SPENDING UNITS BY TOTAL ASSETS WITHIN INCOME GROUPS

Early 1950

Percent

Money income (1949) before taxes	All cases	Total assets								
		Zero	$100 to $400	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,900	$60,000 and over
	1	2	3	4	5	6	7	8	9	10
Under $1,000	100	23	15	8	9	12	17	11	4	1
$1,000 to $1,999	100	15	22	11	10	13	13	14	2	[1]
$2,000 to $2,999	100	3	12	12	15	19	18	16	4	1
$3,000 to $3,999	100	1	5	7	12	21	22	26	5	1
$4,000 to $4,999	100	1	2	4	8	18	20	37	8	2
$5,000 to $7,499	100	[1]	1	2	3	11	19	42	18	4
$7,500 and over	100	[1]	[1]	[1]	[1]	3	5	22	37	33
All spending units	100	7	10	8	10	15	17	22	8	3

[1] No cases reported or less than 0.5 percent.

W-59 DISTRIBUTION OF NUMBER OF SPENDING UNITS BY TOTAL ASSETS WITHIN SAVING GROUPS

Early 1950

Percent

Saving (1949)	All cases	Total assets								
		Zero	$100 to $400	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,900	$60,000 and over
	1	2	3	4	5	6	7	8	9	10
Positive savers										
$2,000 and over	100	[1]	[1]	[1]	1	5	5	22	38	29
$1,000 to $1,999	100	[1]	[1]	[1]	3	9	18	47	17	6
$ 500 to $ 999	100	[1]	1	3	7	16	22	42	7	2
$ 200 to $ 499	100	[1]	5	6	10	22	24	26	7	[1]
$ 100 to $ 199	100	3	18	9	13	20	15	16	5	1
$ 1 to $ 99	100	11	24	13	11	13	13	12	2	1
Zero savers	100	51	10	9	4	8	12	5	1	[1]
Negative savers										
$ 1 to $ 99	100	14	24	10	13	15	14	8	2	[1]
$100 to $499	100	7	13	11	15	16	19	13	5	1
$500 and over	100	2	3	7	11	19	18	26	11	3
All spending units	100	7	10	8	10	15	17	22	8	3

[1] No cases reported or less than 0.5 percent.

DISTRIBUTION OF NUMBER OF SPENDING UNITS BY TOTAL ASSETS WITHIN OCCUPATIONAL GROUPS

W-60

Early 1950

Percent

Occupation	All cases	Total assets								
		Zero	$100 to $400	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,900	$60,000 and over
	1	2	3	4	5	6	7	8	9	10
Professional and semiprofessional	100	1	4	4	11	21	17	24	13	5
Managerial	100	[1]	4	1	3	14	19	36	19	4
Self-employed	100	1	[1]	1	3	9	13	38	24	11
Clerical and sales	100	7	16	8	9	18	17	19	6	[1]
Skilled and semi-skilled	100	5	10	10	12	19	20	22	2	[1]
Unskilled and service	100	13	18	11	14	18	13	13	[1]	[1]
Farm operator	100	1	4	4	6	14	19	26	18	8
Retired	100	16	5	4	2	7	14	31	13	8
All other	100	16	15	9	11	12	19	15	3	[1]
All spending units	100	7	10	8	10	15	17	22	8	3

[1] No cases reported or less than 0.5 percent.

DISTRIBUTION OF NUMBER OF SPENDING UNITS BY TOTAL ASSETS WITHIN AGE GROUPS

W-61

Early 1950

Percent

Age of head	All cases	Total assets								
		Zero	$100 to $400	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,900	$60,000 and over
	1	2	3	4	5	6	7	8	9	10
18 to 24	100	19	28	17	16	11	5	3	1	[1]
25 to 34	100	7	15	11	13	19	16	16	2	1
35 to 44	100	4	8	7	10	18	19	23	10	1
45 to 54	100	4	3	4	7	16	20	31	11	4
55 to 64	100	6	4	4	6	13	18	32	12	5
65 or over	100	11	6	5	5	11	19	26	11	6
All spending units	100	7	10	8	10	15	17	22	8	3

[1] No cases reported or less than 0.5 percent.

W-62 DISTRIBUTION OF NUMBER OF SPENDING UNITS BY NET WORTH WITHIN INCOME GROUPS

Early 1950

Percent

Money income (1949) before taxes	All cases	Net worth									
		Negative	Zero	$100 to $400	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,900	$60,000 and over
	1	2	3	4	5	6	7	8	9	10	11
Under $1,000	100	6	20	14	9	7	14	16	10	3	1
$1,000 to $1,999	100	8	12	21	9	10	12	13	13	2	[1]
$2,000 to $2,999	100	5	3	11	13	15	20	15	13	4	1
$3,000 to $3,999	100	3	2	5	9	12	22	22	20	5	[1]
$4,000 to $4,999	100	3	[1]	1	7	9	23	19	30	7	1
$5,000 to $7,499	100	1	[1]	2	2	5	14	26	31	15	4
$7,500 and over	100	[1]	[1]	[1]	1	[1]	4	8	25	31	31
All spending units	100	5	6	9	8	10	17	17	18	7	3

[1] No cases reported or less than 0.5 percent.

W-63 DISTRIBUTION OF NUMBER OF SPENDING UNITS BY NET WORTH WITHIN SAVING GROUPS

Early 1950

Percent

Saving (1949)	All cases	Net worth									
		Negative	Zero	$100 to $400	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,900	$60,000 and over
	1	2	3	4	5	6	7	8	9	10	11
Positive savers											
$2,000 and over	100	[1]	[1]	1	[1]	[1]	5	6	27	33	28
$1,000 to $1,999	100	1	[1]	1	1	4	13	22	39	15	5
$ 500 to $ 999	100	1	[1]	1	5	7	22	25	31	6	2
$ 200 to $ 499	100	3	1	3	7	11	26	23	19	6	[1]
$ 100 to $ 199	100	3	4	15	9	16	21	14	14	3	1
$ 1 to $ 99	100	4	10	23	13	12	13	12	10	2	1
Zero savers	100	6	45	11	8	4	8	11	5	1	[1]
Negative savers											
$ 1 to $ 99	100	10	12	22	9	12	15	12	7	1	[1]
$100 to $499	100	8	5	12	13	12	17	17	11	4	1
$500 and over	100	6	1	4	9	12	16	18	22	9	3
All spending units	100	5	6	9	8	10	17	17	18	7	3

[1] No cases reported or less than 0.5 percent.

DISTRIBUTION OF NUMBER OF SPENDING UNITS BY NET WORTH WITHIN OCCUPATIONAL GROUPS

W-64

Early 1950

Percent

Occupation of head	All cases	Net worth									
		Negative	Zero	$100 to $400	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,000	$60,000 and over
	1	2	3	4	5	6	7	8	9	10	11
Professional and semiprofessional	100	2	[1]	4	9	11	18	20	22	10	4
Managerial	100	[1]	[1]	4	2	5	20	20	27	18	4
Self-employed	100	2	[1]	[1]	1	3	10	16	38	19	11
Clerical and sales	100	4	7	14	9	10	18	19	14	5	[1]
Skilled and semi-skilled	100	5	4	10	12	14	21	18	14	2	[1]
Unskilled and service	100	8	13	14	12	13	19	10	11	[1]	[1]
Farm operator	100	3	1	5	6	5	14	19	23	17	7
Retired	100	[1]	16	6	3	2	8	13	30	14	8
All other	100	7	12	14	9	11	14	18	12	3	[1]
All spending units	100	5	6	9	8	10	17	17	18	7	3

[1] No cases reported or less than 0.5 percent.

DISTRIBUTION OF NUMBER OF SPENDING UNITS BY NET WORTH WITHIN AGE GROUPS

W-65

Early 1950

Percent

Age of head	All cases	Net worth									
		Negative	Zero	$100 to $400	$500 to $900	$1,000 to $1,900	$2,000 to $4,900	$5,000 to $9,900	$10,000 to $24,900	$25,000 to $59,900	$60,000 and over
	1	2	3	4	5	6	7	8	9	10	11
18 to 24	100	11	17	25	17	14	8	5	2	1	[1]
25 to 34	100	8	5	14	12	12	23	13	10	2	1
35 to 44	100	4	3	7	8	11	20	19	18	8	2
45 to 54	100	2	4	2	4	9	16	23	26	10	4
55 to 64	100	2	5	5	4	6	13	20	29	12	4
65 or over	100	[1]	11	7	4	5	12	20	25	10	6
All spending units	100	5	6	9	8	10	17	17	18	7	3

[1] No cases reported or less than 0.5 percent.

PART II

FAMILY SAVING

1888 to 1950

BY DOROTHY S. BRADY

I. A Statistical Theory of Saving

The studies of personal saving made in the past ten years clearly indicate that the analysis of this aspect of human behavior is in transition from a deterministic theory to a statistical theory. A statistical theory emphasizes the importance of *chance* in the description of the behavior of large populations over time. When the actions of the individual can be explained only by a large number of factors and when the historical changes affecting the total population contain many irreversible factors, a statistical theory provides a more satisfactory description of mass phenomena than does a deterministic theory. [1]

The number of variables introduced into correlation studies of saving behavior by one or more investigators has continued to increase as more cross-section data have become available. Klein has been experimenting with a number of economic, demographic, and attitudinal variables. [2] Duesenberry examined the "role of assets as a determinant of savings" with "age, family composition and income history and expectations constant." [3] Other analysts have suggested or actually used in an empirical analysis variants of these factors and other factors such as mobility and social class. Clearly the number of variables that could be associated with the saving behavior of the individual is so great that the deterministic approach to analysis can defeat its own ends. The description of individual saving in terms of a large number of explanatory variables can become too complicated to provide a useful tool for description, prognosis, and projection.

A number of recent studies have emphasized the element of chance variation in some of the principal factors related to saving. In particular the variation from year to year in the incomes of individuals or families has received considerable attention from economic and statistical analysts. Kuznets in a summary of many of these studies in his recent work shows that the dispersion of individual incomes from year to year is relatively narrow and limited in duration. [4] Individuals move in and out of the income group which can be called the measure of their income status, and in a particular year may be found at some distance from their average.

A substantial part of the mobility which involves change of location, occu-

[1] Statistical theories are widely employed in the natural sciences and there are many books on the subject. Lindsay, *Introduction to Physical Statistics* is an excellent reference.

[2] Klein, "Estimating Patterns of Savings Behavior from Sample Survey Data," *Econometrica*, Volume 19, No. 4, Oct. 1951, pp. 438-454.

[3] Duesenberry, "The Determinants of Savings Behavior: A Summary," *Savings in the Modern Economy.*

[4] Kuznets, *Shares of Upper Income Groups in Income and Savings*, pp. 131–140.

pation, or class of work may reflect variability around the individual's long-run occupational status. A recent study by Bogue shows that much of this mobility contains a random element so that, in a particular year, an individual may be found in an occupation and location which differ from his usual classification. [5] Variability in the size of the individual household from year to year obviously can be traced to many elements of chance. Even the changes in the structure of a household over time may occur in a particular year as a result of many chance events.

To the extent that the amount saved is connected with income, occupation, and size of family, the chance variations in these factors that take place in a given year may prove to be the most adequate explanation of the level and distribution of saving among the various classes in the population. Living standards are determined by custom and imitation. A family's expenditures are fixed, by and large, by the social and economic class of which the family is a part, and the consumption level of a class is determined by its income experience over some fairly long period of time. The individual family alters its level of expenditures as the group standards change and its saving in a particular year will depend upon the relation of current income to the standard expenditures. Saving depends on the divergence between current income and expenditures which change with long-run variations in income and other factors and is thus closely related to the short-run random variation in these factors.

II. Saving and Income Variability

Statistical information reflecting the connection between saving, dissaving, and income variability has been accumulating for almost a century. The data from the first survey of income and expenditures planned as a statistical investigation in 1853 were tabulated by Engel and published in 1859 in a form which has been employed by most of the larger surveys ever since, viz. a table showing the average expenditures of families classified by income and perhaps also by size of family. The difference between the average income and the average expenditures at each income level is a measure of the net saving or dissaving of the group and until recently has been called the net surplus or deficit of income compared with consumer expenditures.

As can be seen in Table H-1, the balance of income and expenditures has always shown net deficits in the lower income brackets at all dates and in every country. This phenomenon was interpreted first by Engel in Europe and Wright in the United States as evidence of inadequate income within the ranks of the workers' families surveyed. While this interpretation has persisted over the years, increasing recognition has been given to the influence of income variability on the correlation between current income, expenditures, and saving. Beginning with the depression decade surveys, the reports on cross-section studies of the distribution and utilization of income have emphasized that the lower income brackets in a

[5] Bogue, *A Methodological Study of Migration and Labor Mobility in Michigan and Ohio in 1947*, Scripps Foundation Studies in Population Distribution, No. 4, 1952.

given year include many families in "unusual" circumstances, with incomes lower than the customary level. This interpretation of the statistical balance of income and expenditures within brackets defined by current income depends on the assumption that families maintain their customary level of expenditures through temporary periods of income reverses. Hence the deficits of the lower income brackets can be traced to the expenditures of families that "usually" have higher incomes and do not adjust their consumption to a lower income which they do not consider to be a permanent shift in their income position.

The dissaving of the lower income brackets has been given more attention than the large saving of the upper income groups because net dissaving of a large group involves an essential paradox. Self-supporting families at all income levels are presumed to live within their means. On the average in a given year, the income of a homogeneous group of families should equal or exceed the expenditures for family living. The classification by income and other factors presumed to define homogeneous groups shows an excess of expenditures over income, which contradicts the assumptions underlying this statistical summary. This paradox easily leads to the notion of "transients" in the lower income brackets, but the large saving of the upper income groups involving no similar contradiction of basic assumptions has only recently been considered in the same way. If consumer expenditures are not adjusted to short and temporary changes in income, the average balance of income and expenditures, both at low and at high incomes in a given year, should be influenced by the spending of the families at some distance from their customary income position.

The difficulties in the interpretation of cross-section data on saving by income level, as summarized in the conventional way, have led to a number of proposals for different modes of summarization. Statistical theory offers three ways of describing the correlation between two quantities, such as current income and consumer expenditures. The classification of families by income results in the regression of expenditures on income, where the income is considered not subject to errors of observation. The conventional summaries of income and expenditures display the regression of expenditures and saving on income. The classification of families by expenditures defines the regression of income on expenditures. The argument for this mode of summary assumes that the level of current expenditures in a given year identifies a homogeneous group of families for the purpose of analyzing the balance of income and expenditures. [6]

If both variables are subject to errors of observation, the appropriate statistical summary involves a mutual regression which depends on the assumption that both income and expenditures may deviate from customary levels. For specific occupational groups the regression has shown expenditures and saving to be the same proportion of income at all levels of income. [7]

[6] Vickrey, "Resource Distribution Patterns and the Classification of Families," *Studies in Income and Wealth*, Volume x.

[7] Snyder, *Consumption Patterns of Office Workers' Families, San Juan, Puerto Rico; Honolulu, T.H.; and Washington, D.C.*, Bureau of Labor Statistics (mimeographed).

H-1 NET SURPLUS OR DEFICIT OVER THE INCOME RANGE; SELECTED SURVEYS OF FAMILY INCOME AND EXPENDITURES

1874 to 1948

Dollars, unless otherwise indicated

Date	Locality	Population group	Average income for all families in survey	Net deficits in all classes below:	Net surpluses in all classes above:	Source
1874–1875	Massachusetts	Workers' families	763	600	700	Mass. Bureau of Statistics of Labor, *Sixth Annual Report*
1888–1890	Alabama	Workers' families in selected industries	577	400	600	Tabulated from individual reports given in *Sixth* and *Seventh Annual Report of the Commissioner of Labor*
	Connecticut	Same	594	600	800	
	Massachusetts	Same	615	400	600	
	Indiana	Same	659	800	1 000	
	Ohio	Same	717	400	600	
	Illinois	Same	824	600	800	
1918–1919	Evansville	White wage-earner families	1 255	900	1 200	Bureau of Labor Statistics, Bulletin 357, *Cost of Living in the United States*
	Atlanta	Same	1 412	900	1 200	
	New York	Same	1 556	1 500	1 800	
	Detroit	Same	1 595	1 200	1 500	
1935–1936	Illinois-Iowa farms	White non-relief families	1 446	1 250	1 500	Dept. of Agriculture, Misc. Publ. 465, *Summary of Family Expenditure*, Farm Series, and BLS, Bulletins 642, 647, 649, Vol. II: *Family Expenditure*
	Portland, Ore.	Same	1 890	1 250	1 500	
	Chicago	Same	2 043	1 750	2 000	
	Atlanta	Same	2 158	2 000	2 250	
1943–1944	Delhi City, India	Workers' families	66 Rs.	70 Rs.	80 Rs.	Govt. of India, Dept. of Labour, *Reports of an Enquiry into Family Budgets of Industrial Workers in Delhi City and... in Lahore City*
	Lahore City, India		84 Rs.	50 Rs.	60 Rs.	
1945	Indianapolis	Families of two or more persons	3 274	2 000	3 000	Bureau of Labor Statistics, Bulletin 956, *Family Income, Expenditures and Savings in 1945*
	Portland, Ore.		3 406	2 000	3 000	
1946	Scranton	Families of two or more persons	3 503	4 000	5 000	Bureau of Labor Statistics, Bulletin 1,065, *Family Income, Expenditures and Savings in 10 Cities.*
	Milwaukee		3 745	3 000	4 000	
1947	Washington		5 244	6 000	7 500	
1948	Sweden	Employee's households	6 500 kr.	4 000 kr.	6 000 kr.	Social Welfare Board, Sweden, *Sparvanorna under år 1948 hos tätortshushåll*

When the information on individual families covers a number of years, various modes of summary can be used to isolate the stable or systematic relation between income, expenditures, and saving. [8] If there were an adequate number of studies of the income and expenditures of the same families over a space of years more effective procedures for analyzing cross-section data might be devised. The available data of this type are, however, distinctly limited by date and population group and are likely to remain fragmentary and scattered.

The various procedures for summarizing the cross-section data for single years lack, as yet, a satisfactory econometric model. None of the modes of summarizing just outlined takes a general change of income over time into account. All of the methods, in fact, assume a stability in the "income status," "permanent" or "systematic" component of income or expenditures, of both income and expenditures. [9]

For the purposes of the present argument, these developments all serve as evidence supporting the proposition that the saving of the individual family is related to the "chance" (or "random," or "transitory") element in income. If expenditures are less variable than income and respond slowly, if at all, to the temporary changes in income, saving as the difference between income and expenditures, must depend on the incidence and magnitude of the "transitory" changes in income. If there is a connection between the saving of individual families and the "chance" element in income and in other factors, the distribution of saving can be described by a statistical model that does not specify the nature of these relationships.

III. The Distribution of Saving and Dissaving

Most of the comprehensive cross-section surveys of family income, expenditures, and saving have provided a summary distribution of families in three groups according as expenditures were greater than, equal to, or less than income during the year. If the families reporting an exact balance between income and expenditures are allocated proportionately to the other two groups as in Table H-2, the relative number of families ending the year with a surplus or a deficit shows very little tendency to vary with the date, the place, or the population group. The recurrence of a ratio of approximately two families with a surplus to one family with a deficit suggests that frequency of surpluses and deficits can at most times be described by a simple statistical model.

If all families end some period of time with a surplus, however small, the number reporting a surplus or deficit in a given year can be deduced from relatively simple assumptions about the probabilities of different situations. If the "balancing" period is three years, the population can be divided into those that accumulate a surplus (1) each year, (2) each two years, and (3) each three years.

[8] Reid, "Savings by Family Units in Consecutive Periods," *Savings in the Modern Economy.*

[9] Jureen and Wold, "Income Elasticities Obtained from Family Budget Data," *Demand Analysis*, Part v.

H-2 PERCENTAGE OF UNITS REPORTING A SURPLUS OR A DEFICIT IN ONE YEAR SELECTED SURVEYS OF FAMILY INCOME AND EXPENDITURES

1888 to 1951–1952

Date	Occupational group	Size of sample	Percentage of consumer units with:		Source
			Surplus	Deficit	
1888–1890	Wage earner in selected industries	8 544	65	35	*Sixth* and *Seventh Annual Report of the Commissioner of Labor*
1901	Wage earner and salaried	25 440	76	24	*Eighteenth Annual Report of the Commissioner of Labor*
1917–1919	Wage earner and lower-salaried	12 096	75	25	Bureau of Labor Statistics Bulletin 357
1934–1936	Wage earner and lower-salaried	14 469	61	39	B.L.S. Bulletin 638
1935–1936	All nonfarm	61 876	65	35	Derived from B.L.S. Bulletins 642–649 and Department of Agriculture Misc. Publ. 396
1936	Farm	15 036	61	39	Derived from Department of Agriculture Misc. Publ. 465
1941	Urban	1 220	67	33	B.L.S. Bulletin 822 and Misc. Publ. 520 of the Department of Agriculture
	Rural nonfarm	981	64	36	
	Farm	762	62	38	
1944	All urban consumer units	1 700	74	26	Unpublished data from B.L.S. *Survey of Prices Paid by Families*
1947	All spending units	3 562	70	30	*Federal Reserve Bulletin*, Aug. 1948, Jan. 1950, Nov. 1950
1948	All spending units	3 510	67	33	
1949	All spending units	3 512	64	36	
	Professional	287	70	30	
	Managerial and self-employed	466	72	28	
	Clerical and sales	486	68	32	
	Skilled and semi-skilled	895	65	35	
	Unskilled and service	344	60	40	
	Farm operator	410	57	43	
	Retired	180	66	34	
1950	All families				
	Chicago	336	57	43	B.L.S. Bulletin 1,097 (Rev.)
	Los Angeles	325	53	47	
	Atlanta	178	61	39	
1950–1951	Oxford (England)				Bulletin of the Oxford University Institute of Statistics, July 1952
	All spending units	416	61	39	
	Manual workers	174	66	34	
	Salaried and self-employed	166	61	39	
	Retired and unoccupied	76	41	59	
1951–1952	Great Britain	2 598	65	35	*Ibid.*, Nov. and Dec. 1952

[1] The percentages shown in this table are based on the total number of families reporting either a surplus or a deficit. It is here assumed that the families that reported no change in assets or liabilities really had a change of some amount, perhaps small. The relative number of families reporting no change appears to depend on the detail of questioning in the interview. The early studies of the Bureau of Labor Statistics showed the greatest number of families reporting no change in assets or liabilities. These studies used a very brief questionnaire which easily permits the cumulation of a large number of unreported items to appear in the report as an exact balance of income and expenditures during the year.

DISTRIBUTION OF CONSUMER UNITS BY SURPLUS OR DEFICIT AS SIMPLE CHANCE DISTRIBUTIONS WITH A BALANCING CONSTRAINT

H-3

Assumptions on "balancing" period		Percentage of consumer units in a given year with:	
Maximum	Equally probable cases	Surplus	Deficit
One year	—	100	0
Two years	Each year Each two years	75	25
Three years	Each year Each two years Each three years	67	33
Four years	Each year Each two years Each three years Each four years	63	37

COMPARISON OF DISTRIBUTION OF TOTAL ASSETS AND NET WORTH WITH A SIMPLE CHANCE DISTRIBUTION

H-4

Amount of net worth or total assets	Chance distribution with three-year balancing [1]	Actual net worth distribution [2]			Actual assets distribution [2]		
		Professional and semi-professional	Clerical and sales	Skilled and semiskilled	Professional and semi-professional	Clerical and sales	Skilled and semi-skilled
Under $1,000	32	24	39	41	18	35	34
$ 1,000 to $ 5,000	25	31	28	28	31	27	26
$ 5,000 to $25,000	31	34	28	29	38	32	38
$25,000 and over	12	10	4	1	12	5	1

[1] A distribution based on the assumption of (1) an equal distribution of the population with balances each year, each two years, and each three years; (2) an equal distribution of each third of the population in the specified class of total assets; (3) the same amount of saving in every balancing period; and (4) a complete age range.

[2] Data from *Federal Reserve Bulletin*, Dec. 1950.

The simple assumption that these cases are equally numerous leads to frequencies of surpluses and deficits in a single year—67 percent and 33 percent—that are very close to the observed distributions (Table H-3). A "balancing" period of two years would lead to 75 percent and 25 percent surpluses and deficits respectively, a distribution that appeared in three of the surveys listed in Table H-2.

If the same amount were accumulated as a surplus by families balancing each year, each two years, and each three years, after some time, say, six years or more, the three groups would have accumulated savings in the ratio 6 : 3 : 2. Although these assumptions are a great oversimplification, the few data that exist

on the distribution of consumer units by the amount of their total assets or net worth may be interpreted as combinations of such simple distributions. Comparison of the frequencies found by the Survey of Consumer Finances in 1950 with a simple cumulated distribution (Table H-4) shows that the observed distributions do not deviate as much from this simple statistical model as might have been expected. More homogeneity in the groups defined by the survey classifications might result in a closer correspondence between the "chance" distribution and the observed, or more realistic assumptions on the amounts "saved" in a balancing period might result in a hypothetical distribution more similar to the observed distributions.

IV. Amount of Surplus or Deficit

The amount of surplus or deficit of a particular year is far from constant among any group of families for which the distributions by these amounts have been tabulated. While the greater number of families accumulate a modest surplus or incur a small deficit in a given year, the range from the largest deficits to the largest surpluses is well into the thousands of dollars (Table H-5). The distributions for the same class intervals in current dollars appear to vary greatly from one group to another from time to time or from place to place, but change to a scale roughly commensurate with the average income of the group reveals a considerable similarity in the frequencies of surpluses or deficits of the same relative magnitude. About 30 percent of the families fall in the central class, with a surplus or deficit less than the comparison unit (Table H-6). Approximately one-half of the families have surpluses in excess of the unit and around 20 percent incur deficits greater than this amount. The similarity of the distributions in relative units betokens a common form in the statistical distributions which can be given the same interpretation for all groups.

The distributions of surpluses or of deficits, taken separately, are found upon statistical examination to follow a simple mathematical form, known as the exponential distribution, when the population group to which the data apply is relatively homogeneous. This distribution, described in the cumulated form

$$f = e^{\frac{x}{a}}$$

(where f is the frequency of surpluses, or deficits, above a given amount x), has a mean, standard deviation, and mean difference all equal to a.[10]

The distributions of this type based on the sample survey averages correspond very well with the observed distributions (Table H-7). The good match in distributions for the more homogeneous groups, such as the farmers in Pennsylvania-Ohio and the wage and clerical families in Chicago, suggests that the deviations from a good fit are the result of mixtures of populations. The families in North Central small cities and the occupational groups in the Federal Reserve Board's

[10] Kendall, *The Advanced Theory of Statistics*, Volume I, p. 48.

DISTRIBUTION OF FAMILIES IN SPECIFIED GROUPS BY AMOUNT OF SURPLUS AND DEFICIT

H-5

1935–1936 and 1947

Percent

Amount of surplus surplus or deficit	North Central small cities, 1935–1936		All localities, 1947	
	Wage-earner	Other occupations	Professional	Skilled and semiskilled
Deficit				
$800 or more	0.8	1.6	12.0	8.0
$400 to $800	3.2	3.5	7.0	6.0
$200 to $400	6.4	5.0	3.0	7.0
$100 to $200	6.8	5.9	4.0	5.0
$50 to 100	5.7	3.4	2.0	3.0
Deficit or surplus less than $50	30.2	19.0	6.0	9.0
Surplus				
$ 50 to $100	10.8	8.2	4.0	8.0
$100 to $200	13.1	11.6	8.0	21.0
$200 to $400	12.0	13.1	12.0	10.0
$400 to $800	6.0	14.2	12.0	10.0
$800 or more	5.0	13.5	30.0	12.0

Sources: 1935-1936: Department of Agriculture, Misc. Publ. 464, *Changes in Assets and Liabilities of Families.* 1947: Derived from *Federal Reserve Bulletin,* "1948 Survey of Consumer Finances," Part IV.

DISTRIBUTION OF FAMILIES IN SPECIFIED GROUPS BY MULTIPLE SURPLUS OR DEFICIT UNITS

H-6

1935–1936 and 1947

Amount of surplus surplus or deficit	North Central small cities, 1935–1936		All localities, 1947	
	Wage-earner	Other occupations	Professional	Skilled and semiskilled
	Dollars			
Median income	1 100	1 900	3 000	4 000
Surplus or deficit unit [1]	50	100	150	250
Percentages of families [2]	*Percent*			
Total	100	100	100	100
With deficits:				
4 units or more	10	5	11	10
2 to 4 units	7	5	5	8
1 to 2 units	6	6	8	2
With deficit or surplus:				
Under 1 unit	30	31	30	30
With surpluses:				
1 to 2 units	11	12	20	12
2 to 4 units	13	13	16	14
4 units or more	23	28	16	24

[1] The unit of surplus or deficit was chosen as being approximately equivalent to the differences in income among the selected population groups in simple multiples of $50.

[2] The data for 1935-1936 refer to families of two or more persons, those for 1947 to "spending units" of one or more persons.

Sources: Department of Agriculture, Misc. Publ. 396; and *Federal Reserve Bulletin,* Aug. 1948.

H-7 COMPARISON OF SURVEY DATA ON DISTRIBUTION OF SURPLUSES WITH EXPONENTIAL DISTRIBUTIONS BASED ON REPORTED AVERAGE SURPLUS

Selected Years: 1936 to 1950

Amount of surplus	Pennsylvania-Ohio farms, 1936	North Central small cities, 1936, wage earner families	All localities, 1949				Chicago, 1950	
			Professional and semi-professional spending units	Managerial and self-employed spending units	Clerical spending units	Skilled and semiskilled spending units	All families	Wage and clerical families
OBSERVED DISTRIBUTIONS								
				Percent				
$ 0	100	100	100	100	100	100	100	100
50	91	78	–	–	–	–	90	90
100	83	60	–	–	–	–	82	82
200	69	38	80	84	66	61	67	64
300	57	24	–	–	–	–	57	50
500	40	13	58	65	32	34	40	32
1,000	17	3	33	46	14	13	–	–
EXPONENTIAL DISTRIBUTIONS WITH SAME AVERAGE SURPLUS								
				Dollars				
	663	234	1 100	1 609	524	486	1 116	482
				Percent				
$ 0	100	100	100	100	100	100	100	100
50	91	81	–	–	–	–	96	90
100	84	65	–	–	–	–	91	81
200	70	43	84	89	68	66	84	66
300	59	28	–	–	–	–	76	54
500	41	12	64	73	39	36	64	35
1 000	17	1	40	54	15	13	–	–

Sources: Department of Agriculture, Misc. Publ. 464, *Changes in Assets and Liabilities of Families; Federal Reserve Bulletin*, 1950, Survey of Consumer Finances, Part IV; and unpublished data from Bureau of Labor Statistics' Survey of Consumer Expenditures in 1950.

surveys were widely dispersed by locality; the Chicago families, in total, included the whole range of occupational groups.

This distribution describes the accumulation of a quantity over time with the same chance of terminating at any time. [11] This interpretation can easily be applied to saving during a year but it does not necessarily explain the connection between surplus or deficit and the chance element in annual incomes. The deviations of annual incomes from usual norms in a given year may follow such a simple distributional pattern, but no data exist to prove or disprove such a hypothesis. The wealth of material on consumer expenditures, however, might be used to infer the connection between saving and the transitory component of income.

Saving, by definition some part or all of the difference between income and expenditures, depends on the response of expenditures to the variations in income over time. If the level of expenditures were absolutely fixed in current or real terms, saving would be identical to the difference between income in a particular year and the level of expenditures. Common experience belies such a simple hypothesis—

[11] Feller, *An Introduction to Probability Theory and its Applications*, pp. 218, 375.

expenditures must be affected by the short-run and the long-run changes in income. The general level of expenditures of a particular population group changes in the long run with the average income of the group, and the expenditures of individual families are, to some extent, influenced by the short-run variations in income. Both long-run and short-run variations in the level of expenditures of a particular group are influenced by the consumption levels of the total population.

V. Average Income and the Level of Expenditures

An examination of about 300 surveys, for various dates, localities, and population groups in the United States showed that the expenditures of all groups vary with the average income level of the total population in the community. [12] From locality to locality at a given time, or from time to time in the same locality, the level of expenditures of particular population groups varies in the same way as the average income of the total community. Table H-8, which illustrates this finding for three cities, shows the variation in level of expenditures among families of different occupational groups. The same variation among localities or over time could be shown in the level of expenditures among families of different size, of different age, or of other characteristics known to have a systematic relation to expenditures.

SAVING AMONG FAMILIES WITH INCOMES NEAR THE AVERAGE IN SPECIFIED OCCUPATIONAL GROUPS, THREE CITIES H-8

1935–1936

Dollars

	Denver		Chicago		New York	
	Income	Saving	Income	Saving	Income	Saving
Wage earner	1 384	–44	1 609	–20	1 885	–76
Clerical	1 902	97	2 036	78	2 358	60
Independent business	2 387 [1]	86	2 153	68	3 269	–45
Salaried business	3 225	331	3 413	317	4 448	212
Independent professional	–	–	3 522	317	5 330	164
Salaried professional	2 630	259	2 845	231	3 930	139
All groups	1 945	50	1 987	69	2 568	53

[1] Includes independent professional.

Sources: Bureau of Labor Statistics, Bulletins 642, 643, and 646. Saving figures are simple interpolations from Table 1.

[12] Brady, "Family Savings in Relation to Changes in the Level and Distribution of Income," *Studies in Income and Wealth*, Volume xv.

The association between the level of community income and the standard of expenditures among all groups in the population implies an interaction which we may describe as an imitative process which operates continuously over time. Imitative behavior can be described fairly simply if the constraints on the particular activity can be specified. [13] The extent to which families of different size, age, race, or occupation adapt their levels of expenditure in imitation of the community standard of consumption must depend on their relative needs and resources. The degree to which various population groups are influenced by the attraction of the community standard is reflected in the differences prevailing among them at a given time.

The differences observed in a particular year cannot, however, be explained simply in terms of the income or other resources at that time. As Table H-8 shows for three cities in 1935–1936, the independent business families at the level of the average income spent more and saved less than the clerical families with lower average incomes. In other years or other places, business families are found to have a lower rate of consumption expenditures and a higher rate of saving than the salaried families of about the same average income. In 1948 and 1949, for example, the average rate of saving among the managerial and self-employed spending units, predominantly entrepreneurial, was above the saving ratio of the professional and semiprofessional units of approximately the same average income and in greater number belonging to the salaried classification (Table H-9). The comparative expenditures and saving of the occupational groups in a given year are related to the income experience of the group and accordingly the contrasts among the groups will vary from date to date and may be expected to change over time as their incomes and resources become more or less stable. [14] The constraints on the momentum of imitative change would, accordingly, be set by the resource pattern of each group, and the differences among groups in a particular year would reflect a combination of past experience, the present situation, and future expectations.

The pattern of consumer expenditures and saving differs among occupational groups at a given time in two ways. First, the "level" of expenditures and saving over the whole income range differs from group to group as shown in Table H-8, which describes the "level" through the "average" family. Second, the extent of variation over the income range varies among the occupational groups. Farmers with twice the average income of their group, for example, do not spend as much more than the families at the average as is the case for nonfarm and particularly for salaried families. The cross-section data for particular years lead to some generalizations about these differences which can be characterized as "between group" and "within group" differences in the relation of consumer expenditures and saving to income. These generalizations cannot be made specific because the com-

[13] Rashevsky, *The Mathematical Biology of Human Behavior*, Part III.

[14] The best evidence on this point is offered by the comparison of the expenditures and saving of farm and nonfarm families in the Consumer Purchases Study 1935-36 and Bureau of Labor Statistics Bulletin 822, *Family Spending and Saving in Wartime.*

AVERAGE INCOME, AVERAGE SAVING, AND PERCENT OF INCOME SAVED AMONG SPECIFIED OCCUPATIONAL GROUPS

1948 and 1949

	1948			1949		
	Average income, dollars	Average saving, dollars	Percent of income saved	Average income, dollars	Average saving, dollars	Percent of income saved
Professional, semiprofessional	5 140	462	9.0	5 350	297	5.6
Managerial, self-employed	6 300	809	12.8	5 630	779	13.8
Clerical, sales	3 350	46	1.4	3 260	186	5.7
Skilled, semiskilled	3 470	168	4.8	3 350	135	4.0
Unskilled, service	2 310	77	3.3	2 407	43	1.8
Farm operator	2 690	431	16.0	2 570	135	5.3
All others	.	.	.	.	-95	.
All groups	3 450	216	6.3	3 270	173	5.3

Sources: Federal Reserve Bulletin, Aug. and Nov. 1950, "1950 Survey of Consumer Finances," Parts III and IV. The figures on average saving were derived from the aggregates presented in Part IV, Tables 1 and 3.

prehensive surveys did not segregate specific occupational groups and the occasional surveys limited to specific groups did not cover a sufficient number simultaneously.

VI. Variation in Expenditures between and within Groups

The study of expenditures by income level by procedures similar to the "latent structure analysis" of Lazarsfeld [15] leads to the conclusion that differences in the relation of expenditures to income between and within particular population groups at a given time can be described in simple statistical terms but without precise estimation of the parameters of the relationships. [16] Both can be described by a measure of the general level of expenditures and the income elasticity. [17] The general level of expenditures in any group has been shown to be connected with the average income in the population of which it is a part, while the income elas-

[15] Stauffer et al., *American Soldier, Measurement and Prediction, Studies in Social Psychology in World War II*, Volume IV. This study indicates that the expenditures of families in different occupational groups follow a relationship to income which can be associated with the general level of income in the community and the variability of income within the occupational groups.

[16] Parameter is a word used by statisticians for the "constants" in equations describing the relation between "variables" such as income and expenditures.

[17] The relation between income (X) and expenditures (Y) can be described by a logarithmic straight line which in natural numbers can be written as

$$Y = K X^{a}$$

were the multiplier K is the measure of level and the exponent a is the measure of the income elasticity.

ticities can be associated with the variability of income within the group at a given time and over time.

The income elasticities observed for the various categories of expenditures generally range between zero and 2. Certain categories of expenditures, such as food and housing, have a low income elasticity both between and within groups. The within-group elasticities may actually be zero. Other categories such as the higher-priced durable goods have a high income elasticity within groups and close to unit elasticity between groups.

The level of expenditures within a particular group of families, say, skilled workers in Detroit, may be described by the expenditures of the "average family," that is, the average expenditures of the families receiving in the given year incomes approximately equal to the average income of the whole group of which the particular group is a part. The within-group "expenditure function" can then be written as

$$y = y(\bar{x})\left(\frac{x}{\bar{x}}\right)^{\beta} \tag{1}$$

in which y represents the expenditures of families with incomes x, x is the average income of the group, $y(x)$ is the expenditures of families with incomes near the average for a particular category of expenditures, and β is the income elasticity within the group.

A similar statistical expression describes the differences between groups in the relation of expenditures to income,

$$y(\bar{x}) = K\left(\frac{\bar{x}}{M}\right)^{\alpha} \tag{2}$$

where $y(x)$ is, as before, the expenditure of families near the average income $\bar{x}$, and α is the income elasticity of expenditure between the groups having the same expenditure function. The constants K and M are in some way connected with the average income of the total population.

These functions describing the relation between expenditures and income between and within groups at a given time can be associated with the long-run and short-run responses to changes in income over time. Among homogeneous population groups the variation among families in income in a given year corresponds to fluctuations in the income of individual families over time. The long-run change in the level of expenditures of a particular group over time follows the path of between-group differences at a given time.[18] Consumers may regard the change in income occurring in a given year as long-run or short-run and act accordingly. If the change is considered of short duration, there is no essential alteration in the pattern of expenditures for the inelastic categories of expenditures but a strong response in the expenditures on the elastic commodities and services. When the change in income is taken as a "permanent" shift in income status, the higher level is reflected in a rise in the standard of living, particularly evident in the inelastic categories of expenditures. The level of saving corresponding to the change

[18] These inferences are based on the unpublished studies mentioned on page 157.

in income in a particular year depends, accordingly, on the nature of consumer expectations. When consumers are uncertain of the continuation of a new level of income, saving and the elastic goods and services are in competition; when the economic situation promises to continue in the same direction, the consumers alter the whole standard of consumption, and saving competes with the purchases of the "necessaries of life," food and housing in particular. The fairly stable proportion of income going to the combination of food, housing, and saving over sixty years as shown by my study is a reflection of this long-run competition.[19] The deviations from stability in this ratio at certain dates in particular communities reflect the short-run relation between saving and consumer purchases. These relations between income, expenditures, and saving cannot be fully understood without specifying the mechanism through which changes in the standard of consumption spread through the population and the extent to which the momentum of such changes is influenced by the changes in the price structure.

VII. Changes in Consumption Standards

If changes in consumption standards result from imitative behavior, the level of expenditures in a given year should exhibit a simple relation to the average consumption in the previous year. The simple assumption that this year's standard is equal to last year's average purchases at current prices can be checked with the facts. This assumption would lead to the definition of K and M in the equation describing the relation between income and expenditures between groups. The symbol K, which stands for the general level of expenditures for particular goods and services, equals the previous year's average purchases over the total population in current prices. The symbol M, which represents the income required to finance the consumption standard, equals the sum of the K's for all categories of consumer goods and services.

The correspondence between the average income of the population and the level of expenditures and saving of separate groups in the population at various dates results under this assumption from the connection between expenditures and income in consecutive years. The tendency for the relative shares of income allocated to various categories of income and expenditures to fluctuate around constant percentages as illustrated in Table H-10 can be explained only by an imitative process of this kind. The differences in the utilization of income at the various dates, widely separated in time, must depend on the course of income and prices at all intervening dates. While it would require cross-section data for every year to display the sequential changes in detail for the sundry population groups, aggregate data can be used to provide the empirical base for the general hypothesis. With a specification of the income elasticities and the influence of the income distribution the time series data can be used to investigate the nature of the changes in the standard of consumption that determine the changes in consumer expenditures and, hence, the changes in personal saving.

[19] Brady, *op. cit.*

H-10 EXPENDITURES AND SAVING OF URBAN FAMILIES AVERAGING 3.5 PERSONS AND HAVING INCOMES NEAR THE AVERAGE INCOME

Specified Dates: 1888 to 1947

	Average income	All consumer goods and services	Food	Housing	All other consumer goods and services	Insurance premiums	All other saving
			Current dollars				
1888–1890	682	601	227	130	244	5	76
1901	750	665	282	163	220	22	63
1909	1 134	.	410	167	.	.	.
1917–1919	1 452	1 279	488	264	527	41	132
1934–1936	1 524	1 512	499	380	633	45	-33
1935–1936	1 982	1 884	588	410	886	107	-9
1941	2 630	2 508	733	450	1 325	106	95
1944	3 411	2 903	1 018	482	1 403	107	401
1947	3 606	.	1 309	.	.	.	50
			Percent of income				
1888–1890	100.0	88.2	33.2	19.1	35.9	0.7	11.1
1901	100.0	88.7	37.7	21.7	29.3	2.9	8.4
1909	100.0	.	36.2	14.7	.	.	.
1917–1919	100.0	88.1	33.6	18.2	36.3	2.8	9.1
1934–1936	100.0	99.2	32.8	24.9	41.5	3.0	-2.1
1935–1936	100.0	95.1	29.7	20.7	44.7	5.4	-0.5
1941	100.0	97.6	30.2	17.0	50.4	3.9	-1.5
1944	100.0	85.1	29.9	14.1	41.1	3.1	11.8
1947	100.0	.	36.3	.	.	.	1.4

Sources: Bureau of Labor Statistics reports listed in Table H-1; Bureau of Human Nutrition and Home Economics, FE 719, *1948 Food Consumption Surveys;* and special tabulation provided by the Survey Research Center of the University of Michigan for nonfarm saving in 1947.

The aggregate consumer expenditures corresponding to the relations described by equations 1 and 2 may be written as follows

$$N\bar{y} = N K \left(\frac{\bar{x}}{M}\right)^{a} V_1 V_2 \tag{3}$$

where N stands for the size of the population, $\bar{x}$ and $\bar{y}$ for the average income and expenditures respectively.

$$V_1 = \left|1 + \frac{a\,(a-1)}{2}\left(\frac{\sigma^2}{\bar{x}^2}\right)\right|$$

represents the effect of the variation in income between population groups, and

$$V_2 = \left|1 + \frac{\beta\,(\beta-1)}{2}\left(\frac{\sigma^2}{\bar{x}^2}\right)\right|$$

represents the effect of the variation in income within population groups. The combined effect of the two components of the income variation which can be estimated from the cross-section surveys for particular years, as shown in Table H-11, amounts to a multiple ranging for most categories of expenditures between 0.90 and 0.99.

EFFECT OF INCOME DISTRIBUTION ON AGGREGATE EXPENDITURES FOR SELECTED CATEGORIES OF GOODS AND SERVICES
1935–1936 and 1941

	1935–1936			1941		
	Average expenditures, dollars	Expenditures of the "average" consumer unit, dollars[1]	Ratio	Average expenditures, dollars	Expenditures of the "average" consumer unit, dollars[1]	Ratio
All consumer goods and services	1 273	1 394	0.91	1 666	1 761	0.95
Food	428	491	0.87	516	574	0.90
Housing	241	255	0.94	290	324	0.90
Clothing	133	139	0.96	205	207	0.99
Automobile	96	102	0.94	171	173	0.99
Recreation	42	44	0.95	69	60	1.15

[1] "Average" consumer units are those with incomes near the average income, $1,502 in 1935-1936 and $1,974 in 1941.

Sources: National Resources Committee, *Consumer Expenditures in the United States*, and Bureau of Labor Statistics Bulletin 822, *Family Spending and Saving in Wartime*.

If the level of consumer expenditures in any year is equivalent to last year's expenditures at this year's prices, the relation between observed aggregate expenditures equivalent to the average over the total population and the quantity which is an estimate of the expenditures of the average family $K(X/m)^a$ should be of the same magnitude as the ratios given in Table H-11. The estimates given in Table H-12 show well how the assumption is verified for the years 1930–1948. The ratios of actual average expenditures per capita to the estimated expenditures of the "average" family per capita are, in general, less than one. In view of all the approximations accepted in this simple test, the hypothesis of continuous changes in the standard of consumption from year to year appears to correspond with the facts.

If the expenditures of a particular year depend on the trend of consumption over time, the association between net saving and the chance or random element in the income of that period can be easily interpreted. As the level of expenditures moves up and down with a moving average (of geometric form) of the incomes of previous years, the saving of a particular year depends upon the chances that incomes in general are higher or lower than the average of previous years. Saving also depends on the distribution of income and of the changes in income. If the standard of consumption and the average income were identical the ratio of saving to income would be proportionate to the variance of incomes and would vary from date to date with changes in the distribution of income.

CHANGES IN CONSUMPTION STANDARDS
1930 to 1948

Year	Expenditures for all consumer goods and services per capita			Food expenditures per capita		
	Over the total population, dollars	Among "average" consumer units, dollars	Ratio	Over the total population, dollars	Among "average" consumer units, dollars	Ratio
1930	572	601	0.95	146	148	0.99
1931	490	508	0.96	118	118	1.00
1932	392	392	1.00	91	91	1.00
1933	367	361	1.02	86	86	1.00
1934	408	401	1.02	96	99	0.97
1935	439	446	0.98	107	106	1.01
1936	485	498	0.97	118	116	1.02
1937	518	539	0.96	127	129	0.98
1938	493	502	0.98	120	117	1.03
1939	513	523	0.98	120	122	0.98
1940	543	558	0.97	129	128	1.01
1941	614	661	0.93	150	155	0.97
1942	670	821	0.82	187	198	0.94
1943	739	906	0.82	213	242	0.88
1944	802	986	0.81	229	249	0.92
1945	875	1 017	0.86	250	266	0.94
1946	1 037	1 081	0.96	292	311	0.94
1947	1 137	1 172	0.97	329	352	0.93
1948	1 206	1 266	0.95	350	365	0.96

Sources: The per capita expenditures are taken from Department of Agriculture, Misc. Publ. 691, *Consumption of Food in the United States 1901-1948*. The estimates of the expenditures of the "average" family are based on the per capita income, and on formula 2 in the text, with K and M interpreted as the previous year's expenditures at current prices for food and total goods and services respectively. The income elasticities used were 0.5 for food and 0.8 for total expenditures.

VIII. The Concept of Saving

The cross-section data on family expenditures and saving indicate that the dichotomy, consumer expenditures and net saving, based on a priori definitions, does not provide the concepts best suited to the analysis of consumer behavior. Changes in assets are, apparently, as simply and systematically related as consumer expenditures are to income, age, and class of worker and other factors. The changes in liabilities, accordingly, must reflect the short-run change or random variation in the determinants of the net balance of assets and liabilities over a single year. The distinction between many assets and consumer goods cannot be made fixed and unchanging in the study of consumer behavior over long periods or in widely different economic environments. The durable goods that represent investment in future purchasing power have greatly changed in character over time and even at the present time differ greatly from place to place. Uniformity in the classification of goods as either consumer expenditures or saving is certain to obscure rather than reveal the elements in consumer purchases that remain stable from place to place or from time to time. Some international comparisons have indicated

that the income in excess of food and housing expenditures is allocated to durable goods (or livestock) and other goods and services in about the same proportions in quite diverse environments. [20] The percentages for three very different situations are given below:

Population group	Income in excess of food and housing expenditures	Percent of such income allocated to	
Eastern European workers in 19th century	421 francs	"Movable property"	26
Four low castes in India, 1946	119 rupees	"Ornaments"	23
Wage earner and clerical, Los Angeles, 1950	2 339 dollars	"Consumer durables"	22

Sources: Engel, *Lebenskosten Belgischer Arbeiter Früher und Jetzt*, 1895; Chaturvedi, *Family Budgets of Some Lower Castes in District Farrukhabad*, University of Allahabad, 1949; and Bureau of Labor Statistics, Bulletin 1,097 (Revised), *Family Income, Expenditures and Savings in 1950.*

They illustrate the stability that may be observed when the classification of goods is adapted to the cultural situation.

Fortunately data on the acquisition of various kinds of assets, on the expenditures for particular goods and services, and on the utilization of the sundry forms of consumer financing are accumulating sufficiently to allow a more intensive study of consumer behavior than has been possible up to the present time. The annual Survey of Consumer Finances of the Federal Reserve Board now offers information on particular assets and liabilities over a span of years in the postwar period. The surveys of consumer expenditures of the Bureau of Labor Statistics in specific cities at various dates since 1919 provide a basis for describing the historical trends of expenditures for particular goods and services. When these data are analyzed in detail it may be possible to describe some of the numerous forces that combine to make net saving behave like a random variable.

[20] A study in progress in the Bureau of Labor Statistics.

APPENDIX I

ESTIMATION OF FAMILY AGGREGATE SAVING FROM SAMPLE SURVEYS

1. Scope of the Problem

The advantages of sample surveys for estimation of national aggregates convincingly outlined by Stone, Utting, and Durbin [1] are, at the present time, offset by "the complexity of the information required from even the smallest transacting entities" and "the necessity for a complete coverage of the economy investigated." The authors conclude that "These are problems which will only be solved by a very considerable amount of research and practical field work in the application of different techniques. But unless these problems can be solved, further development of the theoretical framework for the presentation and use of economic data must remain to a large extent an academic exercise."

Experimentation with the estimation of population values of income, expenditures, and saving from sample surveys in this country has been on the whole discouraging. The various estimates of these economic magnitudes based on survey data are clearly dependent upon the same "highly subjective arts of the economic statistician" [2] as estimates derived by collation of various types of data from accounting and administrative records. Even inquiries designed as samples of the entire population of consumers such as the survey for *Family Spending and Saving in Wartime* and the Survey of Consumer Finances have presented the estimator with problems of adjusting the reported data in various ways and filling in missing information. Sampling theory has not yet provided techniques and procedures that may be followed mechanically in "blowing up" survey data. Interviewing methods have not yet been perfected to the stage of statistical accuracy that permits the assumption that errors of observation are randomly distributed. Adjustment of survey results for various types of nonrandom errors, together with the addition of estimates for missing information, has not been guided by any standard methodology that can be characterized as statistically objective. The correction of errors in survey concepts and in reporting by assumptions about their nature and their distribution gives the investigator considerable latitude in producing an aggregate which makes the survey appear either as a highly accurate or as a very poor source of information. Fairly plausible assumptions about the number of consumer units with incomes over $5,000 or $10,000 and the average income of such units can lead to survey aggregates that agree well with other,

[1] *The Use of Sampling Methods in National Income Statistics and Social Accounting.*

[2] Stone, "Social Accounting, Aggregation and Invariance," *Cahiers du Congrès International de Comptabilité*, Paris, 1948.

perhaps more reliable, estimates of the same totals. Preliminary estimates of the number of consumer units with incomes over $5,000 and their average income from the 1941 survey, for example, yielded an aggregate income of some $6 billion in excess of the final estimate. This difference would explain a large part of the discrepancy between the survey estimate of aggregate income and the corresponding estimates of the Department of Commerce. [3]

Eventually the estimation of aggregates of such quantities as the change in particular assets and liabilities from survey data will have to be based on procedures similar to those known as "regression sampling." Regression sampling selects a variable, such as income, which is highly correlated with the quantity to be estimated, such as saving, but is more easily measured. The frequency distribution of the independent variable (income) provides the weights for the regression of the dependent quantity (saving) on the independent variable in the determination of the aggregate. This procedure of estimation would require an estimate of the frequency distribution of the independent variable that would be relatively free of error in the parameters affecting the aggregation. In the case of income and saving, the income distribution used to weight the regression should be accurate in the frequencies for all income brackets, especially for the income brackets above the mean. The regressions likewise should be accurate, in a statistical sense, in the parameters that most influence the population values to be estimated.

2. The Validity of the Basic Information

Prior to 1935 the surveys of family income and expenditures did not attempt to collect complete data on saving and debt for statistical analysis. The 1935–1936 and 1941 studies incorporated questions on changes in assets and liabilities which provide estimates on saving for all consumer units interviewed, but these questions were secondary to the main purpose of the inquiries. The Surveys of Consumer Finances of the Federal Reserve Board and Michigan Survey Research Center, undertaken from 1946 to date, on the other hand emphasize the information on saving. All surveys have operated on the presumption that with a given rapport between the interviewer and the respondent and sufficient probing with the right kind of questions, a statistically correct answer can be obtained. The limits of the ordinary family's knowledge of its financial affairs remain, however, to be explored. [4] Survey data on changes in assets and liabilities have been limited mainly to financial transactions, such as the purchase or sale of real estate, the deposit of money in a bank account, or the payment of an insurance premium.

[3] Bureau of Labor Statistics, *Family Spending and Saving in Wartime*, Bulletin No. 822, p. 43.

[4] In connection with plans for a survey of federal employees in Washington in 1933, the Bureau of Labor Statistics undertook a pilot survey to ascertain whether families could provide interviewers with the main provisions of their life insurance policies. The Temporary National Economic Committee in the study of *Families and Their Life Insurance* (p. 13) investigated the same matter in Boston in 1935. In both cases, the conclusion was negative; in other words, individuals are generally ignorant of the conditions in the insurance policies they carry.

Over a time period sufficiently short the reporting on such activities might be fairly accurate if the repondents could be persuaded to divulge the information and refer to their papers. Most surveys, however, relate to a period of a year ending, usually, some months before the date of interview. To any tendencies to withhold information, the extended time interval adds the errors categorized as "memory bias." Even cooperative respondents are likely to provide inaccurate reports on their financial activities because they have destroyed written evidence which is not regularly preserved after a lapse of some time.

The use of standardized concepts with all groups in the population has not been given sufficient attention as a possible source of error in reporting. For many people, including some statisticians, the essential element in attaining comparable results in a statistical inquiry is to ask exactly the same questions in exactly the same way of all the respondents and then tabulate the answers in accordance with a uniform mechanical pattern. Differences between the various subgroups of the population universe are then measurable with a high degree of accuracy. How often this accepted statistical procedure fails to yield the desired results when used in measuring the relatively homogeneous population of the United States, we do not know. We do know that it is not a satisfactory technique when applied to widely divergent cultural patterns such as those of many Latin American countries. [5] This problem in the methodology of interviewing may apply also to the United States alone. [6] Small-scale experimental studies might contribute to our knowledge of the data obtained by different survey methods, but ultimately the understanding of the information reported can be reached only through analyses of the summarized data designed to detect uniformities in the location and distribution of nonrandom errors.

Definitions set up for the surveys have to be accepted as a point of departure and adjusted for ambiguities and misunderstandings through the process of analysis. The careful inspection of the schedule form and instructions for any survey will reveal the wide area of interpretation left to the interviewer and the respondent. The 1941 survey, for example, included "investment in business," which, according to the instructions, meant family funds used to make additions to the plant, equipment, or inventory of an owner-operated nonfarm (unincorporated) business. It is apparent that the amount reported depended on the definition

[5] Dedrick, "Cultural Differences and Census Concepts," *Problems in the Collection and Comparability of International Statistics.*

[6] "The problem of determining in an experimental way the reliability and validity of responses in sample surveys has hardly been touched. The same problem exists, of course, in any situation where information has to be obtained from respondents. The Bureau of the Census within recent years, and particularly in connection with the 1950 Census has begun a systematic study of the reliability and validity of responses through specially designed experimental tests. I do not propose to go into a detailed discussion of various techniques and devices by which reliability and validity of responses might be evaluated. They would necessarily vary from one survey to another. They would involve various kinds of small-scale experiments, logical and statistical analysis of internal consistency of responses, independent checks on facts, rigorous enforcement of classification of responses, follow-up studies, etc." Wilks, "Sampling and the Reliability of Information," *Conference on Business Application of Statistical Sampling Methods.*

given in several critical elements of this concept by the interviewer or the respondent.

The accounting relations (constraints) imposed in the interviewing, editing, and tabulating of the statistics, which also have to be accepted initially in estimation and analyses, should be regarded as an additional possible source of bias in the reports. When consumers are asked to give three independent estimates—of income, of expenditures, and of saving—an accounting balance will result only if all three estimates are free of nonsampling errors or if all three are proportionately biased. The selection of "balanced" reports for statistical summary excludes reports that are statistically accurate in one or two of the accounting totals but inaccurate in the other(s). The imposition of the accounting relation as a check on the accuracy of the data obtained in an interview may tend to force all three estimates away from their "true" values. [7]

3. Comparison with Time Series Estimates

The comparison of survey data, aggregated by some simple estimation procedure, with time series data can locate areas that require special examination through more valid analytic procedures. Tables H-13 to H-17 present estimates of various totals based on survey data for the purpose of comparison with time series estimates. They are limited to the 1935–1936 and 1941 surveys because the later surveys of consumer finances have not provided the sample averages on changes in specific assets and liabilities that are necessary for such calculations. The aggregates were derived by making certain simple assumptions about the groups not covered and about the saving pattern of the higher income groups. For 1935–1936, Table H-13 illustrates the variation in the aggregates estimated from survey data that results from using different methods of extrapolating the saving-income relation to higher income brackets and from differences in the assumptions made about population groups not surveyed. [8] These estimates were based on the popu-

[7] The interviewer and the respondents naturally tend to "correct" an imperfect balance in the reported receipts and disbursements, and editorial review usually leads to the rejection of reports that are "out of balance" by a large percentage. The effect of the balancing requirement among farm families (according to an unpublished analysis by the Bureau of Human Nutrition and Home Economics) is to balance an inaccurate income report by reducing food expenditures and altering the report on the magnitude of changes in assets. Balanced and unbalanced reports provided statistically the same relation between reported income and other expenditure or saving categories. Probably the nonfarm survey data are similarly affected by this procedure.

[8] For 1935–1936, the regressions of the changes in assets and liabilities on income are weighted combinations from the area surveys of the Consumer Purchases Study and are shown in the tables in Appendix v. The survey data covered nonrelief families that included a husband and wife, both native-born. These and certain minor qualifications determined a group eligible for the survey which, in general, had a much higher income level than the group excluded by design from the survey. To estimate aggregate saving from this survey it was necessary to make some assumptions about the saving pattern of the ineligible (nonrelief) group and of the relief group. The ineligible group in nonfarm areas was assumed to have the same pattern of saving as nonrelief families of the same income. Among families of farm operators the change in assets and liabilities of the ineligible group

lation weights estimated by the National Resources Committee from Census data, [9] and are shown with certain revisions in Tables H-16 and H-17. For 1941 the aggregates shown in Table H-14 are simply sample data multiplied by the estimated income distribution. [10]

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was assumed, first, to be zero and, secondly, to have the same saving pattern as the eligible group by income bracket. These assumptions are coded "a" and "b" in Table H-13. Similar assumptions were made for the relief families in all areas and are coded "A" and "B" in Table H-13. Four estimates of saving of families in the income group over $10,000 were made as follows:

I. Use of the survey average, which corresponded to an average income of about $16,000 in the three groups, urban, rural nonfarm, and farm.

II. Allocation of the same percentage of income as is shown by the survey average to the income of this class as estimated by the National Resources Committee.

III. Linear extrapolation of the survey data to the average for the class as estimated.

IV. Graphic curvilinear extrapolation. The income distributions used as weights, shown in Tables H-16 and H-17, are based on an estimate for urban families prepared by the Bureau of Labor Statistics and an estimate for farm families prepared by the Bureau of Human Nutrition and Home Economics. These estimates, which were derived from Consumer Purchases Study data and tax data for 1935–1936, followed the procedures used by the National Resources Committee. The principal variations in method relate to an adjustment for certain farm expense items and the use of later data from the 1936 tax statistics. The income distribution for rural nonfarm families and for relief families in each type of community are those estimated by the National Resources Committee.

[9] National Resources Committee, *Consumer Incomes in the United States.*

[10] The aggregates shown in Table H-14 for 1941 do not include any estimates for the population groups not surveyed, which consisted for the most part of men who had entered the armed services before March and April 1942; nor do they include any correction in the survey estimate of saving of the highest income group. They are simply the averages multiplied by the population income distributions as estimated by the Bureau of Labor Statistics and the Bureau of Human Nutrition and Home Economics. The regressions of average net change in assets and liabilities on income are shown in the tables of Appendix v.

VARIOUS ESTIMATES OF THE NET CHANGE IN ASSETS AND LIABILITIES OF FARM AND NONFARM FAMILIES AS DERIVED FROM SURVEY REPORTS
1935–1936

$ mill.

Basis of estimates		Families					Single persons	Total	
		Nonfarm	Farm		Total				
			a	b	a	b		a	b
		1	2	3	4	5	6	7	8
I. Assets									
1. Savings accounts	AI	801.7	12.1	7.3	813.8	809.0	–50.3	763.5	758.7
	AII	909.3	13.0	8.1	922.3	917.4	–50.3	872.0	867.1
	AIII	844.6	12.2	7.4	856.8	852.0	–50.3	806.5	801.7
	AIV	1 030.8	16.3	11.5	1 047.1	1 042.3	–50.3	996.8	992.0
	BI	706.8	6.1	1.2	712.9	708.0	–50.3	662.6	657.7
	BII	814.4	6.9	2.0	821.3	816.4	–50.3	771.0	766.1
	BIII	749.7	6.2	1.3	755.9	751.0	–50.3	705.6	700.7
	BIV	935.9	10.2	5.4	946.1	941.3	–50.3	895.8	891.0
2. Checking accounts	AI	820.9	133.6	126.9	954.5	947.8	0	954.5	947.8
	AII	941.3	142.2	135.4	1 083.5	1 076.7	0	1 083.5	1 076.7
	AIII	975.4	146.2	139.4	1 121.6	1 114.8	0	1 121.6	1 114.8
	AIV	868.2	128.7	122.0	996.9	990.2	0	996.9	990.2
	BI	800.0	126.5	119.7	926.5	919.7	0	926.5	919.7
	BII	920.4	135.0	128.3	1 055.4	1 048.7	0	1 055.4	1 048.7
	BIII	954.6	139.0	132.2	1 093.6	1 086.8	0	1 093.6	1 086.8
	BIV	847.3	121.6	114.8	968.9	962.1	0	968.9	962.1
3. Money on hand	AI	135.9	38.4	31.4	174.3	167.3	90.5	264.8	257.8
	AII	171.0	38.4	31.5	209.4	202.5	90.5	299.9	293.0
	AIII	190.3	37.8	30.8	228.1	221.1	90.5	318.6	311.6
	AIV	158.3	46.9	39.9	205.2	198.2	90.5	295.7	288.7
	BI	112.2	37.5	30.5	149.7	142.7	90.5	240.2	233.2
	BII	147.2	37.5	30.5	184.7	177.7	90.5	275.2	268.2
	BIII	166.5	36.8	29.9	203.3	196.4	90.5	293.8	286.9
	BIV	134.6	45.9	39.0	180.5	173.6	90.5	271.0	264.1
4. Investment in business	AI	869.7	340.7	250.1	1 210.4	1 119.8	251.4	1 461.8	1 371.2
	AII	907.2	343.1	252.5	1 250.3	1 159.7	251.4	1 501.7	1 411.1
	AIII	792.6	342.3	251.7	1 134.9	1 044.3	251.4	1 386.3	1 295.7
	AIV	870.5	345.5	254.9	1 216.0	1 125.4	251.4	1 467.4	1 376.8
	BI	877.7	352.1	261.5	1 229.8	1 139.2	251.4	1 481.2	1 390.6
	BII	915.1	354.5	264.0	1 269.6	1 179.1	251.4	1 521.0	1 430.5
	BIII	800.6	353.8	263.2	1 154.4	1 063.8	251.4	1 405.8	1 315.2
	BIV	878.5	356.9	266.3	1 235.4	1 144.8	251.4	1 486.8	1 396.2
5. Investment in real estate	AI	509.8	136.3	90.6	646.1	600.4	–10.1	636.0	590.3
	AII	462.9	137.3	91.6	600.2	554.5	–10.1	590.1	544.4
	AIII	359.2	137.4	91.7	496.6	450.9	–10.1	486.5	440.8
	AIV	845.4	137.6	91.8	983.0	937.2	–10.1	972.9	927.1
	BI	523.6	143.5	97.8	667.1	621.4	–10.1	657.0	611.3
	BII	476.7	144.6	98.8	621.3	575.5	–10.1	611.2	565.4
	BIII	372.9	144.7	98.9	517.6	471.8	–10.1	507.5	461.7
	BIV	859.1	144.8	99.1	1 003.9	958.2	–10.1	993.8	948.1
6. Stocks and bonds	AI	1 090.9	–6.4	–3.8	1 084.5	1 087.1	362.1	1 446.6	1 449.2
	AII	1 438.3	–6.4	–3.9	1 431.9	1 434.4	362.1	1 794.0	1 796.5
	AIII	1 658.3	–6.4	–3.9	1 651.9	1 654.4	362.1	2 014.0	2 016.5
	AIV	754.7	–6.4	–3.9	748.3	750.8	362.1	1 110.4	1 112.9
	BI	1 090.2	–6.9	–4.4	1 083.3	1 085.8	362.1	1 445.4	1 447.9
	BII	1 437.6	–7.0	–4.4	1 430.6	1 433.2	362.1	1 792.7	1 795.3
	BIII	1 657.6	–7.0	–4.4	1 650.6	1 653.2	362.1	2 012.7	2 015.3
	BIV	754.0	–7.0	–4.4	747.0	749.6	362.1	1 109.1	1 111.7

H-13
(Part 2)

VARIOUS ESTIMATES OF THE NET CHANGE IN ASSETS AND LIABILITIES OF FARM AND NONFARM FAMILIES AS DERIVED FROM SURVEY REPORTS
1935–1936

$ mill.

Basis of estimates		Families					Single persons	Total	
		Nonfarm	Farm		Total				
			a	b	a	b		a	b
		1	2	3	4	5	6	7	8
7. Other property	AI	–58.0	–6.1	–3.0	–64.1	–61.0	0	–64.1	–61.0
	AII	–58.6	–6.0	–2.9	–64.6	–61.5	0	–64.6	–61.5
	AIII	–58.0	–6.3	–3.2	–64.3	–61.2	0	–64.3	–61.2
	AIV	–58.0	–3.9	–0.8	–61.9	–58.8	0	–61.9	–58.8
	BI	–64.8	–7.2	–4.1	–72.0	–68.9	0	–72.0	–68.9
	BII	–65.4	–7.1	–4.1	–72.5	–69.5	0	–72.5	–69.5
	BIII	–64.8	–7.4	–4.3	–72.2	–69.1	0	–72.2	–69.1
	BIV	–64.8	–5.0	–1.9	–69.8	–66.7	0	–69.8	–66.7
8. Improvements in home	AI	153.4	110.6	75.7	264.0	229.1	30.2	294.2	259.3
	AII	156.2	111.7	76.8	267.9	233.0	30.2	298.1	263.2
	AIII	150.4	112.3	77.4	262.7	227.8	30.2	292.9	258.0
	AIV	230.4	111.8	76.9	342.2	307.3	30.2	372.4	337.5
	BI	162.3	117.1	82.1	279.4	244.4	30.2	309.6	274.6
	BII	165.1	118.2	83.3	283.3	248.4	30.2	313.5	278.6
	BIII	159.3	118.8	83.8	278.1	243.1	30.2	308.3	273.3
	BIV	239.4	118.3	83.4	357.7	322.8	30.2	387.9	353.0
9. Improvements in other real estate	AI	125.9	8.7	6.2	134.6	132.1	110.6	245.2	242.7
	AII	125.9	8.7	6.2	134.6	132.1	110.6	245.2	242.7
	AIII	122.6	8.5	6.0	131.1	128.6	110.6	241.7	239.2
	AIV	147.4	9.5	7.0	156.9	154.4	110.6	267.5	265.0
	BI	129.9	9.2	6.7	139.1	136.6	110.6	249.7	247.2
	BII	129.8	9.2	6.7	139.0	136.5	110.6	249.6	247.1
	BIII	126.5	9.0	6.6	135.5	133.1	110.6	246.1	243.7
	BIV	151.3	10.0	7.5	161.3	158.8	110.6	271.9	269.4
10. Insurance premiums paid	AI	2 808.3	160.9	108.7	2 969.2	2 917.0	321.9	3 291.1	3 238.9
	AII	3 086.9	163.0	110.8	3 249.9	3 197.7	321.9	3 571.8	3 519.6
	AIII	3 100.8	163.8	111.5	3 264.6	3 212.3	321.9	3 586.5	3 534.2
	AIV	3 221.3	163.7	111.5	3 385.0	3 332.8	321.9	3 706.9	3 654.7
	BI	2 942.7	171.1	118.9	3 113.8	3 061.6	321.9	3 435.7	3 383.5
	BII	3 221.3	173.2	121.0	3 394.5	3 342.3	321.9	3 716.4	3 664.2
	BIII	3 235.2	174.1	121.7	3 409.3	3 356.9	321.9	3 731.2	3 678.8
	BIV	3 355.8	173.9	121.8	3 529.7	3 477.6	321.9	3 851.6	3 799.5
11. Insurance policies surrendered	AI	–82.0	–12.9	–9.7	–94.9	–91.7	0	–94.9	–91.7
	AII	–88.0	–13.0	–9.8	–101.0	–97.8	0	–101.0	–97.8
	AIII	–90.6	–12.7	–9.5	–103.3	–100.1	0	–103.3	–100.1
	AIV	–95.2	–14.1	–10.9	–109.3	–106.1	0	–109.3	–106.1
	BI	–101.1	–13.6	–10.5	–114.7	–111.6	0	–114.7	–111.6
	BII	–107.2	–13.7	–10.6	–120.9	–117.8	0	–120.9	–117.8
	BIII	–109.8	–13.5	–10.2	–123.3	–120.0	0	–123.3	–120.0
	BIV	–114.4	–14.8	–11.7	–129.2	–126.1	0	–129.2	–126.1
12. Insurance policies settled	AI	–163.1	–37.7	–23.6	–200.8	–186.7	0	–200.8	–186.7
	AII	–164.4	–37.7	–23.6	–202.1	–188.0	0	–202.1	–188.0
	AIII	–160.3	–37.6	–23.5	–197.9	–183.8	0	–197.9	–183.8
	AIV	–161.8	–37.6	–23.5	–199.4	–185.3	0	–199.4	–185.3
	BI	–189.6	–41.0	–26.9	–230.6	–216.5	0	–230.6	–216.5
	BII	–190.8	–40.2	–26.9	–231.0	–217.7	0	–231.0	–217.7
	BIII	–186.5	–40.8	–26.9	–227.3	–213.4	0	–227.3	–213.4
	BIV	–188.1	–40.8	–26.9	–228.9	–215.0	0	–228.9	–215.0
13. Loans to others	AI	110.1	6.9	5.5	117.0	115.6	100.5	217.5	216.1
	AII	144.0	6.9	5.6	150.9	149.6	100.5	251.4	250.1
	AIII	164.1	7.0	5.6	171.1	169.7	100.5	271.6	270.2
	AIV	174.3	7.0	5.6	181.3	179.9	100.5	281.8	280.4

VARIOUS ESTIMATES OF THE NET CHANGE IN ASSETS AND LIABILITIES OF FARM AND NONFARM FAMILIES AS DERIVED FROM SURVEY REPORTS 1935–1936

$ mill.

Basis of estimates		Families					Single persons	Total	
		Nonfarm	Farm		Total				
			a	b	a	b		a	b
		1	2	3	4	5	6	7	8
	BI	110.4	6.7	5.3	117.1	115.7	100.5	217.6	216.2
	BII	144.3	6.7	5.4	151.0	149.7	100.5	251.5	250.2
	BIII	164.3	6.8	5.4	171.1	169.7	100.5	271.6	270.2
	BIV	174.5	6.8	5.4	181.3	179.9	100.5	281.8	280.4
14. Other assets	AI	–62.1	–20.1	–12.9	–82.2	–75.0	0	–82.2	–75.0
	AII	–63.1	–20.1	–12.9	–83.2	–76.0	0	–83.2	–76.0
	AIII	–63.2	–20.1	–12.9	–83.3	–76.1	0	–83.3	–76.1
	AIV	–61.5	–20.1	–12.9	–81.6	–74.4	0	–81.6	–74.4
	BI	–66.3	–21.3	–14.1	–87.6	–80.4	0	–87.6	–80.4
	BII	–67.3	–21.3	–14.1	–88.6	–81.4	0	–88.6	–81.4
	BIII	–67.4	–21.3	–14.1	–88.7	–81.5	0	–88.7	–81.5
	BIV	–65.6	–21.3	–14.1	–86.9	–79.7	0	–86.9	–79.7
II. Liabilities									
1. Mortgages on home	AI	–186.9	–79.3	–76.4	–266.2	–263.3	–50.3	–316.5	–313.6
	AII	–214.1	–83.4	–80.4	–297.5	–294.5	–50.3	–347.8	–344.8
	AIII	–226.5	–84.0	–81.0	–310.5	–307.5	–50.3	–360.8	–357.8
	AIV	–243.8	–82.6	–79.7	–326.4	–323.5	–50.3	–376.7	–373.8
	BI	–180.9	–76.3	–73.4	–257.2	–254.3	–50.3	–307.5	–304.6
	BII	–208.1	–80.4	–77.4	–288.5	–285.5	–50.3	–338.8	–335.8
	BIII	–220.5	–81.0	–78.0	–301.5	–298.5	–50,3	–351.8	–348.8
	BIV	–237.8	–79.6	–76.8	–317.4	–314.6	–50.3	–367.7	–364.9
2. Mortgages on other real estate	AI	–33.0	39.7	25.2	6.7	–7.8	–15.1	–8.4	–22.9
	AII	–33.0	39.7	25.3	6.7	–7.7	–15.1	–8.4	–22.8
	AIII	–25.2	39.5	25.1	14.3	–0.1	–15.1	–0.8	–15.2
	AIV	–34.7	40.4	26.0	5.7	–8.7	–15.1	–9.4	–23.8
	BI	–31.9	42.2	27.6	10.3	–4.3	–15.1	–4.8	–19.4
	BII	–31.9	42.2	27.7	10.3	–4.2	–15.1	–4.8	–19.3
	BIII	–24.1	42.0	27.6	17.9	3.5	–15.1	2.8	–11.6
	BIV	–33.7	42.9	28.5	9.2	–5.2	–15.1	–5.9	–20.3
3. Notes due financial intermedairies	AI	194.0	133.4	62.4	327.4	256.4	10.1	337.5	266.5
	AII	193.7	134.6	63.7	328.3	257.4	10.1	338.4	267.5
	AIII	184.8	136.0	65.1	320.8	249.9	10.1	330.9	260.0
	AIV	267.9	125.2	54.3	393.1	322.2	10.1	403.2	332.3
	BI	220.7	153.1	82.1	373.8	302.8	10.1	383.9	312.9
	BII	220.4	154.3	83.5	374.7	303.9	10.1	384.8	314.0
	BIII	211.4	155.7	84.9	367.1	296.3	10.1	377.2	306.4
	BIV	284.6	144.9	74.1	429.5	358.7	10.1	439.6	368.8
4. Notes due individuals	AI	90.0	56.3	26.9	146.3	116.9	10.1	156.4	127.0
	AII	86.6	56.3	26.8	142.9	113.4	10.1	153.0	123.5
	AIII	83.3	56.6	27.2	139.9	110.5	10.1	150.0	120.6
	AIV	83.3	54.1	24.6	137.4	107.9	10.1	147.5	118.0
	BI	121.1	65.1	35.7	186.2	156.8	10.1	196.3	166.9
	BII	117.8	65.1	35.6	182.9	153.4	10.1	193.0	163.5
	BIII	114.4	65.4	36.0	179.8	150.4	10.1	189.9	160.5
	BIV	114.4	62.9	33.4	177.3	147.8	10.1	187.4	157.9
5. Rents due	AI	42.9	12.2	5.6	55.1	48.5	2.0	57.1	50.5
	AII	42.9	12.2	5.6	55.1	48.5	2.0	57.1	50.5
	AIII	41.5	12.2	5.6	53.7	47.1	2.0	55.7	49.1
	AIV	41.6	11.9	5.3	53.5	46.9	2.0	55.5	48.9

H-13
(Part 4)

VARIOUS ESTIMATES OF THE NET CHANGE IN ASSETS AND LIABILITIES OF FARM AND NONFARM FAMILIES AS DERIVED FROM SURVEY REPORTS 1935–1936

$ mill.

Basis of estimates		Families					Single persons	Total	
		Nonfarm	Farm		Total				
			a	b	a	b		a	b
		1	2	3	4	5	6	7	8
	BI	64.1	14.0	7.4	78.1	71.5	2.0	80.1	73.5
	BII	64.1	14.0	7.4	78.1	71.5	2.0	80.1	73.5
	BIII	62.7	14.0	7.4	76.7	70.1	2.0	78.7	72.1
	BIV	62.9	13.7	7.1	76.6	70.0	2.0	78.6	72.0
6. Taxes due	AI	25.6	16.9	7.7	42.5	33.3	10.1	52.6	43.4
	AII	25.2	16.9	7.7	42.1	32.9	10.1	52.2	43.0
	AIII	25.9	17.0	7.8	42.9	33.7	10.1	53.0	43.8
	AIV	18.3	16.4	7.2	34.7	25.5	10.1	44.8	35.6
	BI	36.5	19.4	10.1	55.9	46.6	10.1	66.0	56.7
	BII	36.0	19.4	10.1	55.4	46.1	10.1	65.5	56.2
	BIII	36.7	19.5	10.3	56.2	47.0	10.1	66.3	57.1
	BIV	29.1	18.9	9.7	48.0	38.8	10.1	58.1	48.9
7. Charge accounts due	AI	90.0	33.4	18.7	123.4	108.7	33.2	156.6	141.9
	AII	90.0	33.5	18.7	123.5	108.7	33.2	156.7	141.9
	AIII	86.7	33.5	18.7	120.2	105.4	33.2	153.4	138.6
	AIV	115.3	33.5	18.7	148.8	134.0	33.2	182.0	167.2
	BI	116.5	37.4	22.7	153.9	139.2	33.2	187.1	172.4
	BII	116.5	37.5	22.7	154.0	139.2	33.2	187.2	172.4
	BIII	113.2	37.4	22.7	150.6	135.9	33.2	183.8	169.1
	BIV	141.8	37.4	22.7	179.2	164.5	33.2	212.4	197.7
8. Other bills due	AI	193.8	62.8	34.3	256.6	228.1	–40.2	216.4	187.9
	AII	194.7	62.8	34.3	257.5	229.0	–40.2	217.3	188.8
	AIII	193.8	62.8	34.3	256.6	228.1	–40.2	216.4	187.9
	AIV	202.9	62.8	34.3	265.7	237.2	–40.2	225.5	197.0
	BI	242.9	70.4	42.0	313.3	284.9	–40.2	273.1	244.7
	BII	243.9	70.4	42.0	314.3	285.9	–40.2	274.1	245.7
	BIII	242.9	70.4	42.0	313.3	284.9	–40.2	273.1	244.7
	BIV	252.1	70.4	41.9	322.5	294.0	–40.2	282.3	253.8
9. Installment balances due	AI	338.7	103.6	72.7	442.3	411.4	160.9	603.2	572.3
	AII	346.1	103.6	72.7	449.7	418.8	160.9	610.6	579.7
	AIII	349.6	103.6	72.7	453.2	422.3	160.9	614.1	583.2
	AIV	319.8	102.5	71.6	422.3	391.4	160.9	583.2	552.3
	BI	378.5	111.0	80.1	489.5	458.6	160.9	650.4	619.5
	BII	386.1	111.0	80.1	497.1	466.2	160.9	658.0	627.1
	BIII	389.6	110.9	80.0	500.5	469.6	160.9	661.4	630.5
	BIV	359.8	109.8	78.9	469.6	438.7	160.9	630.5	599.6
10. Other liabilities	AI	6.0	10.2	5.3	16.2	11.3	0	16.2	11.3
	AII	6.0	10.2	5.2	16.2	11.2	0	16.2	11.2
	AIII	8.2	10.2	5.2	18.4	13.4	0	18.4	13.4
	AIV	–12.7	10.2	5.2	–2.5	–7.5	0	–2.5	–7.5
	BI	9.6	11.5	6.5	21.1	16.1	0	21.1	16.1
	BII	9.6	11.5	6.4	21.1	16.0	0	21.1	16.0
	BIII	11.8	11.5	6.4	23.3	18.2	0	23.3	18.2
	BIV	–8.9	11.5	6.5	2.6	–2.4	0	2.6	–2.4

A – Changes among *relief* families zero.
B – Changes among *relief* families equal changes of nonrelief families of the same income.
a – Changes among ineligible families zero.
b – Changes among ineligible families equal eligible families of same income.
I – Changes among families with incomes $10,000 and over equal those of families surveyed.
II, III, IV – Changes among families with incomes $10,000 and over estimated by extrapolating the regressions on income to estimated average income of the class. See text for description of procedure.

Source: See p. 162 and Tables H-14 to H-17.

NET CHANGE IN ASSETS AND LIABILITIES OF FAMILIES AS DERIVED FROM SURVEY REPORTS ADJUSTED FOR INCOME DISTRIBUTION OF THE POPULATION: 1941

$ mill.

	Nonfarm families	Farm families	All families
	1	2	3
I. Assets			
1. Savings accounts	−1 201	−178	−1 379
2. Checking accounts	616	34	650
3. Money on hand	585	−11	574
4. Investment in business	1 114	1 937	3 051
5. Building and loan shares	−220	11	−209
6. Owned homes	2 760	—	2 760
7. Other real estate	74	123	197
8. U.S. Government bonds and stamps	1 093	86	1 179
9. Tax savings notes	14	0	14
10. Other bonds and stocks	178	−9	169
11. Other personal property	−157	[1])	−157
12. Improvements in owned home	613	113	726
13. Improvements in other real estate	197	53	250
14. Insurance premiums paid	2 666	194	2 860
15. Insurance polices surrendered	87	[1])	87
16. Insurance polices settled	−174	−15	−189
17. Loans secured by mortgage	−8	−25	−33
18. Other loans made	−107	41	−66
19. Social Security tax	321	6	327
20. Unemployment insurance tax	42	[1])	42
21. Other assets	16	34	50
22. Total	8 509	2 394	10 903
II. Liabilities			
1. Mortgages on owned homes	650	111	761
2. Mortgages on other real estate	−56	62	6
3. Debts due banks and insurance companies	188	101	289
4. Debts due small loan companies	83	−7	76
5. Debts due credit unions	12	−1	11
6. Debts due individuals	305	64	369
7. Rents due	10	−5	5
8. Taxes due	1	−1	0
9. Charge accounts due	148	36	184
10. Other bills due	224	38	262
11. Installment purchases	896	122	1 018
12. Other liabilities	37	[1])	37
13. Total	2 498	520	3 018

[1] Less than 0.5.

Source: See p. 162. Families include one-person units.

H-15 NET CHANGE IN SAVING, INSURANCE PREMIUMS PAID, AND PAYMENTS ON PRINCIPAL OF MORTGAGES ON OWNED HOMES AMONG NONFARM FAMILIES AS DERIVED FROM SURVEY REPORTS ADJUSTED FOR INCOME DISTRIBUTION OF THE POPULATION

1888–1890, 1901, and 1917–1919

$ mill. (except col. 1)

Family income class	Number of families	Saving	Insurance premiums	Payments on home mortgages
	1	2	3	4
		1888–1890		
Under $200	307 969	–24.0	0	.
200– 400	2 001 798	–52.0	2.0	.
400– 600	2 032 595	22.4	6.1	.
600– 800	1 201 079	70.9	6.0	.
800–1,000	692 930	66.5	5.5	.
1,000–1,200	469 653	83.6	4.2	.
1,200–1,400	246 375	62.6	2.5	.
1,400–1,600	284 871	115.4	4.6	.
1,600–1,800	230 977	114.6	3.7	.
1,800–2,000	76 992	42.6	1.3	.
2,000–2,200	76 992	60.2	1.7	.
Total under 2,200	7 622 231	562.8	37.6	
2,200 and over	76 992			
Total	7 699 223			
		1901, all family types		
Under $300	451 662	–24.7		
300– 400	1 262 603	–18.9	0	0
400– 500	1 652 675	77.7	9.9	1.7
500– 600	1 437 109	48.9	18.7	4.3
600– 700	1 406 314	91.4	25.3	9.8
700– 800	1 375 519	92.2	30.3	6.9
800– 900	626 169	65.1	10.0	7.5
900–1,000	595 374	96.4	12.5	9.5
Total under 1,000	8 807 425	428.1	106.7	39.7
1,000 and over	1 457 639			
Total	10 265 064			
		1917–1919		
Under $900	2 728 073	–2.7	68.2	10.9
900–1,200	4 136 111	148.9	124.1	28.9
1,200–1,500	3 819 302	366.7	141.3	61.1
1,500–1,800	2 692 872	412.0	115.8	40.4
1,800–2,100	1 988 853	473.3	97.5	39.8
2,100–2,500	1 003 227	295.9	57.2	21.1
2,500–3,000	704 019	283.0	42.9	12.7
Total under 3,000	17 072 457	1 977.1	647.0	214.9
3,000 and over	528 015			
Total	17 600 472			

Source: Income distribution for nonfarm families estimated from survey distributions for wage earner families by procedure which associated the same relation between deciles for the two groups as existed in 1935–1936 and 1941. Census figures for 1890, 1900, and 1920 were used for the total number of nonfarm families and an estimate of the number of quasi-households included in the census was deducted from them. No attempt was made to extrapolate survey regressions for total saving, insurance premiums, and payments on principal of mortgages on owned homes to higher income groups. Regressions are given in Table H-21.

DISTRIBUTION OF CONSUMER UNITS BY URBAN-RURAL RESIDENCE AND INCOME: 1935–1936

Family income class	Urban		Rural nonfarm		Farm	
	Average income	Number	Average income	Number	Average income	Number
	$	Percent	$	Percent	$	Percent
	1	2	3	4	5	6
			A. All families			
Under $500	329	10.2	344	18.9	339	25.1
500– 1,000	771	22.6	748	29.3	743	33.9
1,000– 1,500	1,222	22.4	1 228	22.1	1 224	19.0
1,500– 2,000	1 727	15.4	1 731	12.9	1 719	10.5
2,000– 3,000	2 395	14.8	2 386	10.5	2 390	7.9
3,000– 4,000	3 454	4.9	3 408	2.9	3 390	2.4
4,000– 5,000	4 438	3.2	4 483	1.1	4 396	0.7
5,000–10,000	6 912	4.0	6 818	1.6	6 587	0.4
10,000 and over	23 384	2.5	20 509	0.7	19 057	0.1
All classes	2 274	100.0	1 431	100.0	1 096	100.0
	Total income	Total number	Total income	Total number	Total income	Total number
	$ mill.	unit	$ mill.	unit	$ mill.	unit
All classes	38 551	16 953	812	5 680	7 416	6 767
			B. Single consumers			
All classes	1 151	10 058 [1]				

[1] Single consumers in all types of community.

Source: See p. 162 for definitions of terms and methods used in construction of the estimates.

H-17 DISTRIBUTION OF CONSUMER UNITS BY RELIEF STATUS AND ELIGIBILITY 1935–1936

Percent

Family income class	Urban		Rural nonfarm		Farm operator [1]		
	Nonrelief	Relief	Nonrelief	Relief	Nonrelief		Relief
					Eligible	Ineligible	
	1	2	3	4	5	6	7
Under $500	6.6	28.5	11.9	48.3	11.1	32.4	29.5
500- 1,000	18.5	43.2	26.3	41.8	38.5	25.9	44.6
1,000- 1,500	22.6	21.8	25.6	7.4	21.8	19.2	16.4
1,500- 2,000	17.7	3.6	15.5	1.8	11.3	13.8	6.3
2,000- 3,000	17.1	2.9	12.9	0.7	11.2	6.8	3.2
3,000- 4,000	5.9		3.6		3.7	1.9	
4,000- 5,000	3.8		1.4		1.4		
5,000–10,000	4.8		2.0		0.8		
10,000 and over	3.0		0.8		0.2		
All classes	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total number (unit)	14 161	2 792	4 586	1 094	3 728	2 490	549

[1] Sharecroppers numbered 0.682 million families and had an average income of $456.

Source: See p. 162 for definition of terms and methods used in construction of the estimates.

The comparison of survey aggregate estimates with those derived from time series is shown in Table H-19. In general, survey estimates match time series estimates less favorably for 1941 than for 1935–1936. This difference is almost entirely a reflection of the adjustment of the data for the income groups over $10,000 made in the 1935–1936 estimates. Table H-13 shows that extrapolation of the regression of asset or liability changes to higher levels of mean income alters the estimate of the aggregates by substantial amounts. Thus, the survey yielded an aggregate increase of $600 million or $700 million in the savings accounts of nonfarm families and the extrapolation procedure raised this total to as much as $950 million. The saving of the higher income groups clearly constitutes a critical element in the estimation of the aggregate, for, as Table H-18 shows, the income groups above $10,000 account for a large share of the change in holdings of various types of assets and of payments on home mortgages.

The discrepancy between the survey estimates and the time series data on changes in bank balances may be traced to a fundamental tendency towards underestimates in basic reports (including the underestimate of income), exaggerated by the balancing constraint. Income is known to be positively correlated with increases in savings and checking accounts and negatively correlated with decreases in bank accounts. [11] If the reports on decreases are overestimates, the regression of decreases on income should be steeper (negatively) and at a lower level. The correction of the 1941 data for the underestimate of higher income groups would eliminate a large proportion of the differences between the two surveys in the correspondence with the time series estimates by downward adjustment of the 1935–1936 data on the frequency of decreases reported. Such an adjustment would bring the survey estimate within the range defined by the time series estimates for the two years 1935 and 1936.

The comparison of the survey and time series estimates for insurance premiums paid and for nonfarm real estate shows a fairly close correspondence for 1935–1936. It would be improved considerably in the 1941 estimates by correction of the average for the higher income groups. Table H-13 shows that the estimates for both these items are raised significantly by increasing the average for the highest income groups. Adjustments of the 1941 data for the highest income groups were not attempted because the sampling errors in the observed regressions are very large.

The survey estimate of loans by individuals which were secured by mortgages during 1935–1936, is of the correct order of magnitude as judged by the time series estimates, but the 1941 data contain an unexplained error. In a random sample the loans made to individuals by individuals and the amounts borrowed by individuals from individuals, items shown in Tables H-13 and H-14, should equal zero within the limits of sampling error. The survey schedules record the amounts borrowed and secured by mortgages under mortgage loans, so that in these estimates the aggregate loaned by individuals less the aggregate borrowed should equal the aggregate net change in mortgage loans made by individuals. The estimate of the change in individual mortgage loans, so calculated, is shown in

[11] See Table H-49.

H-18
(Part 1)

VARIOUS ESTIMATES OF THE SHARE OF INCOME GROUPS OVER $10,000 IN THE AGGREGATE NET CHANGE IN ASSETS AND LIABILITIES
1935–1936

Percent

	Method I	Method II	Method III	Method IV
	A. Urban nonrelief families			
I. Assets				
1. Savings accounts	38	46	42	58
2. Checking accounts	57	65	67	67
3. Money on hand	91	93	94	92
4. Investment in business	15	20	3	22
5. Real estate				
6. Stocks and bonds	87	91	92	81
7. Other property	1	3	1	
8. Improvements in home	7	9	4	36
9. Improvements in other real estate	2	2		4
10. Insurance premiums paid	29	36	36	39
11. Insurance policies surrendered	26	32	34	37
12. Insurance policies settled	2	3		1
13. Loans to others	82	86	88	88
14. Other assets	12	16	16	10
II. Liabilities				
1. Mortgages on home	38	46	49	51
2. Mortgages on real estate			82	
3. Notes due banks				26
4. Notes due individuals				
5. Rents due				
6. Taxes due				
7. Charge accounts due	1	1		28
8. Other bills due	2	2	2	8
9. Installment balances due	7	10	11	
10. Other liabilities			41	120
	B. Rural nonfarm nonrelief families			
I. Assets				
1. Savings accounts			89	90
2. Checking accounts			64	35
3. Money on hand			50	48
4. Investments in business			42	26
5. Real estate				22
6. Stocks and bonds			79	81
7. Other property				
8. Improvements in home				33
9. Improvements in other real estate			52	44
10. Insurance premiums paid			11	15
11. Insurance polices surrendered			7	16
12. Insurance policies settled			4	
13. Loans to others				
14. Other assets			2	

VARIOUS ESTIMATES OF THE SHARE OF INCOME GROUPS OVER $10,000 IN THE AGGREGATE NET CHANGE IN ASSETS AND LIABILITIES
1935–1936

Percent

	Method I	Method II	Method III	Method IV
II. Liabilities				
1. Mortgages on home			415	184
2. Mortgages on other real estate			104	103
3. Notes due bank				25
4. Notes due individuals			812	
5. Rents due			9	12
6. Taxes due			9	11
7. Charge accounts due				
8. Other bills due			37	
9. Installment balances due				
10. Other liabilities				22
	C. Farm operator nonrelief families			
I. Assets				
1. Savings accounts	32	39	33	57
2. Checking accounts	18	23	25	15
3. Money on hand				19
4. Investments in business	2	3	2	3
5. Real estate	2	3	3	3
6. Stocks and bonds				
7. Other property			2	
8. Improvements in home	3	4	4	4
9. Improvements in other real estate				9
10. Insurance premiums paid	4	5	5	5
11. Insurance policies surrendered				10
12. Insurance policies settled				
13. Loans to others			1	
14. Other assets				
II. Liabilities				
1. Mortgages on home	15	19	19	18
2. Mortgages on other real estate				2
3. Notes due bank	3	4	5	
4. Notes due individuals				
5. Rents due				
6. Taxes due				
7. Charge accounts due				
8. Other bills due				
9. Installment balances due				
10. Other liabilities				

Sources: Based on Tables H-13 and H-49 to H-54. For description of methods see p. 162.

Columns 1, 2, and 4 – Line 1: Sum of lines 2 and 3.

Line 2: Sum of (a) annual change in time deposits of individuals in operating and closed commercial banks less interest payments and (b) annual in- and outpayments by or to depositors in mutual savings banks. (Sum of Table L-1, col. 6, Table L-38, col. 6, and first differences of Table A-56, col. 6 minus Table L-23, cols. 8 and 9.)

Line 3: Annual change in demand deposits of individuals in operating and closed commercial banks less interest payments (Table L-1, col. 3 plus the first differences of Table A-56, col. 5 minus the sum of the first differences of Table U-1, col. 1 and Table L-23, cols. 4 and 6).

Line 4: Currency holdings of individuals (Table T-6, col. 8).

Line 5: Sum of lines 6 and 7.

Line 6: Unincorporated business, (excluding agriculture, security brokers and dealers, and professionals) investment in multi-family, commercial, and industrial buildings (construction less original cost depreciation, mortgage debt, real estate bonds, and net purchases from institutions); petroleum and gas well drilling, mining development, and producer equipment (expenditures less depreciation); and inventories (including inventory valuation adjustment). Also net change in demand deposits, U.S. Government securities, loans to consumers, receivables, and debt to banks (sum of Table R-7, col. 1 less cols. 2 to 5, Table R-10, col. 1 less cols. 2 and 5, Table R-13, col. 1 less col. 3, Table R-14, col. 9, Table R-15, col. 9, and Table U-11, cols. 4 to 9 less cols. 10 and 11).

Line 7: Includes (a) expenditures for dwellings (see Table A-7, col. 3); (b) expenditures less original cost depreciation for other buildings (see Tables A-7 and A-8) and for machinery (Table A-1, col. 4); and (c) value of change in inventories (Table A-3, col. 6).

Line 8: Individuals' expenditures on construction of one- to four-family dwellings; hence does not include adjustment for depreciation and change in mortgage debt. (Table R-4, cols. 1 to 4, less col. 7.)

Lines 9 and 10: No information.

Line 11: Sum of lines 12 and 13.

Line 12: Noninstitutional holdings of U.S. Government securities as given in Table V-3, col. 3 less accrued interest on savings bond issues of Adjusted Service Bonds and change in holdings of U.S. Government bonds by unincorporated business. (Table T-10, col. 19 plus Table V-3, col. 5.)

Line 13: Individuals' holdings of state and local government securities, corporate and foreign bonds, and common and preferred stocks, including commissions and taxes on security transactions. (Table T-10, cols. 20 to 22.)

Line 14: Insurance premiums less policy dividends.

Line 15: Surrender values.

Line 16: Death benefits, natured endowments, and disability payments.

Line 17: No information.

Line 18: Mortgage holdings of individuals. (Table T-10, col. 13 plus first differences of Table A-53, col. 7.)

Line 19: No information.

Line 20: Sum of lines 21 and 22.

Line 21: Old age and survivors insurance contributions. (Table F-30, col. 1.)

Line 22: Unemployment compensation tax contributions. (Table F-30, col. 6.)

Line 23: Sum of lines 1, 4, 5, 8, 11, 14, and 20.

Columns 3 and 5 – Lines 1–23: From Tables H-13 and H-14 respectively.

COMPARISON OF NET CHANGES IN SELECTED TYPES OF ASSETS OF INDIVIDUALS ESTIMATED FROM SURVEY DATA WITH ESTIMATES BASED ON TIME SERIES DATA

1935–1936 and 1941

$ mill.

	Time series data		Survey estimates	Time series data	Survey estimates
	1935	1936	1935–1936	1941	
	1	2	3	4	5
1. Bank accounts	2 135	2 019	1 811 to 2 290	1 453	–729
2. Savings	495	549	701 to 997	–438	–1 379
3. Checking	1 640	1 470	920 to 1 122	1 891	650
4. Money on hand	178	528	233 to 319	2 129	574
5. Investment in business	1 653	608	1 296 to 1 521	2 409	2 469
6. Nonfarm	960	1 516	1 044 to 1 166	1 121	1 114
7. Farm business and real estate	693	–908	341 to 502	1 288	1 355
8. Investment in nonfarm real estate	723	1 418	349 to 849	4 118	3 644
9. Owned homes	.	.	. .	.	2 760
10. Other	.	.	. .	.	884
11. Securities	–1 861	–2 009	1 109 to 2 016	2 342	996
12. U.S. Government	–848	–919	. .	2 829	1 179
13. Other	–1 013	–1 090	. .	–487	–183
14. Insurance premiums paid	3 198	3 105	3 239 to 3 852	3 648	2 860
15. Insurance policies surrendered	.	.	–129 to –92	565	87
16. Insurance policies settled	.	.	–231 to –184	1 372	–189
17. Loans to others	.	.	216 to 282	.	–99
18. Secured by mortgages	–116	118	. .	54	–33
19. Other	.	.	. .	.	–66
20. Social insurance	.	.	. .	475	369
21. Old age survivors	.	.	. .	419	327
22. Unemployment insurance	.	.	. .	56	42
23. Total of matched items [1]	6 026	5 669	7 922 to 9 273	16 574	10 183

[1] Col. 3 does not add to total due to nature of estimate.

Table H-19 for 1935–1936. On the 1941 schedule the loans made were classified as "secured by mortgage" and "other"; and as Table H-19 shows, the amount appears to be in the wrong direction. The difference in the reported amounts loaned, shown in Table H-14, and reported amounts borrowed in 1941, not secured by mortgage (Table H-19), is $435 million, a figure which cannot differ from zero only by errors of random sampling. Either the reported loans or the reported debts must be affected by some considerable nonsampling error. The comparison of the frequency of borrowing from individuals (Table H-49) in urban communities in 1935–1936 and 1941 suggests that there may have been some duplication of entries in the reported amounts owed individuals. This conjecture does not, however, explain the apparant dollar magnitude of the discrepancy.

The correspondence between the survey estimates for business investment is almost as difficult to explain as the discrepancies in the estimates for other assets. The surveys obtained data on purchases of farm land, buildings, and equipment in some detail, but the change in investment in nonfarm business was obtained by asking the respondent for a single summary figure. [12] This procedure may yield fairly accurate estimates of the average investment in nonfarm business because of some customary balancing of increases and decreases in the operation of unincorporated business.

The estimates for changes in the securities held by individuals present the greatest divergences. Both purchases and sales of stocks and bonds are characterized by a high degree of income elasticity—even in 1941, when middle income groups were purchasing government bonds. The income groups over $10,000 account for a very large fraction of the transactions, dollarwise, as indicated in Table H-18. This concentration in upper income brackets means that the surveys, designed as they are at the present time, are particularly inadequate sources for estimation of the aggregate volume of changes in security holdings of individuals. Sampling theory would require quite different survey designs for magnitudes varying as much between strata in the population. Random samples necessarily lead to very small samples of the population in the classes which account for a large proportion of the purchases and sales of stocks and bonds. Modest oversampling in the higher income brackets is not sufficient to reduce substantially the sampling error. The small size of the sample, which leads to a large sampling error, may, however, be less serious than the apparently inevitable self-selection of the respondents through the general antipathy of the higher income groups towards interview surveys. Refusals and substitutions mean that a stratification by unknown characteristics is introduced among higher economic classes. Thus it may be assumed that the nonrandom error of reporting is particularly great in the upper income groups and the projection of the correlation between income and the purchases and sales of stocks and bonds from the lower income classes is virtually worthless as an estimation device.

[12] The estimates shown in Table H-19 are exclusive of the inventory of corps stored and livestock owned. The value of the change in the inventory in corps stored and livestock owned is included in the estimates shown in Tables H-13 and H-14.

COMPARISON OF NET CHANGES IN LIABILITIES ESTIMATED FROM SURVEY DATA WITH ESTIMATES BASED ON TIME SERIES DATA
1935–1936 and 1941

$ mill.

	Time series data		Survey estimates	Time series data	Survey estimates
	1935	1936	1935–1936	1941	
	1	2	3	4	5
1. Total mortgage debt	–272	–412	–398 to –312	831	767
2. Homes	.	.	–377 to –305	.	761
3. Other	.	.	–24 to 3	.	6
4. Nonfarm notes due banks and insurance companies	96	227	185 to 285	38	188
5. Nonfarm charge accounts	89	127	120 to 175	114	148
6. Nonfarm installment balances	488	631	481 to 550	294	896
7. Nonfarm other bills	21	48	154 to 212	50	224
8. Total [1]	422	621	443 to 665	1 327	2 223

[1] Col. 3 does not add to total due to nature of estimate.

Columns 1, 2, and 4 – Line 1: Mortgages on nonfarm and farm dwellings (Table R-4, col. 6 plus first differences of Table A-54, col. 2).

Lines 2 and 3: No information.

Line 4: Table D-4, cols. 3 and 11 plus change in policy loans (Table I-8, col. 4).

Line 5: Table D-4, col. 10.

Line 6: Table D-4, col. 9.

Line 7: Table D-4, col. 13.

Line 8: Sum of lines 1 and 4–7.

Columns 3 and 5 – Lines 1 to 8: From Tables H-13 and H-14 respectively.

Table H-20 indicates that changes in liabilities may be better estimated from survey data than changes in assets. This is due partly to the fact that the use of mortgage and consumer credit is more uniformly distributed throughout all income classes than investments of various types. Nevertheless, survey data on the debt characteristics of lower income groups would tend to yield overestimates when projected to include all income groups. However, the 1941 estimates for installment debt and "other" bills are too far from time series estimates to be explained simply as an underestimate of the number and income of groups at the top of the economic scale. Here, as in the case of loans, there seems to be some biasing element in survey methodology. [13]

4. The Estimation of the Saving Function from Survey Data

If sample surveys are to become an important and reliable source of information for aggregates, the results of past surveys must provide the frame of reference for survey design and estimation. The data on changes in assets and liabilities in relation to income, summarized in Appendix v, provide some clues to the problems that must be solved before the survey can be treated as a reliable source for estimates of national aggregates. Many of the difficulties in estimation may be traced to the extreme nonlinearity of the various correlations of the change in particular assets and liabilities with income, combined with a positively skewed distribution as a weighting diagram. If it were possible to find a relation of the changes in specific assets and liabilities to some other magnitude which is more nearly linear in form, the precision of the whole estimation procedure might be greatly improved.

The analysis of the relation of asset changes to income suggests that the net change of total assets may be a fairly linear function of income, though the level of that function differs among different groups in the population. For the estimation of the aggregates for specific assets, a method using total assets as an intermediate variable might be developed. If consumer expenditures could be found to follow some systematic relation to income, the estimation of the net change in specific assets might be facilitated through some simple multi-linear relation which utilizes the estimated income, net change in total assets, and consumer expenditures.

Such devices might improve the statistical accuracy of the estimates made from existing survey data. The most serious errors in survey data, systematic errors in reporting and unrepresentative samples of the upper income groups, require thorough examination and analysis so that the need for a new type of survey question and a different stratification in sampling will be clarified.

[13] The accounting requirement imposed in interviewing and editing may have contributed to these discrepancies. Income was underestimated by at least $10 billion in the 1941 survey, consumer expenditures by a smaller amount. The discrepancy between survey and time series estimates for bank accounts, loans between individuals, installment debt, and other bills owed amounts to about $2 billion, which might be considered misplaced income in the reporting process and reduce, accordingly, the gap in the income estimates. (See Bureau of Labor Statistics, *Family Spending and Saving in Wartime*, Bulletin No. 822, p. 43.)

The frequency of transactions of some types is so low and the amounts in other cases are so small that memory bias is serious. The problems of eliciting information in the case of saving and debts are no more complicated than in the case of many items of consumer expenditures. New approaches to survey design, particularly on the part of market analysts, may shortly provide techniques for interviewing which minimize the mental calculations and cumulations required. The question, "When did you last buy the item?" as Stock has shown, provides a more accurate estimate of the purchases over a long period than any question that requires each respondent to carry out the summation of his purchases. [14] A procedure of this kind might be developed for questions on saving and debt.

APPENDIX II

FAMILY SAVING IN RELATION TO INCOME

1. Factors Influencing the Saving Pattern

In recent years it has been the fashion to estimate the distribution of sundry economic variables, including expenditures and saving, by income brackets for exceedingly broad groups in the population and to seek in a comparison of such a distribution for various dates some explanation of the variability in the relationships of the corresponding aggregates. Two such variable correlation tables, relating averages of total expenditures, total saving, and their components to income, have been prepared for the total civilian noninstitutional population and for the urban and rural segments of that population. This mode of presenting empirical observations on the family balance sheets appears to offer a simple and manageable tool for analysis of the changes that have taken place over time in the allocation of income to saving and to sundry forms of expenditure. Certainly a series showing saving by income bracket for various dates provides us with an extremely interesting set of descriptive comparisons (Table H-21), but the efficiency of this mode of presenting data must be ascertained by experience with the problems of interpretation and analysis.

Taken all together the observations on saving, undifferentiated by date, show very little correlation with current income. The analysis of the relation of saving to current income thus becomes a search for the factors that have been responsible for the almost steady decline in the amounts saved at a given income bracket. Such an exploration means the examination of many variables as possible determinants of the level of saving. When the data are merged into a national saving pattern, illustrated in Table H-21, the variables investigated must include significant distributions that lie back of these apparently simple summaries.

The study of the family saving pattern may contribute to the understanding

[14] Stock, "Non-Sampling Errors in Sampling and Business," *Proceedings of the Conference on Business Application of Statistical Sampling Methods.*

of the movement of the national total over time by identifying certain variables that possibly can be described in time series. When the family saving pattern is given as a composite for broad areas, as in Tables H-21 and H-22, the investigator is compelled to consider many other two-dimensional distributions and to read back from such margins to a reconstruction of an original structure in several dimensions. Any one income bracket in a national composite is a very heterogeneous group with respect to geographic location, occupation, and other factors. At different dates the composition of the income bracket with respect to such factors may change, and probably has changed, substantially. Hence the analyst must consider as possible sources of variation in the level of saving not only such factors, but also the changing relationship of these factors to the income distribution. From the point of view of statistical analysis this complication could be avoided except for the circumstance that in recent years many of the data collections yield only two-dimensional projections of the multi-variate universe. [1]

An explanation of some or all of the variation in the pattern of saving [2] of any population group at various dates means the identification of some variable or set of variables in addition to current income that proves to be correlated with the variation of saving from a stable relationship to income. In order to study the dispersion of the national saving pattern at various dates either the variables selected for correlation with saving must be assumed to be constant for all income brackets at a given date, or their average value for each income bracket must be known. The first assumption would hold only if the composition of the population by all factors known to affect the level of saving were approximately the same at all income brackets, but such a constant mixture of geographic locations, age groups, family types, or occupational groups is contrary to empirical fact. In all surveys in which details on such factors have been assembled, the correlations between income, region, size of community, size of family, and occupational groups have proved to be of sufficient magnitude to have a serious effect on the regression of expenditures and saving to income within very broad population groups. This correlation means that factors other than income which may explain the level of saving probably vary systematically along the income scale but in a different way from date to date.

Tables H-21 and H-22 present the average value for one such variable, family size. The average size of family obviously increases regularly with income for all survey dates and this element of variation, being known, can be eliminated by some procedure of standardization. The transformation of the data to a constant size of family, following a procedure described in Appendix III, is given in Table H-23. The effects of standardizing for size of family are mainly to steepen the slope of the saving curve for any one date and to reduce the differences that led to an intersection of the saving curves for different dates. The importance of

[1] The data for 1941, 1944, 1945, and later years are, except for a few scattered area studies, given solely on this basis.

[2] The term pattern of saving or saving pattern will be used to designate the tables showing average saving by income bracket, either in dollars or as a percentage of income.

1888–1890 – Tabulated from reports for individual families published in the *Sixth* and *Seventh Annual Report of the Commissioner of Labor*, 1891 and 1892. Family income and expenditures do not include any nonmoney items.

1901 – *All family types:* Data from tabulation of groups defined by state and nationality given in Department of Commerce and Labor, *18th Annual Report of the Commissioner of Labor*. Family income and expenditures do not include any nonmoney items.

Normal families: Department of Commerce and Labor, *18th Annual Report of the Commissioner of Labor*. Income and expenditures do not include nonmoney items. Expenditures include insurance and principal payments; saving excludes these items.

1917–1919 – Bureau of Labor Statistics, *Cost of Living in the United States*, Bulletin No. 357. Income and expenditures include net value of home-produced food consumed by family. Principal payments were estimated as one-fifth of the expenditures of home owners.

1935–1936 – National Resources Planning Board, *Family Expenditures in the United States*; Bureau of Labor Statistics, *Family Expenditures in Selected Cities, 1935–36*, Bulletin No. 648; and Department of Agriculture, *Changes in Assets and Liabilities of Families, Five Regions*, Misc. Publication No. 464. Income includes value of home-provided home-consumed food in villages and the net value of occupancy of owned homes in all communities. Figures on average income and expenditures exclude these items. Income and expenditures include income and other personal taxes.

1941 – Bureau of Labor Statistics, *Family Spending and Saving in Wartime*, Bulletin No. 822. Average income and expenditures exclude income and other personal taxes. Total saving estimated as the difference between income and expenditures for consistency with other surveys.

1944 – Bureau of Labor Statistics, *Monthly Labor Review*, Jan. 1946. Income and expenditures exclude income and other personal taxes.

1947 – Special tabulation by Survey Research Center, University of Michigan, of data for Federal Reserve Board, Survey of Consumer Finances, 1947. Average income for each income class estimated on basis of other survey data; expenditures obtained by subtracting saving from income. Income and expenditures include income and other personal taxes.

H-21
(Part 1)

EXPENDITURES AND SAVING OF FAMILIES BY INCOME CLASS

Selected Years: 1888 to 1947

Dollars (except col. 1)

Family income class	Average size of family	Average income	Average expenditures	Average saving		
				Total	Insurance premiums	Principal payments on owned home
	1	2	3	4	5	6
			1888–1890			
Under $200	3.50	161	239	78	0	.
200– 400	3.90	333	359	–26	1	.
400– 600	4.40	495	484	11	3	.
600– 800	4.88	686	627	59	5	.
800–1,000	5.21	875	769	106	8	.
1,000–1,200	5.67	1 080	902	178	9	.
1,200–1,400	5.65	1 282	1 028	254	10	.
1,400–1,600	5.49	1 490	1 085	405	16	.
1,600–1,800	6.19	1 678	1 182	496	16	.
1,800–2,000	6.49	1 870	1 316	554	17	.
2,000 2,200	5.91	2 102	1 320	782	22	.
2,200 and over	6.05	2 645	1 439	1 206	29	.
			1901, all family types			
$300– 400	3.67	373	388	–15	0	0
400– 500	4.93	419	372	47	6	1
500– 600	5.26	576	542	34	13	2
600– 700	5.00	652	587	65	18	7
700– 800	4.87	747	680	67	22	5
800– 900	4.81	843	739	104	16	12
900–1,000	4.77	933	771	162	21	16
1,000 and over	4.97	1 084	866	218	44	7
			1901, normal families			
Under $200	3.22	150	196	–46	.	.
200– 300	3.37	250	312	–62	.	.
300– 400	3.75	350	389	–39	.	.
400– 500	3.79	450	466	–16	.	.
500– 600	3.92	550	540	10	.	.
600– 700	3.93	650	612	38	.	.
700– 800	3.95	750	693	57	.	.
800– 900	4.22	850	771	79	.	.
900–1,000	4.06	950	816	134	.	.
1,000–1,100	4.26	1 050	900	150	.	.
1,100–1,200	4.01	1 150	973	177	.	.
1,200 and over	3.80	1 300	1 052	248	.	.
			1917–1919			
Under $900	4.26	813	814	–1	25	4
900–1,200	4.50	1 075	1 039	36	30	7
1,200–1,500	4.73	1 344	1 248	96	37	16
1,500–1,800	4.95	1 632	1 479	153	43	15
1,800–2,100	5.14	1 925	1 687	238	49	20
2,100–2,500	5.69	2 272	1 977	295	57	21
2,500 and over	6.39	2 790	2 388	402	61	18

EXPENDITURES AND SAVING OF FAMILIES BY INCOME CLASS

Selected Years: 1888 to 1947

Dollars (except col. 1)

Family income class	Average size of family	Average income	Average expenditures	Average saving		
				Total	Insurance premiums	Principal payments on owned home
	1	2	3	4	5	6
			1935–1936, nonfarm			
Under $500	3.21	292	493	–201	15	3
500 - 1,000	3.52	730	802	–72	33	4
1,000– 1,500	3.63	1 176	1 196	–20	53	13
1,500– 2,000	3.73	1 636	1 598	38	84	26
2,000– 3,000	3.83	2 292	2 124	168	126	42
3,000– 4,000	4.01	3 243	2 814	429	229	74
4,000– 5,000	4.17	4 207	3 467	740	301	50
5,000–10,000	4.09	6 598	4 950	1 648	600	71
10,000 and over	3.82	22 259	12 109	10 150	1 680	121
			1941, urban			
Under $500	2.64	329	472	–143	12	2
500 1,000	3.17	736	798	-62	19	8
1,000 - 1,500	3.05	1 268	1 320	-52	42	14
1,500 - 2,000	3.39	1 759	1 717	42	47	16
2,000– 2,500	3.30	2 272	2 214	58	96	43
2,500– 3,000	3.70	2 744	2 674	70	110	64
3,000– 5,000	3.71	3 702	3 403	299	149	61
5,000–10,000	4.43	6 120	5 010	1 110	308	82
10,000 and over	4.62	13 478	9 601	3 877	905	
			1944, urban			
Under $500	2.45	313	913	600	14	11
500– 1,000	2.45	776	1 083	- 307	25	24
1,000– 1,500	2.78	1 243	1 454	211	40	14
1,500– 2,000	3.03	1 779	1 854	–75	59	23
2,000– 2,500	3,10	2 259	2 137	122	70	34
2,500– 3,000	3.13	2 757	2 529	228	83	52
3,000– 4,000	3.69	3 480	2 957	523	109	41
4,000– 5,000	4.01	4 408	3 642	766	140	59
5,000 and over	4.13	7 595	4 759	2 836	263	118
			1947, nonfarm			
Under $1,000	1.9	710	912	–202	.	.
1,000– 2,000	2.4	1 620	1 647	–27	.	.
2,000– 3,000	2.8	2 540	2 484	56	.	.
3,000– 4,000	3.1	3 480	3 374	106	.	.
4,000– 5,000	3.1	4 430	4 167	263	.	.
5,000– 7,500	3.1	6 000	5 275	725	.	.
7,500–15,000	3.3	8 300	6 492	1 808	.	.
15,000 and over	3.1	24 000	17 032	6 968	.	.

H-22

EXPENDITURES AND SAVING OF FARM FAMILIES BY INCOME CLASS
1935–1936 and 1941

Dollars (except col. 1)

Family income class	Average size of family	Average income	Average expenditures	Average saving			
				Total	Insurance premiums	Investment in farm business	
						Total	Inventory change
	1	2	3	4	5	6	7
				1935–1936			
$0– 250	3.91	178	302	–124	18	–63	–26
250– 500	4.06	394	442	–48	9	–18	26
500– 750	4.15	643	605	38	11	7	33
750–1,000	4.19	901	760	141	17	17	35
1,000–1,500	4.20	1 236	928	308	28	63	19
1,500–2,000	4.20	1 734	1 124	610	39	105	19
2,000–3,000	4.14	2 362	1 375	987	61	203	–16
3,000 and over	4.10	5 095	2 092	3 003	142	406	624
				1941			
$0– 250	3.68	137	311	–174	6	23	1
250– 500	3.78	377	457	–80	11	54	10
500– 750	4.02	628	633	–5	18	66	35
750–1,000	4.06	868	838	30	26	77	61
1,000–1,500	4.74	1 226	977	249	28	395	101
1,500–2,000	4.30	1 701	1 259	442	46	548	194
2,000–3,000	3.52	2 439	1 663	776	67	674	372
3,000–5,000	4.54	3 776	1 974	1 802	118	1 532	692
5,000 and over	4.50	10 117	5 155	4 962			

1935–1936 – Special tabulation of 1935–1936 data by Bureau of Human Nutrition and Home Economics.

1941 – Department of Agriculture, *Rural Family Spending and Saving in Wartime*, Misc. Publication No. 520.

SAVING-INCOME RATIO AMONG FAMILIES AVERAGING 3.5 PERSONS

Selected Dates: 1888 to 1947

Average income of income class [1]	Average saving	Saving-income ratio	Average income of income class [1]	Average saving	Saving-income ratio
$		Percent	$		Percent
1	2	3	1	2	3
	1888–1890			*1901*	
161	–78	–48.4	150	–49	–32.7
333	–20	–6.0	250	–64	–25.6
495	29	5.8	350	–35	–10.0
686	93	13.6	450	–3	–0.7
875	155	17.7	550	36	6.5
1 080	247	22.8	650	64	9.8
1 282	333	26.0	750	97	12.9
1 490	483	32.4	850	129	15.2
1 678	603	35.9	950	190	20.0
1 870	683	36.5	1 050	227	21.6
2 102	891	42.4	1 150	247	21.5
2 645	1 330	50.3	1 300	313	24.1
	1917–1919			*1935–1936*	
			292	–194	–66.4
813	24	2.9	730	–70	–9.6
1 075	78	7.3	1 176	–14	–1.2
1 344	157	11.7	1 636	54	3.3
1 632	234	14.4	2 292	197	8.6
1 925	342	17.8	3 243	490	15.1
2 272	448	19.7	4 207	838	19.9
2 790	630	22.6	6 598	1 769	26.8
			22 259	10 317	46.3
	1941			*1944*	
329	–165	–50.2	313	–656	–209.6
736	–73	–9.9	776	–374	–48.2
1 268	–87	–6.9	1 243	–263	–21.1
1 759	31	1.8	1 779	–91	–5.1
2 272	35	1.6	2 259	78	3.5
2 744	94	3.4	2 757	175	6.3
3 702	330	8.9	3 480	549	15.9
6 120	1 295	21.1	4 408	903	20.5
13 478	4 304	31.9	7 595	2 964	39.0

[1] Income classes given in Tables H-21 and H-22.

H-23
(Part 2)

SAVING-INCOME RATIO AMONG FAMILIES AVERAGING 3.5 PERSONS

Selected Dates: 1888 to 1947

Average income of income class [1]	Average saving	Saving-income ratio	Average income of income class [1]	Average saving	Saving-income ratio
$		Percent	$		Percent
1	2	3	1	2	3
1935–1936, farm			*1941, farm*		
178	–118	–66.3	137	–171	–124.9
394	–37	–9.4	377	–61	–16.1
643	54	8.4	628	9	1.4
901	164	18.2	868	42	4.8
1 236	336	27.2	1 226	296	24.1
1 734	744	42.9	1 701	569	33.4
2 362	1 023	43.3	2 439	779	31.9
5 095	3 057	60.0	3 776	1 885	50.0
			10 117	5 171	51.1
1947, nonfarm					
710	–296	–41.7			
1 620	–138	–8.5			
2 540	–36	–1.5			
3 480	38	1.1			
4 430	174	3.9			
6 000	616	10.3			
8 300	1 737	20.9			
24 000	10 699	44.6			

[1] Income classes given in Tables H-21 and H-22.

Source: Figures derived from Tables H-21 and H-22 by standardizing saving for family size by procedure described in Appendix III. Data for normal families adjusted to transfer principal mortgage payments on homes and insurance from expenditures to saving by the relation found in the tabulation "1901, all family types" shown in Table H-21.

this adjustment appears when, by various transformations of the income variable, classes which differ considerably in the size of family are compared.

Averages or indices by income bracket for other factors which should be considered in an analysis of the national saving pattern are unfortunately not available. Purchasing power is a variable that is naturally expected to offer an explanation of some of the variation in family expenditures and saving at various dates, but at present there exist no estimates of the variation in purchasing power with income bracket. Changes in the price level over time most certainly must be associated with economic level and are known to have varied among communities. Accordingly, the use of a single measure for purchasing power for each date in lieu of an index that varies with income level will probably lead to certain anomalies in the results that raise more questions than are answered. If the variation in the price level, taken as a single measure for each date, explains the differences in the saving-income ratio, the transformation of income to real income by deflation should result in a set of saving patterns which show greater similarity than the observed data. The transformation to real income shown in Table H-24 does indeed result in considerable reduction in the variation among saving patterns for different dates. The observations for 1888–1890, 1901, and 1917–1919 seem to come almost into coincidence, but the data for 1935–1936 and later dates are at a lower level, with some tendency to be twisted around the position of zero saving.

It may be argued that the failure of the deflation process to produce a complete explanation of the differences among the saving patterns for all survey dates results from fundamental and systematic errors in the measurement of the price level over the period of sixty years. The degree of correspondence of the curves relating deflated saving to income for the years prior to 1920 and following 1930 does suggest that there is a formula for a price index that would yield some further convergence of the two groups of observations. However, in view of the changes in the consumption pattern that have taken place in these sixty years, it would be very surprising if the use for deflation of any simply defined price index, i.e. defined to have the same value for all income groups at a given date, yielded a set of identical saving patterns for the various dates under consideration.

The general income level, as measured by the mean income, has been found to be an effective deflator in the study of saving patterns at different dates, but this deflation also varies with income bracket. [3] When the income variable in Table H-24 is expressed in multiples of the average income, [4] the distinction between earlier and later surveys is eliminated to a considerable extent. (Table H-25.) While various curves tend to converge around the position of zero saving, a significant variation in the slopes of the regressions remains to be explained. This variation in the slopes, without any doubt, arises in large part from the unrealistic assumption that the general income level has the same magnitude for all income brackets within broad population groups. Since the lowest income groups include

[3] Kuznets, *Shares of Upper Income Groups in Income and Savings.*

[4] In this case the survey averages were used as the best estimate of the average income of the population.

H-24

SAVING IN RELATION TO INCOME DEFLATED BY THE INDEX OF CONSUMER PRICES AMONG FAMILIES AVERAGING 3.5 PERSONS

Selected Dates: 1888 to 1947

Average deflated income of various income classes	Saving-income ratio	Average deflated income of various income classes	Saving-income ratio	Average deflated income of various income classes	Saving-income ratio
$	Percent	$	Percent	$	Percent
1	2	1	2	1	2
1888–1890		*1901*		*1917–1919*	
292	-48.4	262	-32.7	–	–
604	-6.0	436	-25.6	–	–
898	5.8	611	-10.0	–	–
1 245	13.6	785	-0.7	753	2.9
1 588	17.7	960	6.5	993	7.3
1 960	22.8	1 134	9.8	1 244	11.7
2 327	26.0	1 309	12.9	1 511	14.4
2 704	32.4	1 483	15.2	1 782	17.8
3 045	35.9	1 658	20.0	2 104	19.7
3 394	36.5	1 832	21.6	2 585	22.6
3 652	42.4	2 006	21.5	–	–
4 801	50.3	2 269	24.1	–	–
1935–1936, nonfarm		*1941, urban*		*1944, urban*	
296	-66.4	313	-50.2	249	-209.6
740	-9.6	700	-9.9	619	-48.2
1 192	-1.2	1 205	-6.9	990	-21.1
1 659	3.3	1 672	1.8	1 418	-0.5
2 324	8.6	2 160	1.6	1 880	0.3
3 288	15.1	2 608	3.4	2 197	6.3
4 266	19.9	3 519	8.9	2 773	15.9
6 690	26.8	5 817	21.1	3 512	20.5
22 570	46.3	12 811	31.9	6 052	39.0
1935–1936, farm		*1941, farm*		*1947, nonfarm*	
180	-66.3	130	-124.9	446	-41.7
399	-9.4	358	-16.1	1 017	-8.5
652	8.4	597	1.4	1 595	-1.5
914	18.2	825	4.8	2 185	1.1
1 253	27.2	1 165	24.1	2 772	3.9
1 758	42.9	1 617	33.4	3 768	10.3
2 395	43.3	2 318	31.9	5 212	20.9
5 166	60.0	3 589	50.9	15 072	44.6
		9 617	51.1		

Source: Derived from Table H-23. Bureau of Labor Statistics consumer price index from 1913 on; Federal Reserve Bank of New York cost of living index prior to 1913 (both indices given in *Historical Statistics*, pp. 235–236).

SAVING IN RELATION TO INCOME EXPRESSED IN MULTIPLES OF AVERAGE INCOME

Selected Dates: 1888 to 1947

Income multiple	Percent of income saved	Income multiple	Percent of income saved	Income multiple	Percent of income saved
1	2	1	2	1	2
1888–1890		*1901*		*1917-1919*	
0.236	–48.4	0.133	–32.7	.	.
0.488	–6.0	0.334	–25.6	.	.
0.726	5.8	0.467	–10.0	.	.
1.005	15.7	0.400	–0.7	.	.
1.283	17.7	0.734	6.5	0.537	2.9
1.584	22.8	0.867	9.8	0.711	7.3
1.880	26.0	1.001	12.9	0.888	11.7
2.185	32.4	1.134	15.2	1.079	14.4
2.460	35.9	1.268	20.0	1.272	17.8
2.742	36.5	1.401	21.6	1.502	19.7
3.082	42.4	1.534	21.5	1.844	22.6
3.878	50.3	1.734	24.1	.	.
1935–1936, nonfarm		*1941, urban*		*1944, urban*	
0.148	–66.4	0.117	–50.2	0.073	–209.6
0.371	–9.6	0.262	–9.9	0.181	–48.2
0.598	–1.2	0.451	–6.9	0.290	–21.1
0.832	3.3	0.615	1.8	0.416	–0.5
1.166	8.6	0.808	1.6	0.551	0.3
1.650	15.1	0.976	3.4	0.644	6.3
2.140	19.9	1.317	8.9	0.813	15.9
3.357	26.8	2.177	21.1	1.030	20.5
11.325	46.3	4.795	31.9	1.1774	39.0
1935–1936, farm		*1941, farm*		*1947, nonfarm*	
0.270	–66.3	0.115	–124.9	0.134	–41.7
0.598	–9.4	0.316	–16.1	0.306	–8.5
0.862	8.6	0.526	1.4	0.480	–1.5
1.370	18.2	0.728	4.8	0.658	1.1
1.879	27.2	1.056	24.1	0.834	3.9
2.636	42.9	1.426	33.4	1.134	10.3
3.591	43.3	2.044	31.9	1.568	20.9
7.745	60.0	3.165	50.0	4.536	44.6
.	.	8.481	51.5	.	.

Source: Derived from Tables H-23 and H-24.

H-26 EFFECT OF TYPE OF COMMUNITY ON NATIONAL SAVING PATTERN
1935–1936

Dollars

Family income class	Average income in 1935–1936	Average saving in 1935–1936 weighted by proportion of population living in metropolitan, city, and rural nonfarm areas in:				
		1890	1900	1910	1920	1930
	1	2	3	4	5	6
Under $500	335	−179	−192	−196	−210	−221
500– 750	654	−93	−99	−100	−102	−106
750– 1,000	885	−53	−56	−57	−59	−61
1,000– 1,250	1 133	−31	−34	−35	−38	−40
1,250– 1,500	1 373	−2	−5	−6	−8	−9
1,500– 1,750	1 623	27	23	23	20	18
1,750– 2,000	1 873	58	53	53	50	49
2,000– 2,500	2 230	144	133	131	126	124
2,500– 3,000	2 730	238	226	224	217	214
3,000– 4,000	3 468	437	419	417	408	406
4,000– 5,000	4 444	778	751	746	726	716
5,000–10,000	6 828	1 819	1 727	1 704	1 634	1 591

Source: Saving patterns for rural nonfarm, city, and metropolitan families from National Resources Planning Board, *Family Expenditures in the United States.* Population distributions from *Statistical Abstract,* 1940.

relatively more families living in small towns in certain regions and the highest income groups include proportionately more families living in metropolitan areas, the measure of general income level certainly must differ along the income scale.

The questions raised by these calculations are emphasized by a simple and rather astonishing comparison of the saving pattern of nonfarm families in 1888–1890 and that of farm families in 1935–1936 and 1941. Any set of variables that will explain the variation in the pattern of saving from date to date must also account for the approximate correspondence in the rate of saving among farm families in recent years and the rate among nonfarm families sixty years ago. If the general income level explains this correspondence, the variation in that measure from one income bracket to another must have been more alike in the nonfarm population surveyed in 1888–1890 and the farm population in 1935–1936 and 1941 than in the nonfarm population at different dates.

These considerations imply not only that the measure of the general income level, or the price level or any other variable that may be associated with saving, must vary with the family income bracket at any given date, but also that these correlations must differ from date to date. Such changes in the factors determining the distribution of the population by income have without doubt taken place, and hence the interpretation of the variations in the saving pattern must take account of the effect of these changes as well as the effect of the changes in the saving patterns of groups that are relatively homogeneous with respect to such factors.

Simple calculations such as are given in Table H-26 show that the national saving pattern is significantly altered simply by assigning new population weights

to component groups. In the illustration, the saving pattern of 1935–1936 among rural nonfarm, city, and metropolitan families was held constant and the composite saving pattern using the population distributions characteristic of 1890, 1900, 1910, 1920, and 1930 was computed. Reweighting definitely moves the saving pattern of 1935–1936 in the direction of the actual observations for earlier dates, but the magnitude of the changes is small compared with observed differences in the actual data.

This illustration of the possible effect on the saving pattern of changing the distribution of the population can be used to illuminate further the analysis of the variation of the national saving pattern in terms of such factors as price level and general income level. The variation in a deflator along any income scale that would bring the observations effectively into coincidence can be estimated by calculating from Tables H-23 and H-26 the income corresponding to saving-income ratios. Such calculations for 1888–1890 and 1935–1936, shown below, indicate that the deflator must increase at least 70 percent over the income scale.

Saving in percent of income	Income corresponding to the saving ratio in:			Ratio of incomes in 1935–1936 to incomes in 1888–1890	
	1888–1890	1935–1936, actual	1935–1936, reweighted	Actual	Reweighted
	Dollars				
–5	347	973	950	2.8	2.7
0	417	1 299	1 271	3.1	3.0
5	487	1 965	1 868	4.0	3.8
10	576	2 497	2 484	4.3	4.3
15	670	3 240	3 031	4.8	4.5
20	967	4 242	4 208	4.4	4.4
25	1 219	5 974	5 517	4.9	4.6

The reweighting reduced somewhat the spread in income corresponding to a specified saving-income ratio, but the calculation remains a clear illustration of the difficulties of reading back from a national composite the probable characteristics of heterogeneous groups that make up each income bracket. Statistically, the solution to these problems is simple. As far as possible, the saving pattern should be treated as multi-variate functions in terms of the variables that a priori or by empirical observation have an influence on the saving-income ratios. Projecting all observations on a two-dimensional screen leads only to questions about their distribution in the multi-dimensional space of reality. As a statistical model a plan for a multi-variate analysis is perfectly sound, but any analysis based on extensive distribution by a number of significant variables is hindered by the nature of the survey data. The limitations of the data in respect to the amount of information provided, as well as the handicaps resulting from variations in basic methodology, were discussed in Appendix I.

2. Further Analysis of the Saving Pattern

These introductory considerations indicate some of the guide lines for further investigation of the sources of variation in the pattern of saving that has appeared over the past sixty years. In order to yield information that may contribute to the understanding of time series, not only must the analysis include many factors associated with saving and the cross distributions among these factors, but it must also take account of the mutual interactions of the various forms of saving in relation to the changing distributions of the population by geographic location, type of community, class of worker, and other significant factors.

The data on family saving have many limitations for such a study; statistical analysis is handicapped not only by basic variations in the methods and concepts used in the collection of data, but also by the form of tabulation, which is incomplete or too compressed for its purposes. Where the original records still exist, it has been possible to make some additional tabulations which permit the analysis to proceed along direct lines suggested by various hypotheses. The amount of such reprocessing of the data that has been done compared with what is possible has been limited, and therefore a considerable portion of the statistical analysis has involved many unrealistic simplifying assumptions.

APPENDIX III

SAVING IN RELATION TO AGE AND FAMILY SIZE

1. Saving in Relation to Age Groups

The effect of progressive changes in the age distribution of the population on the level and composition of personal saving can probably never be measured in any strict sense because age is highly correlated with other factors in the experience of the individual. Age and family responsibility advance together for the great majority of adults in the population; age is closely associated with changes in occupational status and class of work; and, as the long-run result of migration, the geographic distributions of the various age groups are significantly different. Income progresses upwards with age to a point which varies with the occupational group, geographic location, and class of worker and then declines to a level that is, in general, substantially below the maximum. Thus, apart from a secular or cyclical shift in the general income level, individuals in the middle age groups will usually be found in income brackets above their previous experience and older persons will usually be found below their earlier norms. To compare the expenditures and saving of the young, the middle aged, and the old, *ceteris paribus*, requires a measure of economic level that equates the circumstances of age groups. Differences in income experience mean automatically that the income of a given

year may be an exceedingly imperfect measure for isolating the influence of age on spending and saving.

An accumulation of empirical evidence in recent years demonstrates convincingly that expenditures and saving are determined not only by current income, but also by the change in current income from some previous position. In general terms, this proposition can be accepted as applicable to all age groups. The variation among the age groups in expenditures and saving within a current income bracket will accordingly be a reflection of changes in the direction and magnitude of income and thus may yield little or no information on the effect of age alone. In a year when incomes in general are not substantially above or below previous levels, the downward shift in the incomes of the older age groups and the upward movement in the incomes of the younger age groups will probably be most obscure in the lowest income brackets. The age comparison is probably least confounded with the effects of income changes in the upper income brackets. In a year when incomes rise to levels considerably higher than in the recent past, the age comparison will probably be obscured at all income brackets because the magnitude of the income increases will probably be much greater for younger than for older age groups.

These hypotheses are only partly confirmed by the available statistical data on the income, expenditures, and saving of the various age groups, which suggest that there are still other elements to be recognized. In 1935–1936, there was a clear distinction in the slope (elasticity) of expenditure curves as between the youngest families, in which the wife was under 30, and those in other age groups. The age groups over 30 differed chiefly in the level of expenditures, and in general the level decreased uniformly with age (Table H-27). [1] Among single persons living in cities in 1941, there were similar differences, but among two-person families the expenditures of the oldest families, 60 and over, were consistently higher than the middle age groups. This tendency for the oldest units to have a higher level of expenditures than those between 40 and 60 persists through most of the comparisons for 1944 (Table H-28). The shift in position of the middle age groups relative to the oldest between 1935–1936 and 1944 might be interpreted in terms of the lags in consumption associated with rapid changes in income position, for the families in the middle age groups at all times probably experience the greatest increases in income. [2]

[1] The farm data from this same study, shown in Table H-27, unfortunately illustrate only the confusion of age with locality and income level as factors in the expenditure curves. The low expenditures of the age group 60 and older in the income groups with average money incomes less than $1,000 and the low expenditures of the age group 30 to 40 years at money incomes above $1,000 result from a concentration of these groups in areas characterized by low expenditures for family living to a greater degree than was true of the other age groups at these income brackets. The small city and village samples suffered from a variation in the regional composition of the age groups at the various income levels much less than the farm sample.

[2] Such a difference in the change in income position between age groups certainly appeared with the general shift in income between 1941 and 1944. See, in particular, "City-Family Composition in Relation to Income, 1941 and 1944," *Monthly Labor Review*, Feb. 1946.

H-27
(Part 1)

AVERAGE EXPENDITURES AND SAVING OF TWO-PERSON FAMILIES CLASSIFIED BY AGE OF WIFE AND INCOME: NORTH CENTRAL SMALL CITIES, VILLAGES, AND FARMS: 1935-1936

Dollars

Average income [1]	Age of wife				
	Under 30	30 to 40	40 to 50	50 to 60	60 or older
	1	2	3	4	5
Small cities, average expenditures					
$500	560	.	575	600	645
750	800	810	760	770	770
1,000	1 030	1 000	980	980	1 050
1,250	1 245	1 180	1 160	1 200	1 140
1,500	1 420	1 400	1 340	1 400	1 175
1,750	1 610	1 570	1 500	1 525	1 340
2,000	1 800	1 760	1 665	1 625	1 500
2,500	2 210	2 000	1 940	1 875	1 860
Small cities, average saving					
$500	–60	.	–75	–100	–145
750	–50	–60	–10	–20	–20
1,000	–30	0	20	20	–50
1,250	5	70	90	50	110
1,500	80	100	160	100	325
1,750	140	180	250	225	410
2,000	200	240	335	375	500
2,500	290	500	560	625	640
Villages, average expenditures					
$500	555	.	700	600	560
750	815	860	800	745	720
1,000	1 020	1 045	1 010	935	890
1,250	1 220	1 210	1 170	1 110	1 135
1,500	1 415	1 360	1 265	1 280	1 280
1,750	1 610	1 545	1 380	1 450	1 380
2,000	1 880	1 730	1 440	1 610	1 450
2,500	2 240	2 015	.	.	1 740

AVERAGE EXPENDITURES AND SAVING OF TWO-PERSON FAMILIES CLASSIFIED BY AGE OF WIFE AND INCOME; NORTH CENTRAL SMALL CITIES, VILLAGES, AND FARMS: 1935-1936

Dollars

Average income [1]	Age of wife				
	Under 30	30 to 40	40 to 50	50 to 60	60 or older
	1	2	3	4	5
			Villages, average saving		
$500	-55	.	-200	-100	-60
750	-65	-110	-50	5	30
1,000	-20	-45	-10	65	110
1,250	30	40	80	140	115
1,500	85	140	235	220	220
1,750	140	205	370	300	370
2,000	120	280	560	390	550
2,500	260	485	.	.	760
			Farms, average expenditures		
$500	500	495	500	460	440
750	620	595	635	595	575
1,000	690	650	700	680	620
1,250	760	680	780	735	670
1,500	755	710	890	765	700
1,750	740	745	1 000	800	730
2,000	745	760	1 020	850	770
2,500	755	790	935	955	865
			Farms, average saving		
$500	0	5	0	40	60
750	130	155	115	155	175
1,000	310	350	300	320	380
1,250	490	570	470	515	580
1,500	745	790	610	735	800
1,750	1 010	1 005	750	950	1 020
2,000	1 255	1 240	980	1 150	1 230
2,500	1 745	1 710	1 565	1 545	1 635

[1] Money income as defined for the Consumer Purchases Study.

Source: Department of Agriculture, *Family Spending and Saving as Related to Age of Wife and Age and Number of Children*, Misc. Publication No. 489. Averages shown in the table are simple interpolations between tabulated values in order to show the same average income for each age group.

H-28

EXPENDITURES AND SAVING OF URBAN ONE- AND TWO-PERSON FAMILIES CLASSIFIED BY AGE OF HEAD AND INCOME: 1941 and 1944

Dollars

Average income	Two-person families with head aged:			One-person families with head aged:		
	Under 40	40 to 60	60 years or older	Under 40	40 to 60	60 years or older
	1	2	3	4	5	6
			1941, average expenditures			
$500	.	475	605	575	610	545
750	.	725	825	780	795	740
1,000	1 060	975	1 050	990	990	935
1,250	1 310	1 225	1 275	1 195	1 185	1 125
1,500	1 525	1 485	1 490	1 405	1 385	1 325
1,750	1 735	1 730	1 725	1 615	1 575	1 520
2,000	1 960	1 935	1 940	1 825	1 770	1 715
2,500	2 385	2 285	2 305	.	.	.
			1941, average saving			
$500	.	25	–105	–75	–110	–45
750	.	25	–75	–30	-45	10
1,000	–60	25	–50	10	10	65
1,250	–60	25	–25	55	65	125
1,500	–25	15	10	95	115	200
1,750	15	20	25	135	175	230
2,000	40	65	60	175	230	285
2,500	115	215	195	.	.	.
			1944, average expenditures			
$750	1 300	.	1 145	875	675	845
1,000	1 420	.	1 220	1 010	840	980
1,250	1 535	1 245	1 300	1 145	1 010	1 135
1,500	1 650	1 325	1 385	1 275	1 175	1 275
1,750	1 770	1 445	1 495	1 410	1 354	1 410
2,000	1 885	1 590	1 615	1 545	1 505	1 555
2,500	2 120	1 965	1 875	1 805	1 770	1 825
3,000	2 355	2 245	2 135	2 070	1 950	2 020
			1944, average saving			
$750	–550	.	–395	–125	75	–95
1,000	–420	.	–220	–10	160	20
1,250	–285	5	-50	105	240	115
1,500	–150	175	115	225	325	225
1,750	–20	305	255	340	405	340
2,000	115	410	385	455	495	445
2,500	380	535	625	695	730	675
3,000	645	755	865	930	1 050	980

Source: The Taxation of Pensions and Annuities, a report on House Resolution 2948 of the 79th Congress, 2nd Session, by the staff of the Joint Committee on Internal Revenue Taxation, p. 54.

This explanation, although plausible, does not lead to a general similarity among all age groups of the shifts in consumption pattern *between dates*. The common response to the circumstances of the times suggests that fundamental distinctions in the standard of living of age groups over 30, if they ever existed, are disappearing. Expenditures and saving of the different age groups at similar incomes would accordingly be differentiated by the stages of family accumulation of such assets as homes and durable goods and by the amount of transfer payments between families at different points in the age cycle. [3] This argument would lead to the conclusion that the crucial effect of the age distribution on aggregate expenditures and saving is registered in the relative numbers of single individuals and couples living as independent units, in either households or rooming places, and in the proportion of these that are newly established. Among units in existence for at least a year, increase in age does not seem to change substantially the differential between expenditures of one- and two-person families and families of larger size. [4] Accordingly, only the relative number of small units in the total population and their relative economic position significantly affect the aggregate level of expenditures and saving. Newly established units, by investing in homes, furniture and automobiles, liquidate their accumulated saving and incur debts, and hence alterations in the rate of household formation at various times must be reflected in a reduction of the aggregate level of saving. The fragmentary data on the saving of established families by age groups and of newly formed families independent of other factors offer no basis for deciding on the influence of these elements on the aggregate in quantitative terms. This tentative conclusion that the size of the unit and rate of increase in the number of units are significant factors in the total can, however, be verified by time series analyses in the near future, when the Census annual estimates of the number of independent individuals and households have been accumulated for a sufficiently long period of years.

2. The Combined Influence on Saving of Age, Family Size, and Economic Position

Changes in the age distribution of the population, although they might not substantially affect the saving-income ratio within the same locality, family size group, and income bracket, could alter the aggregates significantly through

[3] Social provision for the aged probably has the effect of reducing the outlays made by children for the support of their parents, but this change may have introduced a reversal of the direction of such transfers. The 1935–1936 study quoted above showed a propensity for the oldest families, 60 and over, to allocate more to the item "gifts to relatives" than younger couples.

[4] If the age group 60 and older spent less and saved more than all the younger groups at the same income level, increasing the weight of the older groups should widen the difference between the expenditure patterns of two-person families and families of three or more persons. The few samples for the postwar period described below do not indicate any such change in the differential, and hence it seems reasonable to assume that the parabolic form of the expenditure-age regression indicated in the 1941 and 1944 studies is more probable than the uniformly decreasing line exhibited in the study for the North Central region in 1935–1936.

correlated changes in the distribution of the population by these other factors. Within the same locality, increases in the relative number of older people could lead to increases in the relative number of small families (one and two persons) and, because of the age cycle of income, to accentuation of the correlation between family size and income. Likewise, the changing age distribution could result in expanding the differences in income level, income distribution, size of household, and related variables among localities.

The economic resources of individuals in the various age groups at any given time determine the number of independent consumer units and to a certain extent their geographic location. Individuals of any age with little or no income cannot live independently, but must be part of a household headed by persons able to support them. By and large it is the very young adults, the elderly, the widows, and the disabled who, for lack of income, live as members of some relative's household. Social policies that have reduced the relative number of such individuals have almost automatically increased the total number of consumer units, reduced the average size of the unit, and altered the general level (as well as the components) of expenditures and saving. Within the changing population with some income, age differences have been shown to be of substantial magnitude in every survey of income distribution. Data prepared by the Survey of Consumer Finances are summarized for 1948 in the following medians:

Age of head of spending unit	*Median 1949 income*
18 to 25	$2,020
25 to 35	3,090
35 to 45	3,430
45 to 55	3,130
55 to 65	2,560
65 and older	1,100

Source: Federal Reserve Bulletin, July 1949.

The Survey of Consumer Finances data approach the most comprehensive tabulation to date for measuring the age differential in income at a given time. The spending unit comprehends primary families in private households and secondary families of one or more persons with sufficient income to be counted as financially independent. If the population living in rooming houses and institutions, such as nursing homes and homes for the aged, were also included, the disparity between incomes of the young and the old and incomes of families in their middle years would be widened. On the other hand, restricting the comparison to families that maintain separate living quarters would narrow the age differences in the income distribution. The Census income survey for the same year, for example, shows a median income of approximately $1,380 for families of one or more persons in which the head was 65 years or older. [5] The aggregate levels of expenditures and saving are influenced by the relative number of each age group who receive some

[5] *Materials on the Problem of Low-Income Families*, assembled by the staff of the Subcommittee on Low-Income Families, Joint Committee on the Economic Report, p. 57.

income and by the degree to which that income permits the maintenance of separate living arrangements and the support of relatives. In general the employment situation determines the fortunes of the very young adults, for they ordinarily have few resources in property and "civil rights" added to their earning power. The situation of the elderly is, on the contrary, determined by their property holdings and "rights" to pensions and other benefits. The middle age groups represent, possibly, a continuous transition between these extremes, as affected by their responsibility for the support of the next generation and the preceding one.

Very few spending units in any age group have assets in stocks, bonds, or bank accounts sufficient to finance living expenditures for more than a year or two. According to the Federal Reserve Board's Survey of Consumer Finances, of the spending units in any age group at most one-sixth have liquid assets worth $5,000 or more and at most 7 percent have stocks and bonds valued at $5,000 or more (Table H-29). For the great majority of units the holdings of such assets could only represent a reserve for some particular purpose, and only to a small extent could the holdings serve as a supplement to income in determining living arrangements, expenditures, and current saving. [6] The owned home, which increases in frequency quite steadily with the age of the head of the unit, appears to be the only one of the specified types of assets that is held over a long period and that combined with an assured though small income can offer individuals and families of advanced age the resources needed to maintain independent households.

Apart from owned homes and insurance benefits, the assets held by families and individuals cannot account for the long-run increase in the rate of household formation or for the even more rapid increase in households with heads 65 years of age or older. [7] Income distribution thus may be regarded as the principal determinant of the standard of living, which in turn determines the rate of net saving. If the requisite data were available, the growth of insurance, by providing regular incomes to an increasing number of persons of retirement age, could probably be shown to be the chief factor correlated with the rise in the number of households maintained by persons 65 years of age or older. By the same reasoning, the increase in employment opportunities for women has most certainly been responsible for the increase in the number of households headed by single, widowed, divorced, or separated women.

The reduction in the average size of the consumer unit corresponding to the increase in the number of units is still far from the limiting value which might be set by the age-sex distribution of the population and by purely non-economic factors. There are some 20 million adults 18 years or older living with relatives in private households. [8] Nearly 5 million of these are subfamilies, husband and wife

[6] This attitude towards saving is recorded in the several Surveys of Consumer Finances.

[7] According to the Census Bureau estimates, between 1940 and 1947 the population increased 8 percent, the number of private households 12 percent, and the number of households with heads 65 years or older nearly 18 percent. Between 1900 and 1940 the population increased about 80 percent and the number of private households nearly 120 percent.

[8] Bureau of the Census, *Current Population Reports*, Series P-20, Nos. 17 and 21.

TABLE H–29

Lines I and II – Federal Reserve Bulletin, June 1947 and Aug. 1949 respectively. Includes U.S. Government bonds, savings accounts, and checking accounts.

Line III – Ibid., July 1948. Includes corporate, state, county, and minicipal securities.

Line IV – Ibid., Oct. 1949. Includes common and preferred stock of corporations open to investment by the general public.

Lines V to VII – Ibid., Aug. 1949. U.S. Savings bonds are Series A to F. Savings accounts include accounts in savings banks, the Postal Savings System, and savings and loan associations.

Lines VIII and IX – Ibid., Sept. 1949. Percentages are for nonfarm family units, and exclude spending units that live as members of relatives' households.

ASSET HOLDINGS WITHIN AGE GROUPS: 1947 to 1949

Percent

	Age of head of spending unit					
	18 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 or older
	1	2	3	4		5
I. Liquid assets, 1947	68	76	76	79		67
$1– 500	42	34	24	23		23
500–2,000	22	28	30	27		23
2,000–5,000	4	11	15	17		12
5,000 and over	0	3	7	12		9
II. Liquid assets, 1949	62	70	72	75	76	68
$1– 500	38	36	31	24	21	18
500–2,000	21	23	21	23	21	20
2,000–5,000	3	7	13	15	18	15
5,000 and over	0	4	7	13	16	15
III. Stocks and bonds, 1948	3	5	9	12	10	11
$1– 1,000	3	3	4	5	4	2
1,000– 5,000	0	1	3	3	3	3
5,000–25,000	0	1	1	2	2	4
25,000 and over	0	0	1	2	1	2
IV. Stocks, 1949	2	4	9	11	10	9
$1– 500	1	2	5	4	2	2
500–1,000	1	1	1	2	2	2
1,000–5,000	0	1	2	2	3	2
5,000 and over	0	0	1	3	3	3
V. U.S. Savings bonds, 1949	38	36	44	51	51	43
$1– 500	31	23	27	25	25	22
500–2,000	7	11	11	17	15	12
2,000 and over	0	2	6	9	11	9
VI. Savings accounts, 1949	41	44	37	43	41	39
$1– 500	26	27	16	17	13	10
500–2,000	12	12	13	15	14	14
2,000 and over	3	5	8	11	14	15
VII. Checking accounts, 1949	17	36	45	45	43	38
$1– 500	14	28	28	26	20	17
500–2,000	3	6	13	12	15	14
2,000 and over	0	2	4	7	8	7
VIII. Nonfarm homes, 1948	24	37	46	59	58	64
IX. Nonfarm homes, 1949	22	35	53	59	61	60

or parents of children. Given the resources, many of the subfamilies and individuals would set up separate households. In addition to the population in private households there are about 3 million adults living in quasi households and various institutions for many of whom the living arrangement is simply the result of lack of income. The long-run trend in the average composition of households suggests a limiting value near two adults per household, which implies an "upper bound" of 47 to 50 million households compared with the 40 million existing at the present time. The average number of adults 20 years of age or older per household decreased from 2.67 in 1890 to 2.51 in 1930, 2.46 in 1940, and 2.44 in 1947.[9]

The general level of saving in relation to income has probably been influenced significantly by the trend towards smaller households since per capita consumption increases with the number of households in a given population with a given income.

The changes in the distribution of the population by household composition have probably been slow and systematic over the years except for certain critical periods when the net rate of household formation was greatly accelerated or slackened. Shifts in the age distribution, changes in the income shares of the age groups, increases in the inventory of dwelling units—all take place so slowly that the potential growth of households has continuously been held in check. The full force of desire for separate living quarters on the part of small units in the population was probably never fully appreciated until the last several years of full employment, when this desire became an effective and much publicized demand. The continuous, and sometimes sharply accelerated, increases in the number of small households may offer an explanation of some of the peculiarities in the relationship of consumption and saving to income in the past and certainly should be considered in forecasting the future.[10] The various studies of family expenditures and saving fortunately provide a better basis for assessing the influence of family size on saving than for evaluating the effect of age.

3. Saving and Family Size

Survey data for various dates since 1888–1890 have provided information on the spending of established families classified by size and income. For this group it is possible to measure the influence of size of unit on expenditures and saving. Very few surveys have collected information on the newly formed household, in existence less than a year. The recent national samples have included "migrant" families in their coverage, but very little information about this group has been tabulated separately. The complete picture of the relation between types of households and the changing distribution among types must await the development of

[9] The figures for various dates are not strictly comparable, for institutions were included with households in the earlier years.

[10] The depression is known to have dampened the marriage rate and may be assumed to have slowed or reversed the net rate of household formation over population increases. Unhappily, there are no estimates of the extent of such changes.

cross-sectional studies of the newly formed and relocated households or of time series totals for these groups. In view of the rapid progress of population research, the later possibility seems less remote than the former. [11]

Among surveys providing data on the spending and saving of established families, living for the greater part of the survey year in one locality, very few have attempted a classification of households by the age-sex characteristics of the family members in such a way that quantitative relations between these characteristics and expenditures could be obtained. Accordingly, quantitative measurement of the influence of household composition on saving must be limited at the present time to the effect of the total number of persons.

The statistical significance of the correlation between number of persons and expenditures or saving has been noted in every survey that has given any attention to this factor. Thus, Carroll D. Wright recognized the importance of the size of family by preparing many tables for the voluminous reports on the 1888–1890 and 1901 surveys, and in the first report on recent small sample surveys in selected cities for 1948 the Bureau of Labor Statistics shows the sample averages for groups defined by income and family size. The increase in expenditures with size of family within the same income bracket, which was described by Wright (for food expenditures) as a relationship of "decreasing cost per capita and increasing size of family," [12] has been distinctly nonlinear in all survey data. [13] This result certainly meets the test of common sense, for the degree to which a large family can expand consumption over the amount spent by a small family of the same income must be severely limited by restrictions on the mortgaging of future income through the use of credit.

The partial regressions of expenditures on size of family, income being held constant, have, accordingly, been described for the purposes of this analysis by simple logarithmic lines. This means that expenditures, y_1, are represented by the function

$$y_1 = As^b$$

where s is the size of family and hence saving, y_2, is represented by the statistically more complicated form

$$y_2 = x - As^b$$

where x is income. The hyperbolic form of saving in relation to family size, income being held constant, is clearly indicated in Tables H-32 to H-35. Graphic smoothing of the data for saving and family size suggests that intercepts equal to the income are not unreasonable, a fact that justifies treating saving in this relation as a residual.

[11] The present developments in Census statistics on households and families are a big step in this direction. See *Current Population Reports*, Series P-20.

[12] *Seventh Annual Report of the Commissioner of Labor*, 1917, p. 859.

[13] Allen and Bowley assumed a straight line as a sufficiently accurate description of the variations in expenditures with size of family. (*Family Expenditures*, p. 68.) It is true the line $y = a + bx$, with a relatively large, leads to significantly decreasing per capita expenditures, but such a decrease according to tests made for this analysis does not fit the data for the larger and more reliable samples.

INCOME, EXPENDITURES, AND INSURANCE PREMIUMS OF FAMILIES OF VARIOUS SIZES IN DETROIT, DENVER, AND HOUSTON: 1948

Dollars

Money income after taxes	Number of persons in family				
	1	2	3	4	5
Detroit, average income					
Under $1,000	728	.	.	.	.
1,000– 2,000	1 660	1 388	1 198	.	.
2,000– 3,000	2 419	2 541	2 670	2 688	2 613
3,000– 4,000	3 410	3 475	3 540	3 502	3 540
4,000– 5,000		4 405	4 458	4 480	4 489
5,000– 6,000	6 786		5 414	5 545	5 529
6,000– 7,500		5 626			6 793
7,500–10,000			6 991	7 203	8 490
Detroit, average expenditures					
Under $1,000	799	.	.	.	.
1,000– 2,000	1 665	1 701	3 540	.	.
2,000– 3,000	2 305	2 704	3 292	3 206	2 816
3,000– 4,000	3 322	3 487	3 551	4 028	3 710
4,000– 5,000		4 419	4 805	4 307	4 575
5,000– 6,000	5 049		5 904	5 663	6 399
6,000– 7,500		5 059			6 808
7,500–10,000			7 323	7 353	8 544
Detroit, average insurance premiums					
Under $1,000	5	.	.	.	.
1,000– 2,000	39	45	36	.	.
2,000– 3,000	88	94	83	68	77
3,000– 4,000	103	119	115	153	108
4,000– 5,000		166	120	157	163
5,000– 6,000	352		206	230	226
6,000– 7,500		158			185
7,500–10,000			189	229	230
Denver, average income					
Under $1,000	607	467	.	2 660	.
1,000– 2,000	1 437	1 597	.		.
2,000– 3,000	2 399	2 586	2 692		2 702
3,000– 4,000	.	3 432	3 446	3 627	3 482
4,000– 5,000	.	4 291	4 440	4 432	4 467
5,000– 6,000	.		5 446	5 437	6 259
6,000– 7,500	.	6 589			
7,500–10,000	.		9 072	7 504	8 581
Denver, average expenditures					
Under $1,000	776	1 838	.	3 219	.
1,000– 2,000	1 534	2 043	.		.
2,000– 3,000	2 105	2 640	3 265		3 593
3,000– 4,000	.	3 076	3 904	3 738	3 220
4,000– 5,000	.	3 902	4 587	4 452	4 354
5,000– 6,000	.		5 356	5 136	5 982
6,000– 7,500	.	5 522			
7,500–10,000	.		6 767	6 681	8 106

INCOME, EXPENDITURES, AND INSURANCE PREMIUMS OF FAMILIES OF VARIOUS SIZES IN DETROIT, DENVER, AND HOUSTON: 1948

Dollars

Money income after taxes	Number of persons in family				
	1	2	3	4	5
Denver, average insurance premiums					
Under $1,000	2	41	.	85	.
1,000– 2,000	16	66	.		.
2,000– 3,000	130	93	119		121
3,000– 4,000	.	138	156	216	237
4,000– 5,000	.	229	181	310	163
5,000– 6,000	.	284	313	284	381
6,000– 7,500	.		324	280	386
7,500–10,000	.				
Houston, average income					
$1,000– 2,000	2 478	1 527	1 642	.	2 138
2,000– 3,000		2 605	2 380	2 601	
3,000– 4,000		3 468	3 462	3 443	3 588
4,000– 5,000		4 439	4 755	4 433	4 470
5,000– 6,000		5 277	5 231	7 803	6 034
6,000– 7,500		7 002	7 139		
7,500–10,000		8 307			
Houston, average expenditures					
$1,000– 2,000	2 658	1 588	2 618	.	3 276
2,000– 3,000		2 811	2 711	2 681	
3,000– 4,000		3 578	3 598	3 983	3 250
4,000– 5,000		4 346	5 110	4 809	4 533
5,000– 6,000		6 200	6 171	6 713	5 953
6,000– 7,500		5 208	7 611		
7,500–10,000		7 397			
Houston, average insurance premiums					
$1,000– 2,000	162	80	52	91	135
2,000– 3,000		80	64		
3,000– 4,000		106	132	107	106
4,000– 5,000		225	185	181	181
5,000– 6,000		216	341	284	275
6,000– 7,500		286	489		
7,500–10,000		333			

Source: "Consumer Spending: Denver, Detroit, and Houston, 1948," *Monthly Labor Review*, Dec. 1949. Average income includes, in addition to money income after taxes, receipts such as capital gains, inheritances, and lump-sum settlements. Expenditures include gifts and contributions. Saving may be estimated by subtracting income from expenditures. In these surveys the balancing error between reported income, reported expenditures, and reported saving was of the same order of magnitude as the saving (surplus or deficit). The assumption that the error could be added to saving made for other tables in this analysis needs to be examined for applicability to these postwar surveys.

H-31 (Part 1) AVERAGE INCOME, AVERAGE AND SELECTED EXPENDITURES, AND SAVING OF FAMILIES OF VARIOUS SIZES: 1888-1890

Family income class	Number of families	Average income	Average expenditures	Average saving	Average premium on life insurance	Percent of families:	
		Dollars				Buying insurance	Owning home
			Families of two persons				
Under $200	14	151	214	-63	0	0	7.1
200- 400	228	326	338	-12	2	1.6	10.1
400- 600	380	487	442	45	3	15.5	11.6
600- 800	190	681	567	114	4	21.6	17.9
800-1,000	86	877	660	217	7	32.6	23.3
1,000-1,200	30	1 077	721	356	7	23.3	33.3
1,200-1,400	15	1 249	917	332	13	33.3	13.3
1,400-1,600	11	1 495	985	510	5	18.2	54.6
1,600-1,800	2	1 730	613	1 117	8	50.0	100.0
1,800-2,000	2	1 870	1 111	766	8	100.0	0
2,000-2,200	2	2 087	1 174	913	26	50.0	50.0
			Families of three persons				
Under $200	8	171	211	-40	0	0	12.5
200- 400	233	336	359	-23	1	11.2	9.4
400- 600	503	493	463	30	3	23.3	12.1
600- 800	225	677	585	92	6	31.6	16.0
800-1,000	118	880	711	169	10	40.7	25.4
1,000-1,200	57	1 079	838	241	8	35.1	36.8
1,200-1,400	29	1 278	976	302	5	24.1	41.4
1,400-1,600	16	1 500	1 058	442	12	43.8	31.2
1,600-1,800	8	1 679	997	682	9	37.5	37.5
1,800-2,000	3	1 905	1 414	491	52	66.7	66.7
2,000-2,200	.	.	.	.	.	.	.
2,200 and over	3	3 167	1 278	1 889	0	0	100.0
			Families of four persons				
Under $200	6	176	291	-115	0	0	0
200- 400	187	338	359	-21	2	12.8	11.8
400- 600	492	491	477	14	3	23.2	13.2
600- 800	274	685	612	73	5	29.6	19.3
800-1,000	168	815	726	89	8	36.3	16.7
1,000-1,200	61	1 076	851	225	9	42.6	24.6
1,200 1,400	40	1 282	955	327	8	40.0	45.0
1,400-1,600	31	1 490	938	552	15	54.8	45.2
1,600-1,800	7	1 666	970	696	16	42.9	71.4
1,800-2,000	1	1 821	1 533	288	150	100.0	0
2,000-2,200	4	2 091	901	1 190	48	50.0	75.0
2,200 and over	3	2 337	1 278	1 059	0	0	33.3
			Families of five persons				
Under $200	6	165	273	-113	0	0	33.3
200- 400	146	337	364	-27	1	6.8	13.7
400- 600	443	497	497	0	3	19.6	12.0
600- 800	262	685	633	52	6	31.7	13.7
800-1,000	166	889	744	145	8	40.4	17.5
1,000-1,200	82	1 075	901	174	17	46.3	28.0
1,200-1,400	36	1 275	1 043	232	14	33.3	27.8
1,400-1,600	24	1 496	1 100	396	12	41.7	33.3
1,600-1,800	8	1 714	1 078	636	30	62.5	50.0
1,800-2,000	5	1 896	1 127	769	29	20.0	80.0
2,000-2,200	5	2 107	1 797	310	5	20.0	60.0

AVERAGE INCOME, AVERAGE AND SELECTED EXPENDITURES, AND SAVING OF FAMILIES OF VARIOUS SIZES: 1888-1890

Family income class	Number of families	Average income	Average expenditures	Average saving	Average premium on life insurance	Percent of families: Buying insurance	Percent of families: Owning home
		Dollars					
Families of six persons							
Under $200	1	146	254	-108	0	0	100.0
200- 400	82	325	384	-59	1	9.8	13.4
400- 600	291	500	503	-3	4	22.0	15.8
600- 800	203	685	638	47	5	28.1	20.2
800-1,000	118	889	781	108	10	40.7	20.3
1,000-1,200	61	1 082	910	172	10	42.6	18.0
1,200-1,400	34	1 288	1 075	213	6	23.5	29.4
1,400-1,600	21	1 505	1 182	323	27	57.1	28.6
1,600-1,800	12	1 666	1 180	486	14	50.0	41.7
1,800-2,000	5	1 856	1 333	523	9	40.0	20.0
2,000-2,200	1	2 170	1 943	227	52	100.0	0
2,200 and over	4	2 277	1 436	841	45	50.0	50.0
Families of seven persons							
Under $200	3	144	245	-101	0	0	0
200- 400	46	336	372	-36	1	10.9	19.6
400- 600	168	502	525	-23	2	14.3	16.7
600- 800	145	701	682	19	6	31.7	12.4
800-1,000	94	897	833	64	6	28.7	18.1
1,000-1,200	66	1 084	949	135	4	39.4	31.8
1,200-1,400	30	1 278	1 085	193	9	33.3	23.3
1,400-1,600	16	1 473	1 195	278	20	50.0	31.2
1,600-1,800	10	1 642	1 334	308	21	40.0	40.0
1,800-2,000	4	1 855	1 291	564	6	25.0	25.0
2,000-2,200	3	2 140	870	1 270	23	66.7	100.0
2,200 and over	4	2 885	1 550	1 335	28	50.0	50.0
Families of eight persons							
Under $200	.	.	.	.	.	.	.
200- 400	24	340	392	-52	0	4.2	16.7
400- 600	87	504	541	-37	1	10.3	20.7
600- 800	92	697	701	-4	5	28.3	14.1
800-1,000	55	898	940	-42	8	40.0	23.6
1,000-1,200	51	1 072	916	156	8	37.3	31.4
1,200-1,400	23	1 304	999	305	20	56.5	34.8
1,400-1,600	14	1 477	1 140	337	20	50.0	35.7
1,600-1,800	9	1 696	1 260	436	18	55.6	44.4
1,800-2,000	8	1 853	1 325	528	9	37.5	0
2,000-2,200	2	2 052	1 049	1 003	25	50.0	0
2,200 and over	3	2 707	1 526	1 181	2	33.3	33.3
Families of nine persons							
Under $200	.	.	.	.	.	.	.
200- 400	9	342	386	-44	0	0	11.1
400- 600	72	506	559	-53	3	5.6	16.7
600- 800	88	696	706	-10	3	18.2	18.2
800-1,000	95	894	877	17	6	25.3	18.9
1,000-1,200	57	1 091	1 038	53	7	31.6	19.3
1,200-1,400	37	1 288	1 107	181	9	37.8	16.2
1,400-1,600	16	1 479	1 160	319	9	25.0	31.2
1,600-1,800	13	1 681	1 394	287	11	30.8	23.1
1,800-2,000	7	1 883	1 431	452	0	0	28.6
2,000-2,200	4	2 092	1 535	557	4	25.0	75.0
2,200 and over	2	2 490	1 496	994	0	0	100.0

Source: Sixth and *Seventh Annual Report of the Commissioner of Labor*, 1891 and 1893.

H-32
Part 1)

AVERAGE INCOME, AVERAGE AND SELECTED EXPENDITURES, AND SAVING OF URBAN FAMILIES OF VARIOUS SIZES: 1941 and 1944

Dollars

Money income[1] after taxes	Number of persons in family				
	One	Two	Three	Four	Five or more
			1941, average income		
Under $500	302	321	262	.	320
500– 1,000	730	724	776	697	732
1,000– 1,500	1 196	1 232	1 264	1 318	1 272
1,500– 2,000	1 685	1 745	1 741	1 805	1 760
2,000– 2,500	2 127	2 198	2 269	2 253	2 229
2,500 - 3,000	2 664	2 695	2 727	2 778	2 727
3,000– 5,000	.	3 549	3 744	3 758	3 780
5,000–10,000	.	5 478	6 848	5 924	5 911
10,000 and over	.	.	12 956	13 655	11 685
			1941, average expenditures		
Under $500	431	462	803	.	372
500– 1,000	734	759	842	805	834
1,000 - 1,500	1 178	1 300	1 325	1 397	1 297
1,500– 2,000	1 609	1 699	1 653	1 820	1 772
2,000– 2,500	1 662	2 131	2 210	2 281	2 333
2,500– 3,000	2 385	2 456	2 536	2 851	2 872
3,000– 5,000	.	3 155	3 361	3 390	3 725
5,000–10,000	.	3 378	5 616	5 086	5 132
10,000 and over	.	.	6 789	9 766	9 860
			1941, average saving		
Under $500	–129	–141	–541	.	–52
500– 1,000	–4	–35	–66	–108	–102
1,000– 1,500	18	–68	–61	–79	–25
1,500– 2,000	76	46	88	–15	–12
2,000– 2,500	465	67	59	–28	–104
2,500– 3,000	279	239	191	–73	–145
3,000– 5,000	.	394	383	368	55
5,000–10,000	.	2 100	1 232	838	779
10,000 and over	.	.	6 167	3 889	1 825

[1] Income classes refer to income before taxes in 1941 and income after taxes in 1944; average income is defined as money after taxes in both 1941 and 1944.

Sources: "Expenditures and Savings of City Families in 1944," *Monthly Labor Review*, Jan. 1946, and Bureau of Labor Statistics, *Family Spending and Saving in Wartime*, Bulletin No. 822.

AVERAGE INCOME, AVERAGE AND SELECTED EXPENDITURES, AND SAVING OF URBAN FAMILIES OF VARIOUS SIZES: 1941 and 1944

Dollars

Money income[1] after taxes	Number of persons in family					
	One	Two	Three	Four	Five	Six or more
			1944, average income			
Under $500	282	324	.	.	.	.
500–1,000	750	775	750	917	.	.
1,000–1,500	1 245	1 229	1 264	1 237	.	.
1,500–2,000	1 739	1 742	1 801	1 801	1 800	1 856
2,000–2,500	2 312	2 252	2 258	2 292	2 263	2 233
2,500–3,000		2 734	2 777	2 765	2 792	2 713
3,000–4,000	3 511	3 487	3 438	3 500	3 531	3 490
4,000–5,000	.	4 320	4 388	4 441	4 493	4 442
5,000 and over	7 749	9 350	8 202	7 030	6 824	6 961
			1944, average expenditures			
Under $500	486	1 019	.	.	.	.
500–1,000	820	1 060	1 005	1 260	.	.
1,000–1,500	1 231	1 378	1 491	1 534	.	.
1,500–2,000	1 508	1 601	1 970	1 967	2 485	2 434
2,000–2,500	1 701	1 932	2 209	2 242	2 863	2 197
2,500–3,000		2 268	2 624	2 588	2 759	3 566
3,000–4,000	2 488	2 576	2 873	3 055	3 361	3 324
4,000–5,000	4 906	3 241	3 727	3 478	3 656	4 142
5,000 and over		5 231	4 515	4 662	4 307	5 309
			1944, average saving			
Under $500	–204	–695	.	.	.	.
500–1,000	–70	–285	–255	–343	.	.
1,000–1,500	14	–149	–227	–297	.	.
1,500–2,000	231	141	–169	–166	–685	–578
2,000–2,500	611	320	49	50	–600	36
2,500–3,000		466	153	177	33	–853
3,000–4,000	1 023	911	565	445	170	166
4,000–5,000	2 843	1 079	661	963	837	300
5,000 and over		4 119	3 687	2 368	2 517	1 652
			1944, insurance premiums			
Under $500	8	19	.	.	.	.
500–1,000	13	25	32	13	.	.
1,000–1,500	48	44	35	33	.	.
1,500–2,000	21	58	61	55	33	82
2,000–2,500	33	67	71	93	53	50
2,500–3,000		77	96	83	53	85
3,000–4,000	46	119	110	98	108	122
4,000–5,000	380	159	149	176	121	88
5,000 and over		206	350	241	371	169
			1944, U.S. Government war bonds			
Under $500	16	20	.	.	.	.
500–1,000	38	40	156	0	.	.
1,000–1,500	61	22	25	44	.	.
1,500–2,000	227	111	61	84	20	31
2,000–2,500	235	163	142	113	146	141
2,500–3,000		294	198	176	192	341
3,000–4,000	595	357	310	336	351	160
4,000–5,000	790	487	574	260	485	241
5,000 and over		2 242	1 680	883	728	675

If the partial regression of expenditures on family size varied both in level and in slope among income classes, areas, and dates, the usefulness of a quantitative measure of this relationship would be severely limited. [14] Thus the first step in analysis of the relation between expenditures and size of family becomes a matter of exploring the significance of the interactions with income class, locality, and date. The test conducted was based on the 1935–1936 data and resulted on the whole in a negative result for area and income class interactions. The expenditures of the various family types, as defined for that study, were expressed as percentages of the expenditures of the two-person (husband and wife) families, and these percentages were tested for significance of difference among income brackets and localities by the Friedman rank technique. [15] Only three areas out of twenty showed differences significantly unlike the average, and in these areas the relative number of old persons in the two-person families was above the average. [16] No significant differences between income brackets appeared, a result which seems to conflict with the outcome of the extensive tests of the variation of particular types of expenditures with family type made with the same 1935–1936 data, which showed that food, clothing, and personal care were the only expenditures that varied significantly (at the 1 percent level) with family size in the great majority of communities. [17] Since total expenditures for food, clothing, and personal care decrease in importance for every size of family, the family size differential in total expenditures might be expected to decline with income. This contradiction can be explained only by the hypothesis that the number of consumption items acting as variable costs in relation to the number of persons increases with income. This proposition, if true, means that categories such as housing, recreation, and transportation, individually not significantly correlated with family size, in combination tend to be increasingly related to the size of family as income is expanded. This relationship remains to be explored.

In accordance with the assumption that the regression coefficient b in the relation of expenditures, y_1, to family size s

$$\log y_1 = \log A + b \log s$$

varies only in a random manner from locality to locality, and among income brackets, the average value of the coefficient for various dates was calculated for different dates. These averages are shown in the following tabulation:

[14] The statistical problems of measurement would also be greatly increased. The classification of the survey samples by income and family size has meant, in most cases, that the calculations for separate income brackets in separate areas are based on very small samples for each stratum.

[15] Friedman, "The Use of Ranks to Avoid the Assumption of Normality Implicit in the Analysis of Variance," *Journal of the American Statistical Association*, Volume 32, p. 675.

[16] The data for one of these areas, the North Central villages, are shown in Table H-27.

[17] See, for example, Bureau of Labor Statistics, *Family Income and Expenditure in Chicago, 1935–1936*. Bulletin No. 642, Volume II, p. 248.

Date	Family size	Number of comparisons	Average regression coefficient
1888–1890	2–9	9	0.1729
1901 [a]	4.5 and 5.5	10	0.1841
1901, normal [b]	2–7	7	0.1135
1935–1936, normal [c]	2–7	180	0.1712
1941	1–5	7	0.1589
1944	1–6	7	0.1705
1948	2–5	11	0.1737

[a] Estimates based on tabulation of nationality-area averages, as described in Table H-21.
[b] Normal families include husband, wife, and children under fourteen years of age.
[c] Normal includes native-born, nonrelief families including a husband and wife.

Despite differences in methodology and coverage, these values of the regression coefficient show a tendency towards stability over time. The low figure for 1901 normal families results from the limitation of the tabulation to families with young children and from the fact that expenditures include insurance premiums, which are shown in Table H-33 to be fairly constant among families of all sizes. The low figure for 1941 apparently can be traced to extensive migration, involving a relatively large number of the smaller families, and to a comparatively high level of contributions to welfare, an outlay which varies inversely with the size of family.

The apparent stability in this regression coefficient was accepted as a base for a standardizing procedure for the purposes of other analyses in this report. Many studies of family expenditures, particularly the 1917–1919 study and the recent Survey of Consumer Finances, do not provide data by a two-variable classification, family size and income. Since not only the average size of family irrespective of income but also the averages for income brackets vary considerably among the surveys, some method for eliminating the variability due to size of family is required in connection with a comparison of the saving function at different times or in different places. [18] The logarithmic regression coefficient was taken as sufficiently close to an average value of one-sixth to permit equating the ratios of expenditures for different average sizes to the ratios of the sixth root of the average sizes. [19]

The general implication of the association of family size and income with expenditures may be read from a summation of the relation, expressed in the form of a simple product, as follows:

$$y_1 = AS$$

[18] See Table H-21.

[19] The regression coefficient, although small, has a significant effect in the comparison of expenditure functions, as shown in Tables H-21 and H-23. The effect on the comparison of saving functions is substantial. This may be illustrated by the simple observation—that according to this relationship two families with a given income spend 2 percent more than one family of twice the size with twice the income. This small addition to expenditures is a very large deduction from saving.

where A is a function of income and S is the power of family size, found to be approximately 0.17. Aggregate expenditures, Y_1, are then

$$Y_1 = N\bar{A}\bar{S} + Nr\,\sigma_A\,\sigma_S$$

where A and S are the averages of the functions A and S, N is the total number of households, r is the correlation coefficient between A and S, and σ_A and σ_S are the standard deviations of A and S respectively. The departure of the aggregates for expenditures, income, and size of household from a simple functional relationship clearly depends on the correlation between family size and income. However small the value might be, its effect on the association between aggregate income and aggregate saving is automatically very much greater than its effect on the consumption–income relationship.

4. The Correlation between Family Size and Income

Studies of income distribution in recent years have revealed a distinct but nonlinear correlation between family size and income. As the data in Table H-33 illustrate, the income of one- and two-person families is substantially below the level for families of three or more persons. The differences in income among larger families are not great and the survey samples for 1941 and 1948 do not yield a clear indication of the position of the maximum level of income along the scale of family size. Since the data shown in Table H-33 do not permit an accurate calculation of the correlation coefficient, either for the variables family size and income or for functions of these variables, the general magnitude of the coefficient must be estimated. For this purpose the regression coefficient of average income on family size is the more convenient parameter to use:

$$Nr\,\sigma_A\,\sigma_S = N\,b_{AS}\,\sigma_S^2$$

that is, the correlation of A, a function of income, on S, a function of family size, can be explored through the relation of the estimated average income to family size. These averages, estimated for nonfarm families in 1941 and 1948 by using the class averages in recent expenditure studies (Table H-27), are as follows:

Number of persons in family	Average income			
	Dollars		Percent of two-person family	
	1941	*1948*	*1941*	*1948*
1	830	1 522	49.8	42.4
2	1 668	3 588	100.0	100.0
3	2 020	4 456	121.1	124.2
4	2 278	4 474	136.6	124.7
5	2 139	4 254	128.2	118.6
6 or more	2 117	4 795	126.9	133.6

NUMBER OF FAMILIES OF DIFFERENT SIZES AT VARIOUS INCOME LEVELS: 1941 and 1948

Family income class	All families	Number of persons in family					
		One	Two	Three	Four	Five	Six
				1941, nonfarm			
Under $1,000	9 441	3 310	2 934	1 282	751	451	713
1,000–2,000	10 365	1 271	3 246	2 618	1 319	1 034	877
2,000–3,000	7 764	369	2 011	2 038	1 895	808	643
3,000 and over	5 362	92	1 137	1 349	1 286	658	840
All classes	32 932	5 042	9 328	7 287	5 251	2 951	3 073
				1941, farm			
Under $1,000	3 753	201	1 009	766	701	424	652
1,000–2,000	1 602	17	294	250	428	192	421
2,000–3,000	542	8	133	142	117	117	25
3,000 and over	341	0	25	75	92	75	74
All classes	6 238	226	1 461	1 233	1 338	808	1 172
				1948, nonfarm			
Under $1,000	5 770	3 430	1 460	420	270	90	100
1,000–2,000	5 680	1 700	1 810	910	630	320	310
2,000–3,000	7 770	1 200	2 120	1 910	1 360	650	530
3,000 and over	19 860	940	4 920	5 230	4 420	2 320	2 030
All classes	39 080	7 270	10 310	8 470	6 680	3 380	2 970
				1948, farm			
Under $1,000	2 340	660	650	350	220	170	290
1,000-2,000	1 730	130	420	440	280	140	320
2,000–3,000	1 420	40	260	350	290	220	260
3,000 and over	2 100	40	370	440	480	310	460
All classes	7 590	870	1 700	1 580	1 270	840	1 330

Sources: Data for 1941 from Bureau of Labor Statistics, *Family Spending and Saving in Wartime*, Bulletin No. 822, p. 69. Data for 1948 prepared by the Bureau of the Census for *Materials on the Problem of Low-Income Families*, assembled by the staff of the Subcommittee on Low-Income Families, Joint Committee on the Economic Report, Washington, 1949, pp. 57–58.

These averages show little difference in the relative income of the various size groups at the two dates, despite methodological differences in survey technique. [20] The progression from one to four persons is regular and the relatives for larger families are somewhat lower than for the four-person family. This form would persist in the transformation to functions of the variables, and hence it may be concluded that the relative weights of the family size groups determine the value of the regression coefficient b_{AS} as well as that of the variance σ_S^2. Both of these measures are greater for the 1948 distribution than for the 1941 distribution. If the function A is assumed to be proportionate to the eight-tenths power of income, the values estimated for these parameters are as follows:

	1941	*1948*
N	32,932,000	39,080,000
b_{AS}	$3051	$7281
σ_S^2	0.0083	0.0085
$b_{AS}\sigma_S^2$	$25	$62

Thus the contribution of the income-family size correlation to aggregate expenditures is $28 per family in 1941 and $73 in 1948, of which $33 is the amount representing the increase in income. Accordingly, aggregate expenditures were increased and aggregate saving decreased between 1941 and 1948 by $39 per family, because of the difference in the distribution of families by size. This amount, which is associated with a change in average size of family unit from 3.122 to 3.007, would clearly be substantially increased with larger differences in the distributions. The most significant fact shown by these estimates is the similarity in the value of the regression coefficient b_{AS}, relative to the average income level, and that of the variance σ_S^2. Since the 1941 estimates of the population distribution understated the number of one-person families and since the number of two-person families may have been overstated, the true values for these years would perhaps have been closer together. [21] In any case they are similar enough to suggest that, for time series correlations, a term in the function which covers family size may contribute substantially to the explanation of the variation in the relation of aggregate expenditures and saving to aggregate income. There is, at present, no way of showing conclusively that the correlation term has remained of approximately the same average magnitude over a long period. Nevertheless, the 1888–1890 data for wage earner families suggest that the variation may not have been very great:

[20] Wasson, Hurwitz, and Schweiger, "Field Surveys of Consumer Income: An Appraisal," *Studies in Income and Wealth*, Volume XIII.

[21] Bureau of Labor Statistics, *Family Spending and Saving in Wartime*, Bulletin No. 822, Part II: *Evaluation of the Survey Data*, pp. 38-56.

Number of persons in family	Number of families	Average income	
	Percent	$	Percent of two-person family
2	14.0	567	100
3	17.6	618	109
4	18.8	671	118
5	17.6	666	118
6	12.2	718	127
7	8.6	766	135
8	5.2	881	156
9.8	6.0	898	158

The value for σ_S^2 is 0.0079 and for b_{AS} $719. Thus both of these factors are below the 1948 values. If data for one-person units, which in 1888–1890 were mainly lodgers in private households, were available, the values of the regression coefficient and variance would probably be increased, and hence the product of these two factors might differ little from the 1948 value.

5. Family Size and the Distribution of Saving

Although total saving among families of a given income bracket decreases steadily with the size of family, the amounts spent on life insurance and homes [22] differ little with the number of persons among families of two or more persons (Tables H-27, H-33 to H-36). One-person families (single persons) apparently spend less for life insurance than families of two or more, and there is some indication that very large families, of seven or more persons, spend less than the average for life insurance. Although there may be some variation in outlays with the size of family for the same income bracket, the magnitudes are sufficiently similar that the net change in assets and liabilities, exclusive of insurance premiums and investment in owned homes, decreases substantially as the size of the family is increased. The age composition, as well as the number in the family, determines the use made of different types of assets and various forms of credit, as the following interpolations from Table H-36 show:

NET CHANGE IN ASSETS, EXCLUSIVE OF INSURANCE PREMIUMS AND INVESTMENT IN HOMES, AT SPECIFIED FAMILY INCOME POSITIONS: 1935-1936

Dollars

Family income position	Type of family [1]					
	I	II	III	IV	V	VI
$ 750	–73	–16	–4	4	–32	–116
1 650	91	31	63	15	0	–28
2 500	294	145	228	139	105	107
5,000	737	763	792	584	795	1 002

[1] Definition of various types given in footnote to Table H-34.

[22] Exclusive of down-payments or cash purchases.

H-34
(Part 1)

PURCHASE OF LIFE INSURANCE BY FAMILIES OF VARIOUS TYPES
NORTH CENTRAL REGION: 1935-1936

Family income class	Type of family [1]						
	I	II	III	IV	V	VI	VII
Small cities, families paying for insurance (percent)							
$ 250– 500	35.7	53.3	42.9	90.0	.	.	.
500– 750	45.9	65.1	58.6	60.9	39.1	84.6	.
750– 1,000	60.5	58.6	65.0	61.4	65.9	57.1	40.0
1,000– 1,250	71.8	67.4	63.2	61.3	67.3	54.8	42.9
1,250– 1,500	76.0	78.8	69.1	79.8	76.6	76.0	58.3
1,500– 1,750	76.2	80.6	81.1	87.2	75.0	77.8	57.1
1,750– 2,000	85.5	84.1	75.0	82.8	81.8	90.9	71.4
2,000– 2,250	77.2	87.5	84.8	86.7	74.2	100.0	80.0
2,250– 2,500	93.3	78.6	92.9	81.4	92.9	66.7	100.0
2,500– 3,000	92.7	88.9	90.0	89.5	90.9	100.0	66.7
3,000– 4,000	93.6	96.7	100.0	91.2	87.1	100.0	75.0
4,000– 5,000	100.0	100.0	100.0	89.5	91.7	50.0	.
5,000–10,000	100.0	90.0	100.0	86.7	93.3	.	.
All classes	73.7	75.9	75.1	78.2	75.4	72.7	59.1
Average premiums paid (dollars)							
$ 250– 500	33	18	44	52	.	.	.
500– 750	67	30	34	33	41	43	.
750– 1,000	58	44	50	53	56	64	57
1,000– 1,250	62	72	54	71	61	57	86
1,250– 1,500	65	77	65	78	62	65	82
1,500– 1,750	93	81	97	90	75	214	92
1,750– 2,000	105	118	121	102	123	103	118
2,000– 2,250	135	131	131	139	123	75	112
2,250– 2,500	145	144	144	147	170	144	172
2,500– 3,000	176	194	151	157	157	131	83
3,000– 4,000	237	222	252	196	235	277	268
4,000– 5,000	282	311	224	270	198	275	.
5,000–10,000	471	706	780	578	378	.	.
All classes	116	115	120	122	125	102	112

PURCHASE OF LIFE INSURANCE BY FAMILIES OF VARIOUS TYPES
NORTH CENTRAL REGION: 1935-1936

Family income class	Type of family [1]						
	I	II	III	IV	V	VI	VII
Villages, families paying for insurance (percent)							
$ 250- 500	22.7	14.3	10.0	33.3	0	.	.
500- 750	42.3	49.2	40.5	28.8	35.3	26.7	33.3
750- 1,000	50.9	56.6	63.8	50.5	45.1	70.5	45.0
1,000- 1,250	62.8	65.3	73.3	61.9	63.5	71.2	60.9
1,250- 1,500	69.0	76.6	77.8	62.6	65.1	77.4	44.0
1,500- 1,750	61.9	71.7	68.4	71.0	78.9	66.7	66.7
1,750- 2,000	87.8	79.5	84.4	80.0	64.7	85.7	85.7
2,000- 2,500	80.0	90.2	84.6	75.3	69.6	80.0	100.0
2,500 - 3,000	76.0	78.9	83.3	69.7	94.1	75.0	100.0
3,000- 4,000	63.6	100.0	77.8	91.3	91.7	85.7	66.7
4,000- 5,000	80.0	100.0	100.0	80.0	.	100.0	.
5,000-10,000	75.0	100.0	.	.	.	.	.
All classes	58.5	67.5	69.5	62.2	63.9	68.9	58.8
Average premiums paid (dollars)							
$ 250- 500	29	67	60	58	.	.	.
500- 750	57	41	47	56	58	27	51
750- 1,000	63	55	49	49	48	42	55
1,000- 1,250	67	73	52	59	64	61	70
1,250- 1,500	76	75	74	74	74	80	51
1,500- 1,750	95	83	125	93	99	71	109
1,750- 2,000	166	110	130	124	126	139	74
2,000- 2,500	155	152	174	152	218	161	78
2,500- 3,000	212	236	251	144	180	182	312
3,000- 4,000	236	332	185	280	394	118	83
4,000- 5,000	309	276	863	293	.	134	.
5,000-10,000	289	150	.	.	.	.	.
All classes	97	94	102	104	119	81	99

[1] Families in types I, II, and III include husband and wife with no children (2 persons), with 1 child under sixteen years of age (3 persons), and with 2 children under sixteen years (4 persons), respectively. Families in type IV have at least 1 other family member, not the husband or wife, sixteen years or older, with or without 1 other person and regardless of age (hence, consists of 3 or 4 persons). Type V includes 1 child under sixteen years, 1 person sixteen years or older, and 1 or 2 others regardless of age (5 or 6 persons). Type VI includes 3 or 4 children under sixteen years (5 or 6 persons). Type VII includes 1 child under sixteen years, and 4 or 5 others regardless of age (7 or 8 persons).

Source: Department of Agriculture, *Changes in Assets and Liabilities of Families, Five Regions*' Misc. Publication No. 464, Table 38.

H-35
(Part

HOME OWNERSHIP AMONG FAMILIES OF VARIOUS TYPES NORTH CENTRAL REGION: 1935-1936

Family income class	Type of family						
	I	II	III	IV	V	VI	VII
	Small cities, families investing in owned home (percent)						
$ 250– 500	7.0	6.7	.	20.0	.	.	.
500– 750	8.1	4.8	3.4	2.2	0	0	.
750– 1,000	12.6	9.2	10.0	7.2	4.9	14.3	33.0
1,000– 1,250	17.1	8.7	13.2	10.0	25.0	6.5	28.6
1,250– 1,500	11.7	18.9	11.8	13.1	21.3	8.0	16.6
1,500– 1,750	16.2	20.7	20.8	27.9	15.6	22.2	42.9
1,750– 2,000	14.5	23.8	22.9	24.3	12.1	45.5	56.1
2,000– 2,250	17.5	35.0	18.2	26.7	19.4	.	20.0
2,250– 2,500	22.2	33.5	21.4	32.6	21.4	.	100.0
2,500– 3,000	28.3	28.8	15.0	33.3	31.8	60.0	66.7
3,000– 4,000	10.6	30.0	28.6	35.1	25.8	25.0	25.0
4,000– 5,000	30.4	44.4	50.0	31.6	25.0	100.0	0
5,000–10,000	35.7	30.0	42.9	40.0	40.0	0	.
All classes	15.6	18.5	16.7	22.0	19.0	15.8	33.3
	Average investment (dollars)						
$ 250– 500	3	17	.	26	.	.	.
500– 750	9	36	10	1	.	.	.
750– 1,000	21	41	67	29	26	34	102
1,000– 1,250	58	63	85	24	45	27	75
1,250– 1,500	21	60	35	30	51	18	28
1,500– 1,750	81	114	117	60	46	63	74
1,750– 2,000	66	107	80	126	71	165	126
2,000– 2,250	65	135	182	126	79	.	206
2,250– 2,500	144	150	204	83	49	.	260
2,500– 3,000	148	131	86	141	75	287	238
3,000– 4,000	102	244	207	134	125	150	50
4,000– 5,000	135	149	258	112	156	143	.
5,000 10,000	196	503	263	218	316	.	.
All classes	67	120	114	80	88	73	101

HOME OWNERSHIP AMONG FAMILIES OF VARIOUS TYPES
NORTH CENTRAL REGION: 1935-1936

Family income class	Type of family						
	I	II	III	IV	V	VI	VII
Villages, families investing in owned home (percent)							
$ 250 - 500	6.8	0	0	0	0	0	0
500 - 750	8.1	8.5	2.7	8.5	0	0	0
750 - 1,000	8.1	10.6	3.8	13.6	9.8	9.1	10.0
1,000 - 1,250	10.2	11.9	14.0	21.2	20.6	9.6	13.0
1,250 - 1,500	16.0	20.8	22.2	14.3	11.6	18.9	8.0
1,500 - 1,750	6.3	17.4	18.4	16.1	15.8	5.6	16.7
1,750 - 2,000	20.4	23.1	12.5	16.7	11.8	14.3	14.3
2,000 - 2,500	21.7	22.0	19.2	17.3	13.0	6.7	14.3
2,500 - 3,000	16.0	36.8	8.3	18.2	35.3	12.5	0
3,000 - 4,000	27.3	60.0	44.4	13.0	33.3	0	33.3
4,000 - 5,000	0	60.0	33.3	20.0	.	50.0	0
5,000-10,000	25.0	0	0	0	0	.	0
All classes	11.5	16.3	13.3	15.4	15.2	10.2	10.9
Average investment (dollars)							
$ 250 - 500	7	0	0	0	0	.	.
500 - 750	29	46	3	24	0	0	0
750 - 1,000	21	30	71	35	28	114	11
1,000 - 1,250	26	30	35	111	85	59	16
1,250 - 1,500	27	84	69	50	13	68	6
1,500 - 1,750	19	80	28	31	31	36	37
1,750 - 2,000	56	112	63	36	50	50	17
2,000 - 2,500	119	103	98	39	221	14	976
2,500 - 3,000	105	129	150	44	140	25	0
3,000 - 4,000	161	183	314	86	225	0	1 021
4,000 - 5,000	0	126	420	20	.	305	.
5,000-10,000	25	.	0	0	0	.	0
All classes	38	70	72	52	76	60	98

Source: Department of Agriculture, *Family Expenditures for Housing and Household Operation,* Misc. Publication No. 432, Table 34.

H-36 NET CHANGE IN ASSETS AND LIABILITIES, EXCLUSIVE OF INSURANCE PREMIUMS AND INVESTMENT IN HOMES, AMONG FAMILIES OF VARIOUS TYPES NORTH CENTRAL REGION: 1935-1936

Dollars

Family income class	Type of family						
	I	II	III	IV	V	VI	VII
				Net change in assets			
$ 250- 500	-91	-55	4	-342	.	0	.
500- 750	-124	17	0	-49	-27	-24	0
750- 1,000	-45	-34	-18	-35	-11	-26	-234
1,000- 1,250	-43	-2	-2	-41	-81	57	-47
1,250- 1,500	15	-13	32	11	21	73	8
1,500- 1,750	82	65	53	0	-41	-70	22
1,750- 2,000	153	28	99	-122	3	-11	228
2,000- 2,250	221	113	129	-53	18	121	715
2,250- 2,500	161	183	288	208	92	290	-125
2,500- 3,000	389	93	230	120	179	177	323
3,000- 4,000	682	343	537	506	273	-498	-55
4,000- 5,000	613	682	731	848	825	1 753	700
5,000-10,000	849	1 249	1 013	1 508	1 134	350	.
				Net change in liabilities			
$ 250- 500	47	99	97	139	.	125	.
500- 750	4	122	61	85	82	104	18
750- 1,000	19	59	36	60	99	87	-45
1,000 1,250	26	65	47	23	-3	79	50
1,250- 1,500	66	18	57	52	105	111	17
1,500- 1,750	56	75	76	29	68	156	19
1,750- 2,000	29	4	141	129	11	42	257
2,000- 2,250	2	59	75	42	43	-81	807
2,250- 2,500	12	59	269	66	90	-29	160
2,500- 3,000	117	51	-8	27	24	-14	155
3,000- 4,000	71	-22	150	17	-38	-394	-64
4,000- 5,000	-285	-146	0	12	67	0	0
5,000-10,000	-75	-196	357	101	35	-284	.

Source: Department of Agriculture, Misc. Publication No. 464, *Changes in Assets and Liabilities of Families*, Table 38, and No. 432, *Family Expenditures for Housing and Household Operation, Five Regions*, Table 61.

Thus at the low income level, older families (types V and VI) and two-person families liquidate assets to finance living expenditures, whereas younger families (types II, III, and IV) mortgage their future by incurring debts. In the middle income bracket, the accumulation of assets generally decreases with family responsibility, while at high income levels there does not appear to be any consistent difference among types of families. Thus assets at any given time are apparently acquired by families in high income brackets and by smaller families with moderate incomes. Liabilities are accumulated by young, as well as by large, families with relatively low incomes. Families of all types in the higher income brackets liquidate debts incurred in prior years, as indicated by the following interpolations from Table H-34:

NET CHANGE IN LIABILITIES, EXCLUSIVE OF PAYMENTS ON MORTGAGES ON OWNED HOMES, AT SPECIFIED FAMILY INCOME POSITIONS

Dollars

Family income position	Type of family					
	I	II	III	IV	V	VI
$ 750	13	79	48	95	47	25
1,650	22	-17	45	70	37	-64
2,500	-15	-18	51	-123	11	-42
5,000	-217	-389	63	-437	-99	-46

These figures suggest the relation of the age cycle of income and family responsibility to saving and dissaving. At the period of maximum responsibility, families apparently have little security beside insurance and perhaps a home unless the family income is and has been well above the average. The possession of some assets which can be liquidated in emergencies permits the older and smaller families, and perhaps also the very young, to maintain their standard of consumption. Families whose heads are in their middle years and large families depend on present and future earning power to support their scale of living; these types at most income levels increase their indebtedness in any given year.

The distribution of liquid asset holdings among spending units of different size, as given in the 1949 Survey of Consumer Finances, reveals the relative position of the size groups to be precisely the same as can be inferred from data on disbursements illustrated in Table H-36. The percentages, shown below, indicate that the one-person units and two-person units possess considerably more liquid assets than would be explained by their relative incomes alone. The large units of five or more persons, at the other extreme, have the smallest holdings, although their incomes are the highest for the life cycle.

Number of persons in the spending unit	Amount of liquid assets held [1]		
	None	Under $5,000	$5,000 and over
1	28	64	8
2	24	64	12
3	28	62	10
4	26	66	8
5 or more	44	51	5

Source: Federal Reserve Bulletin, Aug. 1949, reprint p. 16.

Saving in relation to the number and composition of families thus can be viewed as one aspect of the effect of the distribution in the population of income and wealth. With the assurance of some regular income, the groups in the population with some holdings in liquid assets or especially in stocks and bonds have shown a marked tendency to maintain separate living quarters although their total resources in income and assets other than owned homes may, for the most part, be quite modest. These groups are primarily composed of couples and individuals of retirement age, widows, and the disabled. The groups at the beginning of the age cycle, the young adults, appear to require only the promise of employment to liquidate their savings in establishing homes and families. Social insurance benefits and full employment opportunities thus appear to have multiplied the number of households and reduced their average size. The net effect of the change in the number and composition of families is towards an increase in per capita consumption and a decrease in per capita saving for the same level of income. Concomitant with changes in the general level of income, the changes in the distributions of households have probably meant a substantial reduction in the income elasticity of saving, as viewed in the aggregate.

The long-run changes in the number and composition of households clearly must affect the distributions of income, current saving, and accumulated saving. Existing survey data do not provide even a first approximation to the measurement of the changes in the distribution of income and saving that have resulted from essential changes in the population. The studies made before the war were limited by sample design and coverage to certain population groups and the postwar studies of the Federal Reserve Board are apparently designed to show the changes that have occurred from year to year *within groups* (size of spending unit, age, and other factors), and general measures of concentration of income and liquid assets provided by these studies are standardized for changes *between groups*, i.e. the changes in the distribution of the population by size of spending unit, age, and other factors.

Existing cross-sectional data do not offer any quantitative information on the critical points when large changes in the economic situation have occurred in a short time. The process of establishing a home must be accomplished by the conversion of accumulated assets into homes, durable goods, and other consumer goods. Any great increase (or decrease) in the number of new households formed in any period would, accordingly, be registered in the total volume of saving and in particular components. Since none of the statistical studies of the consumption and saving of individual consumer units have recorded the accounts of newly established households, the influence of such units in the total must be read, indirectly, from time series totals.

Examination of the few sample surveys that offer sufficient detail on saving by type of family suggests the important role that insurance and owned homes have played in determining a standard of consumption that has risen almost steadily for

all groups in the population over the past sixty years. In 1888–1890, families of five or more persons were saving more than $300 out of a $1,300 income, whereas large families in 1948 apparently required between five and six times as much income, much more than was warranted by changes in the price level, to put $300 into saving, exclusive of insurance premiums. Insurance has apparently functioned to maintain and increase the standard of consumption among all groups in the population by providing security against contingencies and for the aged, widowed, and disabled through income in benefits that supports the family independent of the charity of relatives.

APPENDIX IV

SAVING IN RELATION TO OCCUPATION OF WORKER

1. Introduction

A strict comparison of the expenditure and saving patterns of different occupational groups should be limited to those occupations which are similar in economic level and geographic environment. This restriction on the empirical study of the relation between occupation, as such, and saving severely reduces the scope of possible generalizations, for occupational groups of different types seldom are found to be in the same economic circumstances. It is not possible, for example, to establish a comparison of the financial balance sheets of highly trained surgeons, architects, or engineers with those of unskilled workers without recourse to extrapolations of dubious validity.

Until recent years the great majority of investigations of family expenditures in this and other countries have been limited to wage earners and low-salaried workers. Occupational differences within the groups surveyed were seldom explored, as the pattern of analysis set by Ernst Engel and Carroll Wright dominated most American studies of family living expenditures. The emphasis was on income as the primary determinant of expenditures and saving, differences between occupational groups appear to have been regarded as solely a matter of income, and income was defined for the purposes of measurement as the current year's receipts. The growing interest in the relation between consumption and income in the latter part of the decade 1920–1929 led to an articulate demand for information on the spending of the higher income groups, [1] and proposals for an extension of the income range covered by studies of family expenditures led automatically to a broadening of the occupational distribution included in such surveys. In the Consumer Purchases Study of 1935–1936, which was modeled on the proposals of the Social Science Research Council, the investigation of consumption and saving was extended both to the higher-level salaried groups and to the self-employed.

[1] The needs were summarized in the report prepared by a Special Committee of the Social Science Research Council entitled *Consumption According to Incomes*, Sept. 1929, mimeographed.

Investigation of the expenditures and saving of farm families had been developing in the 1920's and some knowledge of the problems of measuring the income-consumption-saving relations among farmers was already available to the designers of the Consumer Purchases Study. However, there had been virtually no previous experience with the nonfarm self-employed, and so the investigation of this group was patterned after the study of the wage and salaried occupational group. [2]

The Consumer Purchases Study offers the only data for a study of the effect of occupation on consumption and saving. The more recent studies, for 1941, 1944, and 1945 to date, have covered all occupational groups, but because of the small size of the samples the data have been tabulated using only one variable. Accordingly, it is not possible to examine the family balance sheets of occupational groups of the same income bracket in the same area except for 1935–1936.

2. Variation in the Relation of Saving to Occupation

The Consumer Purchases Study data were tabulated so as to facilitate a comparison of occupational groups over a broad range of incomes. The procedure designed to replicate the occupational comparison at many income positions forced the investigators to classify together broad and heterogeneous groups of workers. Distinctions between groups were based on class of worker (wage and salaried workers versus the self-employed) and on the more or less conventional differentiations between manual work (wage earner), office work (clerical), business (managerial), and professional work. The classification which distinguished six occupational groups, wage earner, clerical, salaried business, salaried professional, independent business, and independent professional, obviously did not define a number of separate and not overlapping groups. The distinction between clerical and salaried business or between salaried business and salaried professional, for example, had to be located by a largely arbitrary system of classification.

A consistent and systematic variation between the expenditure and saving patterns of occupational groups is not revealed in the data for 1935–1936. No single group had expenditures uniformly above or below all of the others throughout the income range in all of the communities surveyed. In Chicago the independent professional group and the salaried business group had relatively high expenditures and low saving. In New York the independent professional group likewise had a high expenditure level, but the salaried business group, with the clerical, had the lowest expenditures and highest saving.

Clear differences appear in some cities in the lower part of the income range but do not continue in the upper income brackets. Thus in Columbus, Ohio, and

[2] The schedule entries for the income of the self-employed used in all interview studies have been so brief that it is impossible to appraise the validity of the reports by any internal checks except the balance between income, expenditures and saving. No other information on assets or financial position was obtained for the nonfarm self-employed, whereas for the farmers data on the size and value of farms was recorded, and the income record included gross as well as net income.

Portland, Oregon, the wage earner group had the lowest expenditures and highest saving up to a $2,000 income, but at higher levels no differences between the wage earner and other groups are exhibited in the data.

Except in New York and Chicago, the data for all six occupational groups are not shown separately in the published reports, but in various combinations. These combinations, by increasing the heterogeneity of the classes, may explain the difficulty in interpreting the occupational patterns of consumption and saving. The wage earner and clerical groups, for which the data are shown separately in nearly all communities, had lower expenditures and higher saving in most of the places where any occupational differences appeared in some part or all of the income range, but between these groups no consistent difference appeared.

3. Waves in the Saving Function

Inconsistencies in occupational differences in the level of saving at the same income bracket may be explained by interpreting the form of the saving function of the various groups as a combination of significantly different levels of saving among component segments of the occupation group. Throughout all communities the rate of the change of saving from one income bracket to the next higher forms a wavelike series of values which rises to a maximum and falls again twice, three times, and even four times over the income range. The repetition of these waves in the rate of the change in the saving of all occupational groups in twenty-five or more surveys in various communities cannot result simply from sampling fluctuations, and hence the phenomenon must have some explanation, which may possibly be read from the trend of expenditures and saving with income. The saving function shows what can be described as almost periodic downward shifts in level corresponding to upward shifts in the expenditure function. These changes in level, which are illustrated in Table II-37 by the data for four cities, occur with such regularity that it is entirely reasonable to interpret them as a reflection of the combination within one occupational group of subgroups with distinctly different patterns of saving and expenditures. Among independent professional families in Chicago at least two changes in level can be easily discerned in the table, one around a $2,000 income and one at about $8,000. Among salaried professional families in Chicago, changes in the level of expenditures and saving clearly appear to take place around $1,750 and $2,500. From the well-known differences in income among the professions (which include elementary school teachers, nurses, architects, and surgeons) it is tempting to associate these changes in level with the occupation, narrowly defined. Such an inference, however, cannot at present be substantiated by any statistical data and hence must wait for more detailed tabulations of expenditure-saving data for verification. A separation of the levels as exhibited in the available data, illustrated in Table II-37, leads to a number of possible generalizations that might be submitted to empirical check at some later time.

H-37
(Part 1)

EXPENDITURES AND SAVING AMONG FAMILIES AVERAGING 3.5 PERSONS BY OCCUPATIONAL GROUPS IN CHICAGO, NEW YORK, DENVER, AND COLUMBUS: 1935-1936

Family income class	Average money income	Expenditures		Saving	
		Average	Relative change	Average	Relative change
	$			$	
	1	2	3	4	5
Chicago, wage earner families					
$ 500– 750	621	843	.	–222	.
750–1,000	883	1 032	0.57	–149	0.28
1,000–1,250	1 081	1 131	0.45	–50	0.50
1,250–1,500	1 315	1 356	0.93	–41	0.04
1,500–1,750	1 581	1 613	0.94	–32	0.03
1,750–2,000	1 844	1 766	0.59	78	0.42
2,000–2,250	2 067	1 946	0.85	121	0.19
2,250–2,500	2 319	2 227	1.17	92	0.12
2,500–3,000	2 694	2 502	0.78	192	0.27
3,000–3,500	3 123	2 600	0.26	523	0.77
3,500–4,000	3 550	2 889	0.82	661	0.32
4,000 and over	4 226	3 555	1.19	671	0.15
Chicago, clerical families					
$ 750–1,000	903	1 026	.	–123	.
1,000–1,250	1 110	1 279	1.07	–169	–0.22
1,250–1,500	1 315	1 371	0.41	–56	0.55
1,500–1,750	1 610	1 625	0.84	–15	0.14
1,750–2,000	1 828	1 821	0.90	7	0.10
2,000–2,250	2 053	1 971	0.68	82	0.33
2,250–2,500	2 288	2 202	1.02	86	0.02
2,500–3,000	2 634	2 367	0.51	267	0.52
3,000–3,500	3 115	2 605	0.57	510	0.51
3,500–4,000	3 612	3 030	1.02	582	0.01
4,000 and over	4 377	3 789	1.16	588	0.03
Chicago, salaried business families					
$ 1,250– 1,500	1 314	1 427	.	–113	.
1,500– 1,750	1 592	1 608	0.62	–16	0.35
1,750– 2,000	1 820	1 838	1.00	–18	–0.01
2,000– 2,250	2 033	2 117	1.28	–84	0.31
2,250– 2,500	2 348	2 307	0.60	41	0.40
2,500– 3,000	2 702	2 629	0.93	73	0.09
3,000– 3,500	3 101	2 899	0.71	202	0.32
3,500– 4,000	3 705	3 274	0.68	431	0.38
4,000– 5,000	4 419	3 954	1.07	465	0.05
5,000– 7,500	5 700	4 703	0.68	997	0.42
7,500–10,000	8 764	7 032	0.94	1 732	0.24
10,000 and over	18 700	10 343	0.51	8 357	0.67
Chicago, salaried professional families					
$ 1,250– 1,500	1 386	1 416	.	–30	.
1,500– 1,750	1 572	1 550	0.72	22	0.28
1,750– 2,000	1 801	1 917	1.56	–116	–0.60
2,000– 2,250	2 112	2 050	0.42	62	0.57
2,250– 2,500	2 339	2 192	0.66	147	0.37
2,500– 3,000	2 577	2 446	1.13	131	–0.07
3,000– 3,500	3 131	2 855	0.79	276	0.26
3,500– 4,000	3 666	3 278	0.88	388	0.21
4,000– 5,000	4 263	3 574	0.57	689	0.50
5,000– 7,500	5 992	4 527	0.69	1 465	0.45
7,500–10,000	8 306	6 176	0.95	2 130	0.29
10,000 and over	11 973	8 521	0.88	3 452	0.36

EXPENDITURES AND SAVING AMONG FAMILIES AVERAGING 3.5 PERSONS BY OCCUPATIONAL GROUPS IN CHICAGO, NEW YORK, DENVER, AND COLUMBUS: 1935-1936

Family income class	Average money income	Expenditures		Saving	
		Average	Relative change	Average	Relative change
	$			$	
	1	2	3	4	5
Chicago, independent business families					
$ 1,250– 1,500	1 276	1 312	.	–36	.
1,500– 1,750	1 550	1 528	0.78	22	0.21
1,750– 2,000	1 803	1 868	1.33	–65	–0.34
2,000– 2,250	2 071	2 026	0.59	45	0.41
2,250– 2,500	2 313	2 202	0.75	111	0.27
2,500– 3,000	2 648	2 391	0.61	257	0.44
3,000– 3,500	3 142	2 919	1.17	223	–0.07
3,500– 4,000	3 674	3 273	0.73	401	0.33
4,000– 5,000	4 311	3 556	0.52	755	0.56
5,000– 7,500	5 725	4 539	0.86	1 186	0.30
7,500–10,000	8 226	5 846	0.70	2 380	0.48
10,000 and over	13 814	11 368	1.28	2 446	0.12
Chicago, independent professional families					
$ 1,250– 1,500	1 330	1 445	.	–114	.
1,500– 1,750	1 572	1 715	1.02	–143	0.21
1,750– 2,000	1 834	1 846	0.48	–12	0.50
2,000– 2,250	2 061	2 410	2.28	–349	–1.48
2,250– 2,500	2 334	2 350	–0.20	–16	1.22
2,500– 3,000	2 689	2 620	0.77	69	0.24
3,000– 3,500	3 131	2 931	0.74	200	0.30
3,500– 4,000	3 707	3 322	0.74	385	0.32
4,000– 5,000	4 369	3 708	0.70	661	0.42
5,000– 7,500	5 940	4 524	0.65	1 416	0.48
7,500–10,000	8 331	7 205	1.38	1 126	–0.12
10,000 and over	12 252	9 233	0.64	3 019	0.48
New York, wage earner families					
$ 500– 750	622	1 071	.	–449	.
750–1,000	871	1 016	–0.16	–145	1.22
1,000–1,250	1 106	1 175	0.61	–69	0.32
1,250–1,500	1 322	1 387	0.93	–65	0.02
1,500–1,750	1 597	1 612	0.80	–15	0.18
1,750–2,000	1 835	1 930	1.30	–95	–0.34
2,000–2,250	2 097	2 177	0.90	–80	0.06
2,250–2,500	2 309	2 297	0.56	12	0.43
2,500–3,000	2 723	2 667	0.91	56	0.11
3,000–3,500	3 195	3 216	1.17	–21	0.16
3,500–4,000	3 614	3 379	0.40	235	0.61
New York, clerical families					
$ 750–1,000	800	1 311	.	–511	.
1,000–1,250	1 084	1 451	0.33	–367	0.51
1,250–1,500	1 376	1 594	0.39	–218	0.51
1,500–1,750	1 595	1 744	0.61	–149	0.32
1,750–2,000	1 866	1 893	0.52	–27	0.45
2,000–2,250	2 094	2 077	0.80	17	0.19
2,250–2,500	2 326	2 299	0.97	27	0.04
2,500–3,000	2 671	2 637	0.99	34	0.02
3,000–3,500	3 218	3 127	0.91	91	0.10
3,500–4,000	3 626	3 535	1.03	91	0

H-37
(Part 3)

EXPENDITURES AND SAVING AMONG FAMILIES AVERAGING 3.5 PERSONS BY OCCUPATIONAL GROUPS IN CHICAGO, NEW YORK, DENVER, AND COLUMBUS: 1935-1936

Family income class	Average money income	Expenditures		Saving	
		Average	Relative change	Average	Relative change
	$			$	
	1	2	3	4	5
New York, salaried business families					
$ 1,500 - 1,750	1 617	1 838	.	-221	.
1,750- 2,000	1 836	1 926	0.37	-90	0.60
2,000- 2,250	2 092	2 106	0.68	-14	0.30
2,250- 2,500	2 402	2 430	1.04	-28	-0.05
2,500- 3,000	2 690	2 565	0.48	125	0.53
3,000- 3,500	3 165	3 139	1.24	26	-0.21
3,500- 4,000	3 783	3 463	0.55	320	0.48
4,000- 5,000	4 390	4 170	1.25	220	0.16
5,000- 7,500	5 837	5 868	1.20	-31	-0.17
7,500-10,000	8 242	7 781	0.82	461	0.20
10,000 and over	18 041	14 025	0.75	4 016	0.36
New York, salaried professional families					
$ 1,250- 1,500	1 395	1 573	.	-178	.
1,500- 1,750	1 639	1 830	0.94	-191	-0.05
1,750 - 2,000	1 837	1 935	0.49	-98	0.47
2,000- 2,250	2 110	2 362	1.44	-252	-0.56
2,250 - 2,500	2 358	2 322	-0.15	36	1.16
2,500- 3,000	2 678	2 695	1.17	-17	-0.17
3,000- 3,500	3 218	3 133	0.82	85	0.19
3,500- 4,000	3 679	3 700	1.24	-21	-0.23
4,000 - 5,000	4 369	4 182	0.71	187	0.30
5,000- 7,500	5 815	5 423	0.91	392	0.14
7,500-10,000	7 969	6 220	0.44	1 749	0.63
10,000 and over	15 013	12 333	1.08	2 680	0.13
New York, independent business families					
$ 1,250- 1,500	1 386	1 397	.	-11	.
1,500- 1,750	1 591	1 760	1.67	-169	-0.77
1,750- 2,000	1 808	1 912	0.65	-104	0.30
2,000- 2,250	2 089	2 218	1.03	-129	-0.09
2,250- 2,500	2 299	2 441	1.00	-142	-0.06
2,500- 3,000	2 700	2 810	0.88	-110	0.08
3,000- 3,500	3 063	3 120	0.83	-57	0.15
3,500- 4,000	3 770	3 707	0.83	63	0.17
4,000- 5,000	4 298	4 159	0.88	139	0.14
5,000- 7,500	5 740	5 948	1.24	-208	-0.24
7,500-10,000	8 379	7 176	0.50	1 203	0.53
10,000 and over	14 573	14 143	1.23	430	-0.12
New York, independent professional families					
$ 1,250- 1,500	1 385	2 078	.	-693	.
1,500- 1,750	1 555	2 091	0.05	-536	0.92
1,750- 2,000	1795	2 266	0.56	-471	0.27
2,000- 2,250	2 082	2 259	-0.02	-177	1.02
2,250- 2,500	2 370	2 505	0.80	-135	0.15
2,500- 3,000	2 678	2 739	0.73	-61	0.24
3,000- 3,500	3 133	3 115	0.82	18	0.17
3,500- 4,000	3 686	3 918	1.14	-232	-0.45
4,000- 5,000	4 608	5 115	1.19	-507	-0.30
5,000 - 7,500	5 911	5 412	0.23	499	0.77
7,500-10,000	8 597	10 318	1.72	-1 721	-0.83
10,000 and over	23 360	17 171	0.51	6 189	0.54

EXPENDITURES AND SAVING AMONG FAMILIES AVERAGING 3.5 PERSONS BY OCCUPATIONAL GROUPS IN CHICAGO, NEW YORK, DENVER, AND COLUMBUS: 1935-1936

Family income class	Average money income	Expenditures		Saving	
		Average	Relative change	Average	Relative change
	$			$	
	1	2	3	4	5
Denver, wage earner families					
$ 500– 750	600	776	.	–176	.
750–1,000	807	913	0.55	– 106	0.34
1,000–1,250	1 059	1 105	0.70	–46	0.24
1,250–1,500	1 313	1 382	1.04	- 69	–0.09
1,500–1,750	1 556	1 612	0.91	–56	0.05
1,750–2,000	1 763	1 705	0.45	58	0.55
2,000–2,250	1 987	2 069	1.62	- 82	- 0.62
2,250–2,500	2 199	2 002	–0.32	197	1.32
2,500 3,000	2 553	2 166	0.53	387	0.54
Denver, clerical families					
$ 750–1,000	862	953	.	–91	.
1,000 1,250	1 093	1 226	1.06	–133	- 0.18
1,250 1,500	1 320	1 471	0.97	–151	–0.08
1,500–1,750	1 550	1 675	0.81	–125	0.11
1,750–2,000	1 800	1 794	0.46	6	0.52
2,000 2,250	1 988	1 878	0.46	110	0.55
2,250–2,500	2 267	2 062	0.71	205	0.34
2,500–3,000	2 589	2 357	1.01	232	0.08
Denver, salaried business families					
$1,250–1,500	1 309	1 673	.	- 364	.
1,500–1,750	1 552	1 683	0.03	–131	0.96
1,750 2,000	1 778	1 944	1.06	–166	- 0.15
2,000–2,250	2 051	2 053	0.38	–2	0.60
2,250–2,500	2 270	2 240	0.86	30	0.15
2,500 3,000	2 616	2 511	0.81	105	0.22
3,000–3,500	3 083	2 729	0.51	354	0.53
3,500–4,000	3 591	3 403	1.45	188	–0.33
4,000 5,000	4 235	3 589	0.32	646	0.71
5,000 7,500	5 453	4 387	0.79	1 066	0.34
7,500 and over	10 546	9 239	1.13	1 307	0.05
Denver, salaried professional families					
$1,250–1,500	1 260	1 417	.	–157	.
1,500–1,750	1 550	1 605	0.60	- 55	0.35
1,750–2,000	1 832	1 897	1.00	- 65	–0.04
2,000–2,250	2 070	2 037	0.58	33	0.41
2,250–2,500	2 306	2 312	1.17	- 6	–0.17
2,500–3,000	2 647	2 431	0.36	216	0.65
3,000 3,500	3 109	2 778	0.83	331	0.25
3,500–4,000	3 589	3 183	0.95	406	0.16
4,000–5,000	4 186	3 413	0.45	773	0.61
5,000–7,500	5 945	4 382	0.71	1 563	0.45
7,500 and over	7 473	4 824	0.42	2 649	0.71

H-37
(Part 5)

EXPENDITURES AND SAVING AMONG FAMILIES AVERAGING 3.5 PERSONS BY OCCUPATIONAL GROUPS IN CHICAGO, NEW YORK, DENVER, AND COLUMBUS: 1935-1936

Family income class	Average money income	Expenditures		Saving	
		Average	Relative change	Average	Relative change
	$			$	
	1	2	3	4	5
Denver, independent business and professional families					
$1,250-1,500	1 315	1 313	.	2	.
1,500-1,750	1 483	1 498	1.10	-15	-0.10
1,750-2,000	1 782	1 749	0.84	33	0.16
2,000-2,250	1 997	1 982	1.10	15	-0.08
2,250-2,500	2 154	2 053	0.47	101	0.55
2,500-3,000	2 555	2 531	1.23	24	-0.19
3,000-3,500	2 933	2 527	-0.01	406	1.01
3,500-4,000	3 501	3 118	1.19	383	-0.04
4,000-5,000	4 068	3 192	0.16	876	0.87
5,000-7,500	5 638	4 700	1.19	938	0.04
7,500 and over	9 463	6 707	0.69	2 756	0.48
Columbus, Ohio, wage earner families					
$ 500- 750	630	794	.	-164	.
750-1,000	842	904	0.45	-62	0.48
1,000-1,250	1 082	1 119	0.85	-37	0.10
1,250-1,500	1 315	1 312	0.82	3	0.17
1,500-1,750	1 540	1 472	0.73	68	0.29
1,750-2,000	1 768	1 623	0.71	145	0.34
2,000-2,250	2 028	1 846	0.94	182	0.14
2,250-2,500	2 280	2 119	1.18	161	-0.08
2,500-3,000	2 588	2 288	0.61	300	0.45
3,000-3,500	3 048	2 472	0.47	576	0.60
3,500-4,000	3 585	2 696	0.53	889	0.58
Columbus, Ohio, clerical families					
$ 750-1,000	867	936	.	-69	.
1,000-1,250	1 096	1 165	0.93	-69	0.00
1,250-1,500	1 302	1 372	0.95	-70	0.00
1,500-1,750	1 555	1 535	0.63	20	0.36
1,750-2,000	1 786	1 739	0.90	47	0.12
2,000-2,250	2 000	1 862	0.60	138	0.43
2,250-2,500	2 290	2 141	1.03	149	0.04
2,500-3,000	2 540	2 178	0.17	362	0.85
3,000-3,500	3 033	2 567	0.93	466	0.21
3,500-4,000	3 441	2 945	1.09	496	0.07
4,000-5,000	3 991	3 279	0.72	712	0.39
Columbus, Ohio, salaried business families					
$ 1,250- 1,500	1 345	1 234	.	111	.
1,500- 1,750	1 579	1 710	2.03	-131	-1.03
1,750- 2,000	1 809	1 766	0.24	43	0.76
2,000- 2,250	2 081	2 359	2.07	-278	-1.18
2,250- 2,500	2 309	2 212	-0.62	97	1.64
2,500- 3,000	2 699	2 421	0.58	278	0.46
3,000- 3,500	3 116	2 864	1.17	252	-0.06
3,500- 4,000	3 506	2 717	-0.45	789	1.38
4,000- 5,000	4 159	3 239	1.03	920	0.20
5,000- 7,500	5 604	4 646	1.21	958	0.03
7,500-10,000	8 276	6 180	0.73	2 096	0.43
10,000 and over	23 818	11 798	0.61	12 020	0.64

EXPENDITURES AND SAVING AMONG FAMILIES AVERAGING 3.5 PERSONS BY OCCUPATIONAL GROUPS IN CHICAGO, NEW YORK, DENVER, AND COLUMBUS: 1935-1936

Family income class	Average money income	Expenditures		Saving	
		Average	Relative change	Average	Relative change
	$			$	
	1	2	3	4	5
Columbus, Ohio, salaried professional families					
$1,250-1,500	1 371	1 541	.	-170	.
1,500-1,750	1 583	1 592	0.23	-9	0.76
1,750-2,000	1 856	1 893	1.09	-37	0.10
2,000-2,250	2 054	1 867	-0.14	187	1.13
2,250-2,500	2 260	2 063	1.04	197	0.05
2,500-3,000	2 630	2 328	0.80	302	0.28
3,000-3,500	3 079	2 540	0.55	539	0.53
3,500-4,000	3 538	2 856	0.84	682	0.31
4,000-5,000	4 178	3 071	0.44	1 107	0.66
5,000-7,500	5 444	4 005	1.00	1 439	0.26
Columbus, Ohio, independent business and professional families					
$ 1,250- 1,500	1 279	1 342	.	-63	.
1,500- 1,750	1 513	1 606	1.07	-93	-0.13
1,750- 2,000	1 696	1 735	0.68	-39	0.30
2,000- 2,250	1 928	1 915	0.77	13	0.22
2,250- 2,500	2 194	2 103	0.72	91	0.29
2,500- 3,000	2 570	2 193	0.26	377	0.76
3,000- 3,500	3 031	2 500	0.79	531	0.33
3,500- 4,000	3 468	2 819	0.89	649	0.27
4,000- 5,000	4 198	3 367	0.93	831	0.25
5,000- 7,500	5 543	4 195	0.79	1 348	0.38
7,500-10,000	8 158	4 603	0.24	3 555	0.84
10,000 and over	12 858	6 650	0.81	6 208	0.56

Source: Data based on information given in Bureau of Labor Statistics, Bulletins No. 642, 643, 644, and 646. Relative change in expenditures calculated by taking ratio of difference in logarithms of expenditures to difference in logarithms of income. Rate of change of saving is ratio of difference in saving to difference in income in successive classes.

The comparison of the expenditures of the separate occupational groups with the average for all occupations as a central function shows the changing levels as repeated series of decreasing ratios from more than one down to values as low as three-quarters. The income position at which the average expenditures of a particular occupational group equal the average expenditures of all occupational groups defines a normal position for a particular subgroup within the occupational group. To some extent the ratios indicate the range of incomes over which a particular level of the expenditure function prevails, and hence they offer a basis for separating the income classes into sets for the calculation of separate functional relationships between income, expenditures, and saving. The ratios of the average expenditures among salaried professional families in Columbus, Ohio, for example, to the average expenditures of all families, regardless of occupation, were as follows:

Average income	*Ratio of expenditures among average salaried professional families to average expenditures of all families*
$1,371	1.15
1,583	1.05
1,856	1.12
2,054	0.98
2,260	0.97
2,630	1.03
3,079	0.98
3,538	1.02
4,178	0.95
5,444	0.92

These ratios suggest four levels in the expenditures of this occupational group —roughly under $1,600, between $1,600 and $2,500, between $2,500 and $3,500, and over $3,500.

When the income range for the occupational groups in all large and middle-sized cities [3] is so divided into segments, similar segments from the different cities grouped together offer a sufficient number of observations on which to base a first approximation to the functional form of the expenditure and saving curves. The form

$$\log y = a + b \log x \tag{1}$$

where x is income and y expenditures, was fitted to a selection of such grouped segments of the income range with the following results:

[3] This calculation was limited to the large and middle-sized cities to avoid the confusion of area differences with occupational subgroup differences in the level of expenditures and saving. The data for the small cities and towns were tabulated only for groups of communities, at least four in number. The data for the large cities are shown separately; the data for the middle-sized cities are shown for combinations of two communities within a region. Some mingling of place differences with occupational differences may accordingly affect the study of the data for the middle-sized cities.

Income range including the value	Occupation	Number of observations	Regression values	
			a	*b*
$2,200	Wage earner	9	1.15	0.61
2,200	Salaried professional	20	1.27	0.61
2,200	Independent business and professional	14	2.23	0.32
2,500	Salaried business	10	1.65	0.55
3,000	Independent business and professional [a]	35	1.43	0.58
3,000	Independent business and professional [a]	7	1.34	0.60
3,000	Salaried professional	21	0.73	0.77
3,000	Salaried business	14	1.15	0.67

[a] Independent business and professional from combined tabulations for cities outside of New York and Chicago and from separate tabulations for New York and Chicago.

The eight values of the regression coefficient b, which measures the elasticity of expenditures, average 0.59 and concentrate sufficiently around the average to warrant the conclusion that this parameter is close enough to a uniform magnitude within all the occupational subgroups to be considered a constant in further examination of the levels of expenditures and saving.

To check the assumption of a constant value of the elasticity of expenditures, a test suggested by Leonid Hurwicz was made. The difference

$$\log y - 0.6 \log x$$

was calculated for all occupational groups in all income brackets in each city and the results tabulated in a frequency distribution. [4] These distributions were separated around their modes and the original data grouped in classes accordingly. The parameters of the logarithmic regression lines of form (1) calculated for these groups are illustrated below:

Occupation	*Regression values*	
	a	*b*
Wage earner	2.94	0.602
	2.96	0.592
	3.01	0.599
	3.07	0.606
	3.08	0.603
	3.17	0.605
	3.20	0.595
Clerical	3.07	0.611
	3.22	0.597
	3.26	0.601
	3.31	0.603
	3.36	0.594

This test confirms the uniformity in the magnitude of the regression coefficient, but it does not identify the levels of expenditure, since these were determined by

[4] These distributions were similar to those shown in Table H-40 but less concentrated around the modes.

the rather arbitrary partitions of the frequency distributions of the ratios of expenditures to a power of income.

If it is true that the expenditure or saving function of a given occupational group, such as wage earner or salaried professional, is a composite of several functions with different levels, the primary functions must overlap to a considerable extent. At the income positions where two or more levels are averaged together, the level of expenditures does not offer any basis for estimating the separate levels. Accordingly, to approximate the levels that apparently prevail within a given occupational group in a given community, the observed averages which appear to be a combination of two or more levels must be eliminated from the calculations.

Tables H-38 and H-39 show for selected communities the levels identified by averaging together the differences

$$\log y - 0.6 \log x$$

for the various income brackets when these differences varied by less than 0.01. The levels are expressed in terms of the break-even points of the expenditure function

$$y = Kx^{0.6} \tag{2}$$

or the purposes of interpretation and summary. Levels based on only one observation are shown for the extremes of the income range in order to indicate the range of variation in the various occupational groups in different communities, but are not shown for intermediate positions. Intermediate levels based on but one observation are not shown for the reason given in the paragraph above.

The most noticeable property of these estimates of expenditure levels is the tendency from community to community towards repetition of approximately the same magnitudes and an absence of others. The frequency distributions of these measures for all other nonfarm communities included in the 1935–1936 survey show concentration in pronounced modes in certain ranges (Table H-40). A natural separation of these frequency distributions into sets with one mode is feasible, for in the array of values there are fairly wide gaps, ranges in which no observation falls. By cutting the arrays, displayed in the frequency distributions of Table H-40, where the gaps amounted to $25 or more and averaging the sets so defined, estimates of the average level for the different occupational groups are obtained.

A number of inferences may be drawn from the estimates shown in Table H-41. The estimates of the expenditure levels of the subgroups within the occupational groups are close to certain familiar amounts in annual receipts, such as $1,200, $1,440, and $1,800. These calculations, it should be remembered, are based on averages standardized to an average size of family of 3.5 persons. If the estimates of level are converted to those that result from using a standard size of 3 or 4 persons, the values will be reduced by 6.4 percent or increased by 5.6 percent. These ratios applied to the figures in Table H-41 do not lead to a greater propor-

BREAK-EVEN POINT OF EXPENDITURE FUNCTIONS FOR FAMILIES AVERAGING 3.5 PERSONS BY OCCUPATIONAL GROUPS IN VARIOUS CITIES: 1935-1936

Dollars

	Wage earner	Clerical	Salaried business	Salaried professional	Independent business	Independent professional
	1	2	3	4	5	6
New York, N.Y.						
Median income	1 810	2 190	3 250	3 060	2 280	3 920
Consumption levels	1 282	2 011	2 140	1 883	1 414*	2 636*
	2 333	2 253	2 430	2 125	2 061	2 958
	3 997*	2 615	3 066	2 759	3 093	3 237
		3 398*	9 613*	3 823	5 974	13 565*
				9 182	13 522*	
Chicago, Ill.						
Median income	1 557	1 934	2 917	2 515	1 793	3 014
Consumption levels	1 201	1 242	1 623	1 490	1 431	1 895
	1 658	1 561	2 248	2 017	2 007	2 586
	2 063	1 832	2 620	2 758	2 675	2 941
	2 743*	2 029	3 434	5 116*	3 353	5 916
		3 052*	5 054*		8 486*	
Providence, R.I.						
Median income	1 163	1 634	2 809	2 447	1 575	3 781
Consumption levels	1 031*	1 275	1 490*	1 462*	2 209	
	1 358	1 641	1 966	1 914		
	2 016	1 960	2 525	2 171		
	2 193	2 392*	5 875*	9 038*		
Columbus, Ohio						
Median income	1 496	1 897	2 728	2 521	1 626	2 913
Consumption levels	1 006*	1 050*	1 082*	1 613	1 444*	
	1 152	1 495	1 814	1 917	1 898	
	1 369	1 749	2 059	2 841*	2 547	
	1 840	2 386	4 050			
Omaha, Nebr.						
Median income	1 423	1 887	2 803	2 369	1 736	3 170
Consumption levels	1 121*	1 272*	1 577*	1 439*	1 348	
	1 481	1 532	1 769	2 149	2 258	
	1 524	1 747	2 334	2 606	6 547*	
	1 696*	1 795*	2 845			
			4 074			
Denver, Colo.						
Median income	1 341	1 824	2 885	2 378	1 742	3 239
Consumption levels	1 143	1 107*	1 899*	1 688	1 307*	
	1 688	1 781	2 155	1 993	1 853	
		2 051*	2 347	2 194	2 122	
			3 029	2 504	2 559	
			7 594*	2 720	3 577	
					4 013*	
Portland, Ore.						
Median income	1 445	1 796	2 600	2 171	1 546	2 663
Consumption levels	1 127	1 293	1 583*	1 368*	1 415*	
	1 371	2 251*	1 725	1 688	2 296	
	2 033*		1 833	2 203	2 497	
			2 804*	4 697*	3 791*	
Atlanta, Ga.						
Median income	1 475	2 033	3 011	2 489	1 707	3 170
Consumption levels	728*	1 093*	1 398*	1 553*	1 372	
	1 316	2 032	2 281	2 012	2 261	
	1 728	2 186	3 076	2 142	2 992	
	2 112		4 092*	2 772		
				2 955		
Median income						
New Britain, Conn.	1 326	1 622	2 500	2 062	1 614	3 750
Haverhill, Mass.	1 255	1 602			1 801	2 875
Consumption levels						
Combined cities	1 072*	1 205*	1 552		1 457	
	1 447	1 514	2 144		1 720	
	1 842	1 721	2 250		2 081	
		1 903*	4 804*		2 976*	

H-38
(Part 2)

BREAK-EVEN POINT OF EXPENDITURE FUNCTIONS FOR FAMILIES AVERAGING 3.5 PERSONS BY OCCUPATIONAL GROUPS IN VARIOUS CITIES: 1935-1936

Dollars

	Wage earner	Clerical	Salaried business	Salaried professional	Independent business	Independent professional
	1	2	3	4	5	6
Median income						
New Castle, Pa.	1 293	1 655	2 413	2 208	1 588	3 250
Muncie, Ind.	1 340	1 627	2 349	2 326	1 517	3 000
Springfield, Ill.	1 329	1 859	2 766	2 656	1 584	3 361
Consumption levels						
Combined cities	902*	1 057*	1 370		1 197*	
	1 051	1 433	1 496		1 555	
	1 239	1 615	1 829		1 958	
	1 467		2 151			
Median income						
Dubuque, Iowa	1 129	1 596	2 420	1 975	1 341	2 667
Springfield, Mo.	1 145	1 565	2 266	2 008	1 216	2 455
Consumption levels						
Combined cities	809*	1 092*	1 403*		1 197*	
	1 166	1 247	1 946		1 555	
	1 351	1 635	2 029		1 958	
		1 754*	2 176			
			2 288*			
Median income						
Butte, Mont.	1 569	1 893	2 859	2 538	2 125	2 312
Pueblo, Colo.	1 374	1 687	2 238	1 836	1 440	2 656
Consumption levels						
Combined cities	1 330*	1 178*	1 428*		1 274*	
	1 540	1 612	1 701		2 024	
	1 847	1 852	2 048		2 945	
	1 922*		2 194		3 391*	
			2 865			
Median income						
Aberdeen-Hoquiam, Wash.	1 352	1 754	2 412	1 902	1 692	2 750
Bellingham, Wash.	1 243	1 607	2 185	1 804	1 444	2 375
Everett, Wash.	1 355	1 714	2 182	1 900	1 528	2 731
Consumption levels						
Combined cities	916	1 036*	1 286*		1 875	
	1 704	1 599	1 747			
	2 280	1 943*	1 878			
			2 268			
Median income						
Mobile, Ala	1 177	1 710	2 544	2 045	1 530	3 563
Columbia, S.C.	1 335	2 022	2 972	2 729	2 174	4 375
Consumption levels						
Combined cities	802*	825*	1 228*		1 255*	
	1 211	1 744	1 964		1 746	
	1 805	1 909*	2 068		1 615	
			2 963		2 121	
					2 701*	
Median income						
Atlanta, Ga. (Negro)	737	1 598	1 750	1 625	761	2 250
Consumption levels						
Atlanta, Ga. (Negro)	504*	638	1 192		653	
	902	1 088	1 669		908	
	1 040*	1 935*			999	
					1 219	

Sources: Estimates derived from data in Bureau of Labor Statistics Bulletins No. 642-647, and Department of Agriculture, *Family Income and Expenditures, Five Regions*, Misc. Publication No. 396, by procedure described in the text. Levels marked with an asterisk(*) based on data for only one income class. Median incomes are for native-born, nonrelief, complete families.

BREAK-EVEN POINT OF EXPENDITURE FUNCTIONS FOR FAMILIES AVERAGING 3.5 PERSONS BY OCCUPATIONAL GROUPS IN GROUPS OF CITIES: 1935-1936

Dollars

Community and item	Occupational group		
	Wage earner	Clerical	Business and professional
	1	2	3
New England			
4 small cities			
Median income	1 324	1 647	2 329
Consumption levels	1 196*	1 014*	1 108*
	1 325	1 537	1 825
	1 704	1 850	2 194
	2 168*	1 994*	2 603*
Middle Atlantic and North Central			
7 small cities			
Median income	1 170	1 478	1 801
Consumption levels	846*	1 081	917*
	1 199	1 285	1 297
	1 381	1 378	1 508
	1 529	1 631	1 639
		1 872*	2 081*
5 small cities			
Median income	1 330	1 370	1 549
Consumption levels	794*	959*	1 317*
	1 137	1 163	1 454
	1 999*	1 460	1 543
		1 823	1 969*
Mountain and West North Central			
4 small cities			
Median income	1 292	1 795	2 221
Consumption levels	913*	1 284	1 246*
	1 115	1 801	1 536
	1 463	2 155	1 923
	2 314*		2 718*
Pacific			
4 small cities			
Median income	1 418	1 804	2 153
Consumption levels	980*	1 352*	1 137*
	1 233	1 833	1 360
	1 333	2 054	1 696
	1 835	2 337*	1 827
	2 421*		2 060
			2 562
Southeast			
4 small cities			
Median income	1 063	1 742	2 091
Consumption levels	573*	915	1 102*
	1 501	1 825	1 637
	1 948*	2 284*	2 181

H-39
(Part 2)

BREAK-EVEN POINT OF EXPENDITURE FUNCTIONS FOR FAMILIES AVERAGING 3.5 PERSONS BY OCCUPATIONAL GROUPS IN GROUPS OF CITIES: 1935-1936

Dollars

Community and item	Occupational group		
	Wage earner	Clerical	Business and professional
	1	2	3
New England			
14 villages			
Median income	1 284	1 658	2 032
Consumption levels	1 030*	998*	1 008*
	1 363	1 617	1 678
	1 579	1 873*	1 948
	1 881*		2 113
Middle Atlantic and North Central			
46 villages			
Median income	1 007	1 352	1 609
Consumption levels	809	951*	872*
	1 195	1 080	1 014
	1 397	1 348	1 454
	1 895*	1 661*	1 683
			1 956
Mountain and West North Central			
22 villages			
Median income	1 010	1 495	1 662
Consumption levels	823*		
	1 000		
	1 202		
	1 501*		
Pacific			
24 villages			
Median income	1 254	1 602	1 786
Consumption levels	904	822*	786
	1 609	1 327	1 542
	1 725*	1 759	1 639
			2 025
Southeast			
34 villages			
Median income	1 019	1 665	2 042
Consumption levels	587*	960	432*
	1 071	1 144	1 272
	1 615*	1 532	1 685
		1 604	1 832
		1 792	

Sources: Same as for Table H-38.

FREQUENCY OF EXPENDITURE LEVELS AMONG OCCUPATIONAL GROUPS IN CITIES AND VILLAGES: 1935-1936

Expenditure level	Wage earner	Clerical	Salaried	Independent	Salaried and independent
	1	2	3	4	5
Under $900	8	3			4
900– 1,000	6	6			1
1,000– 1,100	7	9	1		2
1,100– 1,200	10	4	1	1	3
1,200– 1,300	7	8	2	3	3
1,300– 1,400	11	5	3	4	2
1,400– 1,500	4	3	7	5	3
1,500– 1,600	6	6	4	3	4
1,600– 1,700	6	8	5	1	7
1,700– 1,800	4	9	4	2	0
1,800– 1,900	7	8	6	5	3
1,900– 2,000	3	6	6	1	4
2,000– 2,100	2	5	6	5	4
2,100– 2,200	3	2	11	2	3
2,200– 2,300		4	6	4	0
2,300– 2,400		3	2	0	0
2,400– 2,500			1	1	0
2,500– 2,600			2	3	1
2,600– 2,700		1	2	2	1
2,700– 2,800			4	1	1
2,800– 2,900			4	0	
2,900– 3,000		1	2	5	
3,000– 3,100		1	3	1	
3,100– 3,200				0	
3,200– 3,300				1	
3,300– 3,400		1		2	
3,400– 3,500			1		
3,500– 3,600				1	
3,600– 3,700					
3,700– 3,800				1	
3,800– 3,900			1		
3,900– 4,000	1				
4,000– 5,000			6	7	
5,000–10,000			7	4	
10,000 and over				2	

Source: These distributions summarize the estimates of expenditure levels shown in Tables H-38 and H-39.

H-41

AVERAGE EXPENDITURE LEVELS OF OCCUPATIONAL GROUPS: 1935-1936

Wage earner			Clerical			Business and professional		
Range	Number of cases	Average $	Range	Number of cases	Average $	Range	Number of cases	Average $
	1	2		1	2		1	2
$ 573– 587	2	$ 580						
794– 809	3	802	$ 822– 825	2	$ 823	$ 872– 896	2	$ 889
902– 916	5	907	951– 960	4	956	1,008–1,014	2	1 011
980–1,006	3	995	998–1,014	2	1 006	1,082–1,137	4	1 108
1,130–1,072	6	1 049	1,036–1,107	9	1 082	1,192–1,307	11	1 214
1,115–1,166	7	1 139	1,144–1,205	4	1 172	1,335–1,457	18	1 441
1,195–1,282	10	1 222	1,242–1,293	7	1 271	1,490–1,639	17	1 564
1,316–1,397	11	1 354	1,327–1,378	4	1 351	1,669–1,769	13	1 699
1,447–1,540	8	1 497	1,433–1,460	2	1 446	1,814–1,966	23	1 894
1,609–1,615	2	1 612	1,495–1,561	6	1 528	1,993–2,093	16	2 041
1,658–1,728	8	1 696	1,599–1,661	9	1 634	2,122–2,209	18	2 161
1,835–1,847	4	1 841	1,721–1,873	17	1 798	2,248–2,269	8	2 269
1,881–1,948	4	1 912	1,903–1,960	5	1 930	2,504–2,720	14	2 612
2,168–2,193	2	2 180	1,994–2,054	6	2 028	2,758–2,772	3	2 763
			2,232–2,253	3	2 245	2,804–2,865	4	2 839
			2,386–2,392	2	2 388	2,955–2,963	2	2 959
						3,029–3,093	4	3 066
						4,050–4,092	4	4 057

Source: Computed from estimates shown in Table H-38.

tion of even numbers. It is interesting to speculate, nevertheless, on the possibility suggested by the figures, that the relationships being investigated in this study may in truth be functions of discrete variables determined by the calendar, monetary units, and, perhaps, also by arithmetic rules. The variation of expenditures with family size, for example, summarized as a continuous function in Appendix III, might actually prove to be a series that moves by some multiple of a money unit with each addition of a person to the household size. If this were true, the use of a scale based on the approximating continuous function would not result in precise estimates of expenditure levels at different income positions.

Differences in expenditure levels among occupational groups are difficult to interpret. Almost all of the values in the clerical set, for example, are higher than those in the same range in the wage earner set. This consistent difference probably is simply the result of the method of estimation, for the existence of higher expenditure levels among clerical families could lead to consistently higher values in the estimation of all levels from the averages. Accordingly, the similarity or identity of consumption levels among specific occupational groups within the same income distribution seems a most reasonable hypothesis which might ultimately be checked by the requisite tabulation of survey data.

5. Determinants of Expenditure Levels

The expenditure levels identified by the procedures just described and shown in Table H-41 are similar to wage and salary rates prevailing at the time of this survey, 1935–1936. The information needed to associate these levels with the average income of the various classes in the population is not available in the existing 1935–1936 data. If the subgroups in the population were equally frequent, the income size distributions for an occupational group, such as salaried professional, would indicate heterogeneity by the presence of modes at the concentration of each subgroup. Since the subgroups, that is, separate and distinct occupations, are very unequal in number, the income size distribution for the entire occupational group does not usually register the presence of different subgroups. Only a few distributions in the 1935–1936 survey showed more than one mode. A convenient association between the frequency distribution and the expenditure levels of all occupational groups for the same survey date is therefore impossible and the relation of the expenditure levels to prevailing incomes of different groups in the population must be inferred from the information for a few groups or for different dates.

A survey of wage earners and lower-salaried clerical workers for about the same date, 1934–1936, [5] provides, for the combined group, a separation of the income distributions into subgroups which can be associated with expenditure levels estimated by the same procedure from Consumer Purchases Study data. The subgroups for which income distributions are given in the published tables

[5] Bureau of Labor Statistics, *Money Disbursements of Wage Earners and Clerical Workers...*, Bulletins No. 637–641.

H-42
(Part 1)

EXPENDITURE LEVELS AND MODAL INCOMES OF WAGE EARNER AND LOWER-SALARIED CLERICAL FAMILIES AVERAGING 3.5 PERSONS
1934 to 1936

Dollars

	Expenditure levels	Modal income			
		Unskilled	Semiskilled	Skilled	Clerical
	1	2	3	4	5
Jackson, Miss. (N)	455, 787, 964	716	800	[1]	[1]
Richmond, Va. (N)	516, 993	775	994	[1]	[1]
Norfolk, Va. (N)	523, 1,088	700	800	1 050	[1]
Birmingham, Ala. (N)	540, 1,102	675	800	1 050	[1]
Houston, Tex. (M)	540, 826, 1,424	808	908	[1]	875
Indianapolis, Ind. (N)	550, 1,104	959	1 000	[1]	[1]
Baltimore, Md. (N)	552, 979, 1,671	980	792	[1]	[1]
Mobile, Ala.	574, 1,341, 2,106	[1]	800	1 391	1 914
Memphis, Tenn. (N)	578, 925	812	660	[1]	[1]
New Orleans, La. (N)	596, 1,112	919	725	[1]	[1]
Mobile, Ala. (N)	602, 1,164	729	690	[1]	[1]
Kansas City, Mo.-Kan. (N)	635, 1,069, 1,366	1 007	1 100	[1]	[1]
New Orleans, La.	663, 1,659, 2,011	975	750 1 677	1 595	1 670
Louisville, Ky. (N)	670, 1,215	650	960	1 050	[1]
Cincinnati, Ohio (N)	963, 1,242	900	1 100	[1]	[1]
Birmingham, Ala.	796, 2,022, 2,282	[1]	1 065	1 324	1 666
Houston, Tex.	797, 1,821, 2,310	1 267	1 345	1 650	1 843
Memphis, Tenn.	821, 1,480, 1,630	[1]	1 336	1 100 1 900	1 350 1 950
Norfolk, Va.	828, 1,635, 1,953	900	1 282 1 950	1 389 2 229	1 672
Los Angeles, Calif. (M)	849, 1,871	750	1 075	1 275	[1]
Louisville, Ky.	856, 1,201, 1,490, 2,110	1 000	1 290	1 329	1 092
Portland, Me.	865, 1,221, 2,126	1 243	1 120	1 387	1 200
Jackson, Miss.	873, 1,552, 1,813, 2,068	750	1 036 2 175	1 600	1 257 1 971
Sacramento, Calif.	881, 1,259, 1,858, 2,061	1 133	1 368	1 335 2 166	1 407
Dallas, Tex.	895, 2,524	1 013	1 050	1 614	1 845
Jacksonville, Fla.	899, 3,239	1 500	1 031	1 360	1 650
Philadelphia, Pa. (N)	902, 1,420	1 068	1 107	1 200	1 500
Richmond, Va.	909, 1,329, 1,695, 2,286	1 170	800 1 350	1 580	1 700
Johnston, Pa.	918, 1,188	816	1 015	1 286	1 143
St. Louis, Mo. (N)	928, 1,652	1 023	1 100	1 300	1 500
Denver, Colo.	930, 1,540, 1,994	1 050	1 085	1 110 1 923	1 308 1 909
New York, N.Y. (N)	933, 1,500, 2,500	1 113	1 266	[1]	1 320
St. Louis, Mo.	934, 2,115	1 043	1 375	1 659	1 671

EXPENDITURE LEVELS AND MODAL INCOMES OF WAGE EARNER AND LOWER-SALARIED CLERICAL FAMILIES AVERAGING 3.5 PERSONS

1934 to 1936

Dollars

	Expenditure levels	Modal income			
		Unskilled	Semiskilled	Skilled	Clerical
	1	2	3	4	5
Baltimore, Md.	935, 1,393, 1,640, 2,079	1 057	1 295	1 383	1 284 1 931
Buffalo, N.Y.	943, 1,677, 2,229	1 069	1 332	1 866	1 641
Kansas City, Kan.	976, 1,705, 1,894	1 059	1 107	1 487	1 500
Indianapolis, Ind.	989, 1,701, 1,982	1 008	1 700	1 623	1 657
Seattle, Wash.	995, 1,611, 1,823	1 398	1 389	1 839	1 851
Littleton and Conway, N.H.	997, 1,650	1 000	900	1 119	1 267
Nashua, Concord, and Berlin, N.H.	1,004, 1,588	685	1 044	1 625	1 157
Pittsburgh, Pa. (N)	1,005, 1,303	994	900		
Philadelphia, Pa.	1,022, 1,498, 2,316	1 147	1 075	1 369 1 913	1 329 1 950
Portsmouth and other cities, N.H.	1,022, 1,445, 1,759	1 093	1 054	1 270	1 080 1 917
Columbus, Ohio	1,024, 1,343, 1,857	1 062	1 038	1 286	1 355
Lancaster, Pa.	1,036, 1,601	1 050	1 073	1 433	1 300
San Diego, Calif.	1,036, 1,285, 1,622, 1,968				1 920
Los Angeles, Calif.	1,058, 1,745, 1,991, 2,399	1 330	1 335	1 626	1 644
Minneapolis, Minn.	1,085, 1,501, 1,843	1 303	1 325	1 612	1 086 1 721
Pittsburg, Pa.	1,095, 1,553, 1,807	1 326	1 328	1 617	1 624
Reno, Nev.	1,101, 1,725	1 350			
Salt Lake City, Utah	1,119, 1,580	857	1 288	1 371	1 074
Milwaukee, Wisc.	1,168, 1,724, 2,612	1 100	1 611	1 620	1 638
Boston, Mass.	1,175, 1,434, 1,788, 2,359	1 050 1 582	1 300	1 316 1 966	1 500
Scranton, Pa.	1,178, 1,399, 1,572, 2,257	1 200	1 335	1 367	1 617
Manchester, N.H.	1,194, 1,348, 1,742	[1])	1 120	1 341	1 350
Cincinnati, Ohio	1,213, 1,777, 2,755	1 050	1 236	1 407	1 644
Springfield, Mass.	1,221, 2,126	1 116	1 345	1 409	1 626
Cleveland, Ohio	1,224, 1,607, 1,927, 2,686	1 100	1 365	1 389 1 953	1 640
Rochester, N.Y.	1,255, 1,456, 1,828, 2,371	1 113	1 119	1 338 1 950	1 307
Grand Rapids, Mich.	1,262, 1,625, 1,933	1 080	1 038	1 329	1 106
San Francisco, Calif.	1,303, 1,681, 2,022, 2,872	1 326	1 350 1 941	1 884	1 671
Detroit, Mich.	1,337, 1,881, 2,369	1 095	1 323	1 653	1 686
New York, N.Y.	1,438, 1,587, 2,019, 2,879	1 329	1 630	1 647	1 625

N refers to Negroes, M to Mexicans.

[1] Less than ten cases in the survey sample.

Sources: Estimates derived from data given in Bureau of Labor Statistics Bulletins. Expenditure levels calculated by procedure described in text. Most of the low levels based on data for only one income class. Nevertheless, communities were arranged by the lowest expenditure level to give clearest progression of expenditure levels and income position.

H-43 AVERAGES OF THE EXPENDITURE LEVEL AND MODAL INCOME BY CLASSES OF WAGE EARNER AND CLERICAL FAMILIES 1934 - 1936

Modal income		Expenditure level	
Range	Average	Range	Average
$ 800– 900	837.50	$ 787– 826	806.50
900–1,000	942.00	763–1,005	884.00
1,000–1,100	1 056.80	902–1,387	1 065.70
1,100–1,200	1 117.30	979–1,262	1 126.00
1,200–1,300	1 258.70	1,143–1,566	1 330.20
1,300–1,400	1 344.20	1,104–1,498	1 344.50
1,400–1,500	1 448.50	1,434–1,607	1 570.50
1,500–1,600	1 500.00	1,242–1,420	1 321.70
1,600–1,700	1 630.40	1,501–2,019	1 692.60
1,700–1,800	1 727.00	1,635–1,677	1 656.00
1,800–1,900	1 843.00	1,366–1,821	1 619.80
1,900–2,000	1 939.10	1,455–1,927	1 697.80
2,000–2,100	—	—	—
2,100–2,200	2 175.50	2,061–2,068	2 064.50

Source: Table H-42.

H-44 NUMBER OF OCCUPATIONS WITH MODAL WAGE AND SALARY EARNINGS IN SPECIFIED CLASSES, FIVE CITIES: 1939

Modal earnings in the class	Number of occupations in:				
	New York	Chicago	Denver	Portland, Ore.	Atlanta
	1	2	3	4	5
$ 200– 400	4	6	6	13	10
400– 600	2	3	1	2	14
600– 800	28	13	14	15	26
800–1,000	1	4	8	8	2
1,000–1,200	16	14	5	9	4
1,200–1,400	6	10	23	10	16
1,400–1,600	1	1	5	4	2
1,600–2,000	24	24	34	32	27
2,000–2,500	47	44	31	34	28
2,500–3,000	0	1	2	3	1
3,000–5,000	25	24	26	22	23
5,000 and over	7	6	3	0	0
Total [1]	128	128	128	128	128

[1] The total is less than the sum of the entries because occupations having two modes were counted in two classes.

Source: Data derived from Bureau of the Census, *Sixteenth Census of the United States; 1940, Population,* Volume III, Parts 2 and 4.

are the clerical, skilled, semiskilled, and unskilled. In most communities these four groups have distinctly different income distributions, and frequently these distributions indicate two modes. The correspondence between the modes of these distributions and the expenditure levels, city by city, offers a fairly reasonable basis for associating the expenditure levels with the average income position of a fairly homogeneous group (Table H-42). The mode of income and the expenditure level are clearly associated and rise together more or less uniformly from the lowest to the highest income community. In order to measure the correlation it is necessary to associate particular income positions with particular expenditure levels. Such a pairing can be effected for those modal income positions which fall within an income bracket for which it was possible to estimate the expenditure level by the procedure used. Thus in Pittsburgh the modal incomes for clerical and skilled workers, $1,624 and $1,617 respectively, were in the income class $1,500 to $1,800, which formed part of the range within which the expenditure level was identified and measured by a break-even point of $1,553. Combining the groups with similar modes and averaging the two variables in $100 classes of the income position led to the results shown in Table H-43. The scatter of the income modes and expenditure levels reveals a relation of simple proportionality; the expenditure level is, on the average, 95 percent of the modal income.

This result, although based on data for only a few occupations, strongly suggests an important conclusion. The expenditure level is a constant and high proportion of the average income, and, accordingly, the elasticity of expenditures in relation to the average income of a group is unity.

The relation of the average income to the mode for relatively homogeneous occupational groups is not known, but the ratio of the mode to the mean is certainly greater for such subgroups in the population than for the broader occupational groups. Since among the broader groups such as skilled and semiskilled the ratio was close to 0.9 when the distributions had only one clear mode, an even higher value may be assumed to hold among more narrowly defined groups of wage and salary workers. The ratio of the expenditure level to the mean income may then be assumed to lie between 0.85 and 1.00. It will require a specially designed tabulation of the data to provide the statistical basis for a valid estimate of this relation.

Further evidence pointing to the correspondence of expenditure levels and modal income is offered by Census data on wage and salary incomes in 1939. The distributions of annual earnings of individuals in specific occupations grouped by their modes for four cities are shown in Table H-44. These income positions correspond quite well with the expenditure levels for these cities in 1935–1936, shown in Table H-38.

A survey in Washington, D.C. in 1948 offers an interesting check on the procedure for estimating expenditure levels and associating them with income distributions. In Washington the clearly defined Civil Service classifications provide the kind of grouping of the population required by this hypothesis. The data so utilized identify six levels of expenditures. These are shown below, together with the modal incomes probably associated with them:

Expenditure level	Modal income	Population group
$2,500	$2 626	Wage earner, Negro
2,712	3 200	Wage earner, white
3,633	3 750	Clerical, white
4,952	6 200	Professional, white
7,325		Administrative, white

A calculation of the expenditure levels for one occupational grouping, clerical and administrative, yielded similar magnitudes for three of the expenditure levels —$3,602, $5,294, and $7,490.

The income distribution data [6] were not detailed enough to indicate whether the lowest and the highest expenditure level could be matched with the income of some group in the population. It is interesting, however, to note the agreement of these calculations with those for the earlier date 1934–1936.

6. Changes in Expenditure Levels

This investigation tends to confirm the existence of expenditure functions with different levels in separate communities and the possibility of an association of these levels with the average income position of groups in the population with similar income distributions. If the average income of a population group rises over a period of time, the consumption level may also be expected to rise. The fact that expenditure functions have risen is clearly demonstrated by data from surveys in the postwar period. The relation of changes in expenditure levels to changes in income over time cannot be studied from family expenditure surveys because of the absence of data for a sufficient number of years. Comparisons possible between prewar consumption levels (principally 1935–1936) and postwar levels (1945–1948) for the same cities indicate (1) that by 1947–1948 the new income positions of the various population groups had been accepted as permanent, for by then expenditure levels had been adjusted to the new income distribution; and (2) that the absolute variability of income among "homogeneous" groups must have been much greater in 1945–1948 than in prewar years. The most interesting illustration is offered by the data for the city of Denver. The expenditure levels prevailing in 1948, estimated from the data for all families, were $3,524 extending over a range from $1,500 to $4,000 or more; $4,168 over a range from $2,000 to $6,000 or more; and $6,060 in the range over $5,000. In 1935–1936, ex-

[6] Unpublished data from the files of the Bureau of Labor Statistics.

penditure levels as high were found only among the business and professional families with the highest incomes (Tables H-37 and H-38).

The expenditure level as a function of the permanent component of income is a plausible hypothesis. The slope of the expenditure function, which determines the expenditures at incomes above or below the average, should be a function of the temporary component,[7] and the changes in the expenditure level must be determined by the time element related to changes in income. An upward shift in income which affects a whole population group more or less uniformly would probably not lead to a change in the consumption level unless the new income position showed promise of continuing. Data for studying the changes in consumption level with fluctuations in income among specific nonfarm population groups are wanting, but the annual records of farm family balance sheets in a number of states offer some basis for isolating the separate effects for this particular population group. An intensive study[8] of these data now being undertaken will provide some understanding of the way in which changes in the level of consumption follow changes in income.

7. The Slope of the Expenditure Functions

If the slope of the expenditure function of a relatively homogeneous population group is determined by the temporary component of income, then the slope must vary among groups in the degree that there are differences in the variability of income around its average. Thus far in this analysis the slopes have been assumed constant, measured by a logarithmic regression coefficient of 0.6. A uniform value for the relative change of expenditures with income does not appear consistent with our general knowledge of the variability of income associated with the different trades, businesses, and occupations. The fact that the 1935–1936 data for nonfarm groups offered no evidence of a variation of the slope within occupational groups indicates certain limitations of the measurements that cannot be assessed due to the absence of more reliable empirical evidence. Income of the self-employed might be expected to show more variability than income of many wage and salary workers, and, accordingly, the slope of the expenditure functions for independent business and professional should differ systematically from those for wage and salary families. The absence of any significant difference in the functions between the self-employed and other groups probably can be traced to the inadequate measure of net income obtained in the survey reports. It is believed that a large proportion of the self-employed reported withdrawals for family living instead of net income. This measure of income would obviously result in making the independent business and professional families appear similar to wage and salary families in the general pattern of expenditures and saving in relation to income.

The farm income information obtained in 1935–1936 provided a reasonably

[7] The terms permanent and temporary are taken from Friedman and Kuznets, *Income from Independent Professional Practice*, pp. 325–328.

[8] Reid, "Effect of Income Concept upon Expenditure Curves of Farm Families," *Studies in Income and Wealth*, Volume XV.

H-45
(Part 1)

AVERAGE EXPENDITURES AND SAVING OF FARM FAMILIES AVERAGING 3.5 PERSONS, RATE OF CHANGE IN SAVING, AND VALUE OF FARM LAND AND BUILDINGS, FIVE FARM COMMUNITIES: 1935-1936

Dollars (except cols. 4 and 7)

Family income class	Average money income	Average expenditures	Saving		Value of land and buildings	Expenditure function [1]	
			Average	Relative change		Level	Elasticity
	1	2	3	4	5	6	7
Pennsylvania-Ohio							
$ 250- 500	80	409	-329	—	3 500		
500- 750	251	419	-168	0.94	4324	—	—
750- 1,000	435	484	-49	0.65	4 955		
1,000- 1,250	608	566	42	0.53	5 809		
1,250- 1,500	808	671	137	0.48	6 386		
1,500- 1,750	1 024	741	283	0.68	7 717		
1,750- 2,000	1 242	802	440	0.72	8 282	600	0.42
2,000- 2,500	1 511	873	638	0.74	9 712		
2,500- 3,000	1 990	980	1 010	0.78	10 639		
3,000- 4,000	2 572	1 037	1 535	0.90	13 264		
4,000- 5,000	3 646	1 302	2 344	0.75	15 531		
5,000-10,000	4 986	1 195	3 791	1.08	15 546	—	—
Michigan-Wisconsin							
$ 250- 500	97	478	-381	—	5 107		
500- 750	310	524	-214	0.78	6 020	—	—
750-1,000	493	594	-101	0.62	6 510		
1,000-1,250	686	688	-2	0.51	7 497	691	0.45
1,250-1,500	890	775	115	0.57	8 635		
1,500-1,750	1 065	858	207	0.53	9 644		
1,750-2,000	1 304	977	327	0.50	9 788	688	0.52
2,000-2,500	1 649	1 078	571	0.71	10 970		
2,500-3,000	2 158	1 259	899	0.64	11 762		
3,000-4,000	2 648	1 445	1 203	0.62	12 295	—	—
California							
$ 250- 500	207	823	-616	—	11 952		
500- 750	389	766	-377	1.31	10 065		
750- 1,000	608	877	-269	0.49	13 560		
1,000- 1,250	833	1 010	-177	0.41	17 245		
1,250- 1,500	1 062	1 177	-115	0.27	14 725		
1,500- 1,750	1 298	1 206	92	0.88	19 114		
1,750- 2,000	1 518	1 358	160	0.31	18 996		
2,000- 2,500	1 891	1 523	368	0.56	20 410		
2,500- 3,000	2 332	1 669	663	0.67	23 840	1 192	0.49
3,000- 4,000	3 000	1 866	1 134	0.71	33 195		
4,000- 5,000	4 009	2 136	1 873	0.73	38 077		
5,000-10,000	5 642	2 909	2 733	0.53	71 737		

AVERAGE EXPENDITURES AND SAVING OF FARM FAMILIES AVERAGING 3.5 PERSONS, RATE OF CHANGE IN SAVING, AND VALUE OF FARM LAND AND BUILDINGS, FIVE FARM COMMUNITIES: 1935-1936

Dollars (except cols. 4 and 7)

Family income class	Average money income	Average expenditures	Saving		Value of land and buildings	Expenditure function [1]	
			Average	Relative change		Level	Elasticity
	1	2	3	4	5	6	7
Georgia-Mississippi, white							
$250– 500	137	187	-50	—	1 296		
500– 750	258	284	–26	0.20	1 690		
750– 1,000	427	405	22	0.28	2 766		
1,000– 1,250	594	514	80	0.35	3 211	354	0.69
1,250– 1,500	823	666	157	0.34	4 181		
1,500– 1,750	1 049	763	286	0.57	4 585		
1,750– 2,000	1 313	824	489	0.77	6 265		
2,000– 2,500	1 688	1 124	564	0.20	6 497	—	—
2,500– 3,000	2 070	1 352	718	0.40	11 553		
3,000– 4,000	2 661	1 765	896	0.30	23 077	571	0.73
4,000– 5,000	3 686	2 060	1 626	0.71	21 846		
5,000–10,000	5 794	3 039	2 755	0.54	70 082	—	—
10,000 and over	12 561	4 225	8 336	0.82		—	—
Georgia-Mississippi, Negro							
Under $250	58	150	-92	—			
250– 500	175	181	–6	0.74	757	—	—
500– 750	287	251	36	0.38	982		
750–1,000	504	402	102	0.30	1 243		
1,000–1,250	729	487	242	0.62	2 287	234	0.63
1,250–1,500	918	545	373	0.69	2 380		

[1] Expenditure functions calculated over range of income where the rate of change of average saving with income formed an increasing series of values.

Sources: Derived from Department of Agriculture, *Family Income and Expenditures, Farm Series*, Misc. Publications No. 356, 383, and 462. Also see Brady, "Family Savings in Relation to Changes in the Level and Distribution of Income," *Studies in Income and Wealth*, Volume xv.

accurate measure of net income,[9] and the farm areas surveyed offer examples of many types of farming which differ in degree with respect to annual fluctuations of income. The groups studied within areas were restricted to the more homogeneous types of families with respect to economic position. Thus the farm data for 1935–1936 provide a basis for examining the slope of the expenditure functions for an entrepreneurial group. It appears that among farm families the regression coefficient for the consumption levels that are indicated in the data is less than 0.6, varying between 0.4 and 0.6. Although the small number of surveys makes it difficult to generalize the relation between the regression coefficient and the income distribution, it appears that the greater the variability of income, the lower the income elasticity of expenditures (Table H-45).

The information on the saving of occupational groups in the postwar years that is provided by the Survey of Consumer Finances[10] has some bearing on the variation in the expenditure and saving functions of the different groups. The data in Table H-46 which compare actual saving with the average related to the income distribution of the occupational group, show a greater variability in current saving among the professional and among the managerial and self-employed than among the clerical, skilled, and unskilled. In 1947, for example, the relative number with large deficits, $500 or more, or large surpluses, $500 or more, compared with average for their incomes was as follows:

Occupation	*Actual percentage*	*Average percentage for the same income distribution*
Professional	56	50
Managerial, self-employed	61	51
Clerical, sales	32	35
Skilled, semiskilled	31	35
Unskilled	12	21

These results can be interpreted as the effect of long run differences in the level and variability of income. The generally higher income of the professional, managerial, and self-employed allows a greater accumulation of resources which can be used, if necessary, to finance consumption. The variation among occupational groups in liquid asset holdings, shown in Table H-47, is clearly related to the income level. Among higher-income occupations, more families have holdings, and larger holdings than can be explained by their income in the particular year.

The generally higher level of current saving in relation to income associated with the lower-income occupations, which has been discussed in the preceding paragraphs, cannot be checked in any direct way with data for recent years for lack of requisite detail. The simple comparison of the income, saving, and liquid assets distributions shown in Table H-48 suggests that the general relationship

[9] Except at the extremes of the income range. The accounting procedures used to minimize the amount of information required from the interviews led to serious systematic biases in the income distribution and expenditure functions. See Reid, "Effect of Income Concept upon Expenditure Curves of Farm Families," *Studies in Income and Wealth*, Volume xv.

[10] Federal Reserve Board, Survey of Consumer Finances, collected reprints, 1947, 1948, and 1949.

DISTRIBUTION OF ACTUAL AND AVERAGE SAVING BY OCCUPATIONAL GROUPS
1946 to 1948

Percent

Saving	Professional		Managerial and self-employed		Clerical and sales		Skilled and semiskilled		Unskilled	
	Actual	Average	Actual	Average	Actual	Average	Actual	Average	Actual	Average
	1	2	3	4	5	6	7	8	9	10
1946										
Deficit										
$500 or more	9	9	7	9	10	10	9	10	Included with skilled and semiskilled	
Under $500	11	13	10	13	17	17	22	18		
No surplus or deficit	3	4	3	3	3	5	11	7		
Surplus										
Under $200	16	15	15	15	27	22	25	24		
$ 200– 500	16	14	9	15	20	17	17	17		
500–1,000	16	16	20	15	12	15	10	14		
1,000 or more	29	29	36	30	11	14	6	10		
Total	100	100	100	100	100	100	100	100		
1947										
Deficit										
$500 or more	18	12	13	12	9	11	12	11	5	9
Under $500	12	13	8	13	17	17	21	18	23	20
No surplus or deficit	2	3	3	3	5	7	4	5	13	12
Surplus										
Under $200	14	20	16	19	29	26	26	26	41	34
$ 200– 500	16	14	12	14	17	15	18	16	11	13
500–1,000	14	12	13	11	12	11	11	12	4	7
1,000 or more	24	26	35	28	11	13	8	12	3	5
Total	100	100	100	100	100	100	100	100	100	100
1948										
Deficit										
$500 or more	12	14	16	15	15	13	12	13	6	12
Under $500	17	15	10	14	17	18	20	17	23	20
No surplus or deficit	1	2	2	2	3	2	3	3	7	8
Surplus										
Under $200	16	18	12	17	25	25	24	22	37	30
$ 200– 500	17	15	14	14	20	17	17	17	14	15
500–1,000	14	12	11	11	12	13	14	14	9	10
1,000 or more	23	24	35	27	8	12	10	14	4	5
Total	100	100	100	100	100	100	100	100	100	100

Source: Data taken from Federal Reserve Board, Survey of Consumer Finances, collected reprints, 1947, 1948, and 1949. Average distribution calculated by applying income distribution of group to saving distributions of all spending units by income class.

H-47

DISTRIBUTION OF ACTUAL AND AVERAGE LIQUID ASSETS BY OCCUPATIONAL GROUPS: 1947 to 1949

Percent

Saving	Professional		Managerial and self-employed		Clerical and sales		Skilled and semiskilled		Unskilled	
	Actual	Average	Actual	Average	Actual	Average	Actual	Average	Actual	Average
	1	2	3	4	5	6	7	8	9	10
1947										
None	6	14	11	12	13	19	34	22	Included with skilled and semiskilled	
Under $500	21	20	19	20	32	28	29	30		
500–2,000	33	30	33	31	33	31	24	30		
2,000–5,000	20	19	20	20	16	14	9	13		
5,000 or more	20	17	17	17	6	7	4	5		
Total	100	100	100	100	100	100	100	100		
1948										
None	6	12	10	11	12	19	22	18	48	29
Under $500	20	20	18	20	31	25	30	26	28	30
500–2,000	32	27	32	27	34	29	30	31	19	28
2,000–5,000	19	21	22	21	17	16	13	17	5	10
5,000 or more	23	20	18	21	6	10	5	8	0	3
Total	100	100	100	100	100	100	100	100	100	100
1949										
None	6	16	11	15	17	24	27	20	53	32
Under $500	23	25	21	22	32	29	34	29	26	30
500–2,000	28	26	26	25	31	26	23	27	15	23
2,000–5,000	24	18	18	19	14	13	12	15	5	10
5,000 or more	19	15	24	19	6	8	4	9	1	5
Total	100	100	100	100	100	100	100	100	100	100

Source: Data taken from Federal Reserve Board, Survey of Consumer Finances, collected reprints, 1947, 1948, and 1949. Average distribution calculated by applying income distribution of group to liquid asset distributions of all spending units by income class.

PERCENTAGE OF SPENDING UNITS WITH HIGH INCOME, SAVING, AND LIQUID ASSET HOLDINGS WITHIN OCCUPATIONAL GROUPS: 1948

	Median income of occupational group	Proportion of spending units with:		
		Income of $5,000 or more	Saving of $500 or more	Liquid assets of $5,000 or more
	$	Percent		
	1	2	3	4
Managerial, self-employed	4 500	47	46	19
Professional	4 000	34	37	24
Skilled, semiskilled	3 300	12	24	4
Clerical, sales	3 000	11	20	6
Unskilled	2 100	2	13	1
Farm operators	1 800	16	36	10
All units	2 840	15	26	8

Source: Federal Reserve Board, Survey of Consumer Finances, collected reprints, 1949.

between the expenditure and saving level and the general income position of a group holds now as in the prewar period. Proportionately more of the clerical, skilled, and unskilled have high saving than the professional and managerial with higher incomes, but the lower wage and salary groups have relatively less accumulated liquid assets than the professional group.

8. Summary

This examination of data relating to the spending and saving of occupational groups leads to postulation of the existence of finite, though perhaps numerous, different expenditure and saving functions at a given time. Groups with the same or almost the same income distribution have similar expenditure functions whether they are manual workers, farmers, or professional people, and regardless of their geographic location. The expenditure function, y, of the form

$$y = km\left(\frac{x}{m}\right)^b \tag{3}$$

expresses the relationship where m is the average income of the group. The income elasticity of expenditures b probably varies from group to group with the relative variability of income. The coefficient k may vary from date to date with changes in the mean income and may also differ among groups.

The total expenditures, Y, of a group accordingly may be expressed as

$$\overline{X} = kX\,(1 + \overline{V})$$

where X is aggregate income and V represents a function of the elasticity and parameters of the income distribution. Aggregate expenditures decrease with the variance and increase with the skewness of the income distribution of the group.

Aggregate saving as a percentage of aggregate income will change with the number of groups with different income distributions, their relative importance, and the changes in the income differentials between groups. The long-run decrease in the relative number of self-employed should accordingly be registered in a decreasing percentage of income saved.

The percentage of income saved will also vary with changes over time in the income level of all groups. The deviations of time series data from a constant percentage, or from one that is slowly declining, offer the best information on this phenomenon. The new collections of data on income distribution from the Census of 1950 and on the expenditures and saving in 1950 from the 1950 surveys of the Bureau of Labor Statistics will offer valuable new information on the association between group incomes and group patterns of spending.

APPENDIX V

CHANGE IN ASSETS AND LIABILITIES OF FAMILIES IN RELATION TO INCOME

1. Consumption and Saving

In the preceding sections the variations in the level of consumption of different groups at different times have been in vestigated as the explanation of the differences among groups in the personal saving-income ratio. Saving considered as a residual, i.e. as the difference between income and expenditures, must necessarily be explained by the factors that determine the consumption level. This mode of explaining the differences in the saving-income ratio among various population groups and the changes in the ratio over time vastly oversimplifies the relationships that must exist between the numerous elements in family balance sheets. In effect such a simplified projection of the structure of relations between family transactions, needs, and resources ignores all interactions, some of which might prove to be crucial in the explanation of the variability of personal saving.

Saving to some extent must be determined independently of the consumption level, for given sufficient resources all families make some provision for the future. The changes in the pattern of saving along the age cycle evidenced in the data discussed in Appendix III, the avowed reasons for saving and dissaving reported in the annual surveys of the Federal Reserve Board, and common experience all point to the existence of a joint determination of current expenditures and some of the forms of saving. In particular the business investment of the self-employed, farm or nonfarm, and the purchase of homes may take priority over consumption expenditures and may, accordingly, influence the level of consumption.

In Appendix II the trend of insurance premiums paid in relation to income position was shown to be contrary to the trend of total saving over the period 1888 to 1947. It is, therefore, reasonable to assume that the factors determining the frequency and size of insurance premiums are not the same as those accounting for changes in other forms of saving. The data on types of saving—money and bank accounts, real estate, stocks and bonds, and so on—for individual families all apply to the past two decades, and, accordingly, inferences about long-run trends must be severely qualified. For a complete account, with some separation of significantly different population groups, it is necessary to depend primarily on the data for two periods, 1935–1936 and 1941. Fortunately, these periods are sufficiently different in economic outlook to give some contrasts in the behavior of individuals with respect to saving and investment. These contrasts may possibly lead to some understanding of the fundamental interactions between current consumption, past saving, and investment.

2. Insurance Premiums

Insurance premiums are closely associated with consumer expenditures. In Appendix II the rising level of consumer expenditures and insurance premium payments and the corresponding decline in the saving-income ratio over time were illustrated with data for various dates between 1888 and 1947. In general, average insurance premiums paid by families in various income brackets follow the same form in relation to family expenditures regardless of the date or geographic location. Insurance payments are negligible when expenditures are less than $300. Above that level, insurance premiums paid increase gradually from less than 2 percent when expenditures range between $300 and $500, to about 5 percent when expenditures reach an average of $5,000. These ratios are characteristic of most survey dates between 1901 and 1947, but in 1888–1890 they were at a lower level.

There are two noteworthy exceptions to a uniform association between the level of consumer expenditures and the average insurance premium payment. Insurance premiums paid by farm families in 1935–1936 were as low, in relation to expenditures, as among nonfarm families in 1888–1890 (Appendix II, H-21 and H-22). Between 1936 and 1941 the ratio of insurance premiums paid by farm families to expenditures increased to the level characteristic of the nonfarm population. Insurance premiums paid by nonfarm families in 1935–1936, on the other hand, were higher than the general level, in relation to total expenditures, and hence decreased for the same expenditure at later dates, 1941, 1944 and 1947. The deviations of the farm and nonfarm groups in 1935–1936 must be recognized as significant, for the peculiarities of survey methodology common to both populations could not explain variation in opposite directions from a relationship characteristic of other periods. Farm family purchases of insurance may have changed, along with many aspects of farm life, and become similar to the urban pattern in the late thirties. The positive variation of nonfarm premium payments in 1935–1936 for a given level of expenditures, which may be interpreted in various ways, must wait for an analysis of time series data for a satisfactory explanation.

3. Change in Assets

Tables H-49 to H-54 display the net changes in assets and liabilities by income brackets for three residence groups—urban, rural nonfarm, and farm—at two dates, 1935–1936 and 1941. Since similar balance sheets are not available for other dates, the general order of the relationships between changes in assets and liabilities, income, expenditures, and other variables must, for the present, be derived from these data and be confirmed, if possible, for earlier and later dates by reference to partial summaries.

A summary of the data from Tables H-49 to H-54 is given in Table H-55. Total change in assets, exclusive of insurance, exhibits approximately the same relationship to income within each residence class at the two dates. Increases in

Note: Average money income was estimated from the reports of families included in the surveys. The average income shown in Table H-16 for 1935–1936 includes nonmoney income and adjustments for the sample deficiencies in the highest income groups.

1935–1936 – Data are weighted combinations of information from area surveys of Consumer Purchases Study, published in Bureau of Labor Statistics, *Family Expenditures in Selected Cities, 1935–36*, Bulletin No. 648, Volume VIII, and Department of Agriculture, *Changes in Assets and Liabilities of Families, Five Regions*, Misc. Publication No. 464. Weights and methods of combination are those used by National Resources Committee in *Consumer Expenditures in the United States* and National Resources Planning Board in *Family Expenditures in the United States*.

1941 - Data from Bureau of Labor Statistics, *Family Spending and Saving in Wartime*, Bulletin No. 822, and Department of Agriculture, *Rural Family Spending and Saving in Wartime*, Misc. Publication No. 520. The Bureau of Labor Statistics made available original records for single persons. Data for urban families derived by weighted subtraction from information published in Bulletin No. 822. Since there were relatively few single persons in the rural samples, no attempt was made to eliminate their records from the rural data. The Bureau of Human Nutrition and Home Economics provided information on high income brackets, $5,000 to $10,000 and $10,000 and over, from its files. For other income brackets, data taken directly from Department of Agriculture, Misc. Publication No. 520.

NET CHANGE IN ASSETS OF URBAN FAMILIES BY INCOME CLASS
1935-1936 and 1941

Dollars

Family income class	Average money income	Total assets	Savings accounts	Checking accounts	Money on hand	Investment in business	Stocks and bonds				Real estate		
							Total	U.S. Government	Building and loan	Other	Total	Owned home	Other
	1	2	3	4	5	6	7	8	9	10	11	12	13
1935–1936, families													
Under $500	296	–53.27	–36.61	–5.34	–18.37	–2.27	1.66	.	.	.	–1.01	.	.
500– 1,000	750	–9.75	–27.06	–4.54	–2.95	1.61	–0.69	.	.	.	–3.03	.	.
1,000– 1,500	1 182	40.90	–23.93	–3.80	–0.43	3.58	–0.31	.	.	.	11.28	.	.
1,500– 2,000	1 651	100.31	–9.76	–1.04	2.22	6.54	2.14	.	.	.	26.03	.	.
2,000– 3,000	2 274	222.47	15.14	10.45	3.04	22.12	–1.27	.	.	.	50.81	.	.
3,000– 4,000	3 259	548.15	132.79	52.33	12.57	49.35	29.19	.	.	.	63.78	.	.
4,000– 5,000	4 091	1 306.14	302.59	132.00	–1.50	124.27	69.33	.	.	.	106.81	.	.
5,000–10,000	7 028	2 227.20	500.99	183.20	18.94	497.01	101.52	.	.	.	245.19	.	.
10,000 and over	16 828	5 480.52	651.67	726.75	209.80	225.28	2098.23	.	.	.	–284.80	.	.
1941, families													
Under $500	323	–438.01	–133.10	–90.22	4.33	–34.98	–49.48	0	0	–49.48	–108.54	53.70	–162.24
500– 1,000	736	–22.19	–14.33	–1.40	–14.75	–2.94	7.14	5.40	0	1.74	–9.62	3.64	–13.26
1,000– 1,500	1 257	35.71	–8.67	–11.17	–11.50	5.17	–3.29	9.37	–10.82	–1.84	43.58	49.36	–5.78
1,500– 2,000	1 756	166.11	–43.76	7.12	11.11	1.24	49.21	48.23	0.94	0.04	75.75	80.58	–4.83
2,000– 2,500	2 240	123.13	–62.19	–1.91	–6.67	20.52	6.63	10.54	–4.30	0.39	54.53	78.48	–23.95
2,500– 3,000	2 745	224.15	–91.79	4.92	3.52	–28.02	6.63	12.35	–3.44	–2.28	183.90	120.02	63.88
3,000– 5,000	3 726	565.62	14.81	14.81	9.24	41.12	22.48	35.82	–60.65	2.35	246.27	252.43	–6.16
5,000–10,000	6 208	1 342.11	33.82	166.30	10.21	151.30	161.83	123.96	33.64	4.23	370.14	328.76	41.38
10,000 and over	14 196	4 512.81	–250.83	1 066.25	–64.56	1 335.75	981.37	452.63	0	528.74	675.28	675.28	0
1941, single persons													
Under $500	302	–44.77	–64.57	–4.10	9.84	0	10.05	0	10.05	0	0.57	0.57	0
500–1,000	731	13.76	–9.07	–0.94	–2.94	0	11.55	11.46	0.09	0	0	0	0
1,000–1,500	1 208	49.80	–61.31	1.28	12.05	21.98	26.61	32.00	–5.39	0	20.51	20.51	0
1,500–2,000	1 697	81.31	–62.22	11.11	17.29	0	65.27	40.27	25.00	0	0	0	0
2,000–2,500	2 183	387.97	94.15	–27.27	–3.64	109.09	75.00	75.00	0	0	15.91	0	15.91
2,500–3,000	2 688	372.04	25.00	0	0	0	250.00	250.00	0	0	0	0	0
3,000–5,000	3 411	204.80	24.50	0	0	0	130.00	0	0	130.00	0	0	0

NET CHANGE IN ASSETS OF URBAN FAMILIES BY INCOME CLASS

1935-1936 and 1941

Dollars

Family income class	Improvements		Insurance premiums	Insurance policies		Loans to others		Social security tax	Unemployment insurance	Personal property sold	Other assets
	Owned home	Other real estate		Surrendered	Settled	Total	Secured by mortgage				
	14	15	16	17	18	19	20	21	22	23	24
1935–1936, families											
Under $500	1.53	1.61	17.62	-4.45	-3.29	-3.01	.	.	.	-0.68	-0.66
500– 1,000	1.99	0.18	39.05	-6.68	-7.29	2.55	.	.	.	-1.68	-0.21
1,000– 1,500	2.92	0.98	56.20	6.23	-7.83	-0.77	.	.	.	-2.14	-1.08
1,500– 2,000	4.71	1.26	86.30	-6.47	-10.10	0.25	.	.	.	-1.01	-0.76
2,000– 3,000	9.32	4.11	127.32	-6.07	-10.20	0.34	.	.	.	-0.98	-1.66
3,000– 4,000	13.61	6.53	227.93	-2.95	-13.93	6.26	.	.	.	-25.56	-3.75
4,000– 5,000	31.98	18.97	555.63	-12.53	-31.95	19.56	.	.	.	1.98	-11.00
5,000–10,000	27.17	14.29	651.39	-9.59	-16.23	17.49	.	.	.	-1.20	-2.97
10,000 and over	16.80	2.38	1 680.40	-39.53	-6.33	207.78	.	.	.	-0.85	-7.05
1941, families											
Under $500	2.88	0	21.77	-15.96	-31.66	0.93	0	0.05	0	-4.50	0.47
500– 1,000	4.91	0.05	19.49	-0.56	0	-10.13	-8.43	0.32	0.24	-0.72	0.11
1,000– 1,500	3.07	0.94	42.15	-3.96	-3.25	-3.68	-2.47	7.19	0.46	-20.37	-0.96
1,500– 2,000	1.01	9.35	47.37	-3.34	-2.23	0.96	0.64	10.36	2.04	-3.20	3.12
2,000– 2,500	28.61	1.38	95.67	-5.94	-18.30	-3.33	4.83	14.00	1.65	-3.25	1.73
2,500– 3,000	18.15	17.04	109.57	-12.87	0	-2.87	0	16.74	2.80	-4.51	0.94
3,000– 5,000	29.27	14.34	149.01	-1.57	8.05	-0.71	1.83	21.03	3.26	-8.88	3.09
5,000–10,000	97.20	2.99	312.31	0	0	4.85	0	29.11	2.05	0	0
10,000 and over	144.27	4.03	842.37	0	0	-234.16	0	13.04	0	0	0
1941, single persons											
Under $500	4.54	0.26	7.61	0	0	-9.08	0	0.11	0	0	0
500–1,000	0	2.75	8.23	0	0	0	0	3.18	0.14	-0.01	0.87
1,000–1,500	0	0	36.24	0	0.12	0	8.21	4.32	0.74	-21.58	0.63
1,500–2,000	5.56	11.11	29.96	0	0	3.44	0	8.12	0	-11.11	2.78
2,000–2,500	0	90.91	47.64	0	0	0	0	6.14	1.86	0	-21.82
2,500–3,000	0	0	32.68	0	0	42.50	0	21.86	0	0	0
3,000–5,000	0	0	35.30	0	0	0	0	15.00	0	0	0

NET CHANGE IN LIABILITIES OF URBAN FAMILIES BY INCOME CLASS
1935-1936 and 1941

Dollars

Family income class	Average money income	Total liabilities	Mortgages		Installment balances	Rents due	Taxes due	Charge accounts due	Other bills due	Notes due:			Amounts due individuals	Other liabilities
			Owned home	Other real estate						Banks, insurance companies	Small loan companies	Credit unions		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1935–1936, families														
Under $500	296	69.67	1.57	1.63	4.42	12.02	4.31	9.36	20.91		2.92		10.59	1.94
500– 1,000	750	57.63	–0.39	–0.57	10.77	6.22	2.94	6.38	13.43		8.42		9.82	0.61
1,000– 1,500	1 182	48.81	–1.78	–0.10	17.52	1.81	1.93	3.50	9.28		7.24		8.53	0.88
1,500– 2,000	1 651	55.89	2.93	–0.53	26.54	0.25	1.10	2.86	8.76		8.20		5.29	0.49
2,000– 3,000	2 274	53.65	–10.98	7.42	28.01	0.07	1.06	3.45	4.52		12.52		7.04	0.54
3,000– 4,000	3 259	12.06	–24.82	0.34	19.94	0.08	0.76	2.60	0.63		10.18		2.49	–0.14
4,000– 5,000	4 091	–39.60	–97.58	6.64	17.14	–0.07	–1.17	6.26	8.67		15.85		5.51	–0.85
5,000–10,000	7 028	4.72	–24.26	–27.19	7.56	5.14	–5.21	13.84	5.26		32.96		3.97	–7.35
10,000 and over	16 828	–135.06	–165.20	0	45.80	0	–3.82	2.30	5.03		0.75		–19.92	0
1941, families														
Under $500	323	102.31	26.22	0	6.43	–0.06	–0.11	–7.72	1.08	–6.87	0	0	83.16	0.18
500– 1,000	736	35.50	–3.33	–1.06	19.31	0.29	1.47	1.97	7.10	–1.58	0.53	0.37	10.09	0.34
1,000– 1,500	1 257	76.41	10.63	7.22	14.05	0.36	–0.15	7.16	14.36	4.37	17.66	–0.78	1.67	–0.14
1,500– 2,000	1 756	120.33	45.90	6.77	15.07	–0.21	–2.29	4.16	14.84	22.89	9.44	0.13	4.18	–0.55
2,000– 2,500	2 240	71.52	–8.85	–8.18	49.81	1.74	0.35	7.50	12.96	2.83	–0.22	0.31	6.16	7.11
2,500– 3,000	2 745	140.68	33.56	32.84	64.25	0	1.89	2.17	11.75	–5.24	–3.79	0.81	2.82	–0.38
3,000– 5,000	3 726	136.38	77.94	–30.52	52.82	0.41	0.60	8.35	–0.07	3.43	–8.63	3.23	26.40	2.42
5,000–10,000	6 208	163.51	70.33	–8.91	30.32	–2.92	4.25	9.54	–6.44	5.72	28.29	0	21.22	12.11
10,000 and over	14 196	429.20	193.05	36.46	–12.41	0	–9.43	–7.27	85.00	19.34	0	0	133.94	–9.48
1941, single persons														
Under $500	302	19.44	0	0	–0.09	0.06	0.52	0.57	2.32	0	0	0	16.06	0
500–1,000	731	–3.59	–10.12	–1.46	–1.79	0.18	0	2.88	1.65	4.49	0	0	0.58	0
1,000–1,500	1 208	38.15	7.23	0	18.57	0.67	0.02	4.53	–4.98	5.56	5.42	0	1.13	0
1,500–2,000	1 697	–5.23	–3.33	–6.67	16.81	0	4.74	3.61	–11.22	0	–6.11	–4.17	1.11	0
2,000–2,500	2 183	–41.77	–11.36	–12.18	0	0	0	–2.55	–6.36	0	0	0	–9.32	0
2,500–3,000	2 688	60.00	0	0	55.00	0	0	0	5.00	0	0	0	0	0
3,000–5,000	3 411	–433.00	–150.00	–450.00	0	0	0	0	9.00	158.00	0	0	0	0

Source: Same as for Table H-49.

NET CHANGE IN ASSETS OF RURAL NONFARM FAMILIES BY INCOME CLASS: 1935-1936 and 1941

Dollars

Family income class	Average money income	Total assets	Savings accounts	Checking accounts	Money on hand	Investment in business
	1	2	3	4	5	6
			1935–1936			
Under $500	301	–56.10	–23.51	–14.03	–11.97	–0.44
500– 1,000	706	3.84	–12.35	–5.24	–0.34	3.00
1,000– 1,500	1 156	61.82	–9.15	–2.47	5.54	14.56
1,500– 2,000	1 614	174.02	–5.41	6.04	8.81	29.63
2,000– 3,000	2 244	310.95	13.51	41.52	7.34	43.80
3,000– 4,000	3 193	659.69	–23.22	75.78	15.54	79.86
4,000– 5,000	4 304	1 098.41	158.18	100.09	–4.36	175.43
5,000–10,000	6 610	2 639.54	397.42	760.90	67.85	540.76
			1941			
Under $500	291	–25.52	–18.08	–13.57	0.85	–0.01
500– 1,000	740	–15.89	–50.58	–7.18	0.46	12.85
1,000– 1,500	1 238	137.37	–20.89	2.54	1.16	39.33
1,500– 2,000	1 703	169.72	0.68	4.42	7.09	8.91
2,000– 3,000	2 363	347.78	–100.36	23.70	12.88	42.42
3,000– 5,000	3 685	743.18	36.35	58.74	16.31	125.71
5,000–10,000	6 084	1 662.65	511.82	72.73	45.45	63.79
10,000 and over	19 494	6 092.38	85.50	1000·00	0	3659.50

Family income class	Stocks and bonds				Real estate		
	Total	U.S. Government	Building and loan	Other	Total	Owned home	Other
	7	8	9	10	11	12	13
				1935–1936			
Under $500	–0.10	.	.	.	–2.36	.	.
500– 1,000	–2.10	.	.	.	6.55	.	.
1,000– 1,500	–1.26	.	.	.	16.20	.	.
1,500– 2,000	–3.04	.	.	.	50.67	.	.
2,000– 3,000	3.16	.	.	.	72.29	.	.
3,000– 4,000	–40.33	.	.	.	112.56	.	.
4,000– 5,000	47.23	.	.	.	153.76	.	.
5,000–10,000	243.00	.	.	.	112.56	.	.
				1941			
Under $500	8.39	8.39	0	0	–1.81	4.44	–6.25
500– 1,000	12.39	15.82	0	–3.43	–9.50	4.06	–13.56
1,000– 1,500	6.98	6.36	0.34	0.28	25.46	46.73	–21.27
1,500– 2,000	–33.14	5.40	0	–38.54	94.51	28.35	66.16
2,000– 3,000	33.72	40.20	2.08	–8.56	149.56	113.19	36.37
3,000– 5,000	230.56	273.83	0	–43.27	57.69	–23.08	80.77
5,000–10,000	348.91	348.91	0	0	181.82	0	181.82
10,000 and over	550.00	550.00	0	0	0	0	0

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(Part 2)

NET CHANGE IN ASSETS OF RURAL NONFARM FAMILIES BY INCOME CLASS: 1935-1936 and 1941

Dollars

Family income class	Improvements		Insurance premiums	Insurance policies		Loans to others	
	Owned home	Other real estate		Surrendered	Settled	Total	Secured by mortgage
	14	15	16	17	18	19	20
1935–1936							
Under $500	1.56	0.68	9.57	–3.11	–8.75	–0.10	.
500– 1,000	2.18	0.68	19.81	–1.35	–3.78	–0.31	.
1,000– 1,500	8.69	5.61	44.17	–3.20	–8.02	3.77	.
1,500– 2,000	10.76	7.00	75.29	–5.05	15.81	–0.37	.
2,000– 3,000	29.72	8.06	122.76	–7.19	–12.94	5.67	.
3,000– 4,000	46.66	22.90	232.88	–1.48	–32.25	33.74	.
4,000– 5,000	82.27	19.70	295.26	0	–11.46	79.58	.
5,000–10,000	51.48	177.45	397.89	–4.46	–13.08	6.13	.
1941							
Under $500	0.92	0	4.57	0	–3.04	2.30	1.41
500– 1,000	10.73	1.63	17.89	–0.63	–4.86	9.84	2.21
1,000– 1,500	51.09	2.87	38.86	–1.22	–4.19	–9.58	–9.74
1,500– 2,000	20.08	1.91	61.52	0	0	4.87	0
2,000– 3,000	88.66	5.79	104.13	–2.63	–18.08	9.24	0
3,000– 5,000	67.10	12.50	139.30	–0.14	–30.77	5.89	0.12
5,000–10,000	50.10	45.45	329.34	0	0	0	0
10,000 and over	0	0	767.38	0	0	0	0

Family income class	Social security tax	Unemployment insurance	Personal property sold	Other assets
	21	22	23	24
1935–1936				
Under $500	.	.	–3.54	0
500– 1,000	.	.	–1.88	–1.03
1,000– 1,500	.	.	–0.10	–12.52
1,500– 2,000	.	.	–1.29	–14.83
2,000– 3,000	.	.	–1.70	–15.05
3,000– 4,000	.	.	141.84	–4.79
4,000– 5,000	.	.	11.08	–8.35
5,000–10,000	.	.	–98.36	0
1941				
Under $500	0.09	0	–6.32	0.19
500– 1,000	1.76	0.11	–8.38	–2.42
1,000– 1,500	4.49	0.66	–0.05	–0.14
1,500– 2,000	8.78	0.81	–6.86	–3.86
2,000– 3,000	12.16	1.80	–4.79	–10.42
3,000– 5,000	21.28	1.86	–9.32	10.12
5,000–10,000	13.23	0	0	0
10,000 and over	30.00	0	0	0

Source: Same as for Table H-49.

NET CHANGE IN LIABILITIES OF RURAL NONFARM FAMILIES BY INCOME CLASS: 1935-1936 and 1941

Dollars

Family income class	Average money income	Total liabilities	Mortgages		Installment balances	Rents due	Taxes due
			Owned home	Other real estate			
	1	2	3	4	5	6	7
1935-1936							
Under $500	301	53.33	9.46	-0.04	6.53	4.59	3.57
500- 1,000	706	41.40	2.78	-0.89	9.71	1.36	1.04
1,000- 1,500	1 156	60.70	8.26	2.54	17.19	0.43	1.06
1,500- 2,000	1 614	60.75	-2.01	3.58	24.25	-0.05	2.22
2,000- 3,000	2 244	70.12	-0.94	9.34	22.50	0.01	0.27
3,000- 4,000	3 193	78.16	7.15	54.64	5.80	0.11	0.98
4,000- 5,000	4 304	80.90	-41.90	-34.91	17.37	0	1.41
5,000-10,000	6 610	-141.56	-75.15	-166.53	3.83	1.77	3.89
1941							
Under $500	291	10.95	0.15	0.65	2.59	0.34	0.46
500- 1,000	740	26.07	-3.22	-2.73	13.77	0.85	0.73
1,000- 1,500	1 238	84.34	23.05	-6.29	34.94	0.36	1.64
1,500- 2,000	1 703	59.35	-21.66	49.44	9.42	1.02	0.28
2,000- 3,000	2 363	133.39	78.79	-18.04	31.34	0	-10.57
3,000- 5,000	3 685	-108.91	-96.05	-19.23	67.68	0	-0.77
5,000-10,000	6 084	-198.64	-89.01	-156.91	-201.28	0	11.64
10,000 and over	19 494	-2 200.00	-2 200.00	0	0	0	0

Family income class	Charge accounts due	Other bills due	Notes due:			Amounts due individuals	Other liabilities
			Banks, insurance companies	Small loan companies	Credit unions		
	8	9	10	11	12	13	14
1935-1936							
Under $500	9.52	7.67	.	7.40	.	3.74	0.89
500- 1,000	6.85	9.95	.	5.76	.	4.31	0.53
1,000- 1,500	5.36	7.05	.	11.70	.	6.33	0.78
1,500- 2,000	4.74	9.48	.	15.66	.	2.51	0.37
2,000- 3,000	6.74	5.39	.	18.20	.	8.14	0.47
3,000- 4,000	-1.18	-3.69	.	12.33	.	0.96	1.06
4,000- 5,000	7.94	-3.50	.	109.75	.	24.74	0
5,000-10,000	-10.43	87.74	.	69.18	.	-55.86	0
1941							
Under $500	3.25	3.23	1.97	0	0	-1.69	0
500- 1,000	3.87	3.62	4.22	1.05	0.87	2.90	0.14
1,000- 1,500	7.11	-0.52	17.06	0.97	0.04	6.18	-0.20
1,500- 2,000	2.79	0.37	1.66	9.70	0	6.33	0
2,000- 3,000	5.20	1.37	27.69	-1.86	0	22.88	-0.67
3,000- 5,000	4.13	1.98	-65.98	-1.63	-4.81	5.77	0
5,000-10,000	-22.72	0	0	0	0	0	0
10,000 and over	0	0	0	0	0	0	0

Source: Same as for Table H-49.

H-53
(Part 1)

NET CHANGE IN ASSETS OF FARM FAMILIES BY INCOME CLASS
1935-1936 and 1941

Dollars

Family income class	Average money income	Total assets	Savings accounts	Checking accounts	Money on hand	Investment in business	
						Total	Inventory change
	1	2	3	4	5	6	7
				1935–1936			
Under $500	124	–92.09	–29.20	–39.17	–16.42	–27.98	.
500– 1,000	359	–9.21	–13.15	–18.36	–2.62	12.30	.
1,000– 1,500	711	116.65	–5.79	–5.97	10.62	62.99	.
1,500– 2,000	1 124	277.96	0.20	50.88	26.10	105.21	.
2,000– 3,000	1 723	579.37	57.98	139.41	24.96	203.38	.
3,000– 4,000	2 630	1 029.64	162.34	264.58	40.75	335.69	.
4,000– 5,000	3 770	1 776.29	96.83	470.52	93.92	467.54	.
5,000–10,000	6 422	2 235.51	227.37	750.65	146.49	659.37	.
10,000 and over	14 108	6 975.09	358.85	3 718.76	0	1 050.35	.
				1941			
Under $250	137	–42.96	–34.97	–19.12	–10.49	23.41	1
250– 500	377	–7.32	–9.48	–51.12	–12.60	53.80	10
500– 750	628	109.67	–0.26	–4.72	5.62	65.28	35
750– 1,000	868	103.71	–28.08	–12.34	14.89	77.25	51
1,000– 1,500	1 226	467.37	–10.37	1.57	–12.80	395.30	101
1,500– 2,000	1 701	680.81	–48.70	43.50	39.61	548.31	194
2,000– 3,000	2 439	936.32	–32.00	35.37	13.17	673.91	372
3,000– 5,000	3 776	2 229.82	–50.14	87.20	8.04	1 532.15	692
5,000–10,000	7 416	2 531.29	0	356.52	0	1 454.20	1 566
10,000 and over	14 168	8 498.51	0	1 850.40	0	5 476.71	3 545

Family income class	Stocks and bonds				Real estate	Improvements	
	Total	U.S. Government	Building and loan	Other		Owned home	Other real estate
	8	9	10	11	12	13	14
				1935–1936			
Under $500	–0.84	.	.	.	12.88	8.07	0.32
500– 1,000	–1.09	.	.	.	1.90	7.96	1.00
1,000– 1,500	–0.80	.	.	.	25.10	14.96	1.21
1,500– 2,000	–1.06	.	.	.	40.13	27.88	1.22
2,000– 3,000	–0.80	.	.	.	58.07	55.61	2.93
3,000– 4,000	–13.49	.	.	.	87.43	55.20	8.80
4,000– 5,000	12.90	.	.	.	278.09	175.76	6.62
5,000–10,000	3.36	.	.	.	114.27	84.76	38.83
10,000 and over	0	.	.	.	437.50	485.71	0
				1941			
Under $250	0.65	0.43	0	0.22	0	0.21	0
250– 500	7.65	7.44	0	0.21	–6.64	4.72	0.70
500– 750	15.71	15.71	0	0	8.47	5.38	2.85
750– 1,000	7.59	7.59	0	0	0	7.54	0
1,000– 1,500	13.65	8.05	4.55	1.05	11.57	28.56	0.55
1,500– 2,000	17.45	5.91	8.95	2.59	41.98	16.73	11.61
2,000– 3,000	69.80	68.88	0.92	0	3.08	29.31	70.69
3,000– 5,000	23.00	21.57	0	1.43	357.14	35.26	5.36
5,000–10,000	35.42	35.42	0	0	0	0	0
10,000 and over	37.50	25.00	12.50	0	0	925.00	0

NET CHANGE IN ASSETS OF FARM FAMILIES BY INCOME CLASS
1935-1936 and 1941

Dollars

Family income class	Insurance premiums	Insurance policies		Loans to others		Personal property sold	Other assets
		Surrendered	Settled	Total	Secured by mortgage		
	15	16	17	18	19	20	21
1935–1936							
Under $500	10.99	-0.97	-6.01	-1.93	.	-1.33	-0.50
500 - 1,000	14.37	-1.36	-5.44	-0.68	.	-3.12	-0.92
1,000– 1,500	27.85	-1.86	-4.83	0.68	.	-3.06	-4.45
1,500– 2,000	38.42	-1.48	-6.49	2.31	.	1.24	-6.60
2,000– 3,000	60.88	-1.85	-19.40	8.49	.	3.22	-13.51
3,000 - 4,000	85.51	-5.38	-4.08	19.15	.	1.45	-8.31
4,000– 5,000	157.32	0	-3.31	19.95	.	0.32	-0.17
5,000–10,000	228.47	-60.87	-7.68	21.28	.	71.77	0
10,000 and over	906.06	0	0	0	.	17.86	0
1941							
Under $250	6.41	-0.16	0	-2.63	0	0	-6.27
250– 500	10.96	0	-1.40	-5.59	-5.59	1.68	0
500 - 750	18.38	0	-3.33	-5.71	0	2.00	0
750– 1,000	25.98	0	0	-4.12	-0.29	0.06	14.94
1,000– 1,500	28.37	0	0	10.90	0	0	0.07
1,500– 2,000	46.24	0	-16.05	-19.87	-19.75	0	0
2,000– 3,000	66.93	-0.10	0	6.18	-7.41	0	-0.02
3,000– 5,000	117.52	0	0	1.79	0	0	112.50
5,000–10,000	110.91	0	0	569.69	0	0	0
10,000 and over	208.70	0	0	0	0	0	0

Source: Same as for Table H-49.

H-54

NET CHANGE IN LIABILITIES OF FARM FAMILIES BY INCOME CLASS: 1935-1936 and 1941

Dollars

Family income class	Average money income	Total liabilities	Mortgages: Owned home or farm	Mortgages: Other real estate	Installment balances due	Rents due	Taxes due
	1	2	3	4	5	6	7
			1935–1936				
Under $500	124	198.69	31.06	2.62	13.98	7.09	9.21
500– 1,000	359	83.97	1.52	0.80	11.36	2.32	3.09
1,000– 1,500	711	66.89	0.68	10.77	17.22	1.53	1.18
1,500– 2,000	1 124	17.16	–33.01	14.64	10.21	–1.08	1.72
2,000– 3,000	1 723	–55.29	–75.12	19.41	20.81	–0.30	0.32
3,000– 4,000	2 630	–188.95	–116.73	1.88	22.81	–0.74	–4.86
4,000– 5,000	3 770	–195.08	–149.19	37.05	13.04	0	–1.08
5,000–10,000	6 422	–841.72	–657.88	45.15	–10.89	–4.87	–17.46
10,000 and over	14 108	–1 237.35	–1 757.84	0	1.07	0	0
			1941				
Under $250	137	110.95	9.97	0	22.11	0.41	2.80
250– 500	377	44.40	–8.74	–0.90	20.13	–0.52	1.34
500– 750	628	75.37	9.15	–1.60	21.02	–0.95	0.26
750– 1,000	868	52.12	–25.23	0	37.27	–1.14	–2.68
1,000– 1,500	1 226	212.81	182.80	–0.55	–7.13	–0.09	–0.25
1,500– 2,000	1 701	157.90	145.40	8.65	–13.84	–3.70	–5.24
2,000– 3,000	2 439	143.09	31.85	37.25	14.19	–0.93	–1.28
3,000– 5,000	3 776	391.36	–280.78	256.47	183.19	0	1.08
5,000–10,000	7 416	–2 336.68	–1262.22	–273.93	–64.44	0	0
10,000 and over	14 168	–3 172.26	0	0	–159.84	0	–3.12

Family income class	Charge accounts due	Other bills due	Notes due: Banks and insurance companies	Notes due: Small loans companies and credit unions	Farm security administration loans	Amounts due individuals	Other liabilities
	8	9	10	11	12	13	14
			1935–1936				
Under $500	12.24	23.58	66.84		.	27.74	4.33
500– 1,000	6.65	11.55	29.60		.	15.61	1.47
1,000– 1,500	3.12	9.10	16.25		.	5.63	1.39
1,500– 2,000	0.79	1.99	16.22		.	4.57	1.11
2,000– 3,000	3.19	4.26	–21.23		.	–7.58	0.95
3,000– 4,000	–0.80	1.51	–48.47		.	–43.46	–0.09
4,000– 5,000	3.06	1.78	–104.50		.	4.76	0
5,000–10,000	–6.28	–1.03	–90.77		.	–96.12	–1.57
10,000 and over	0	0	540.85		.	21.43	0
			1941				
Under $250	0.21	4.80	33.83	–1.64	16.84	21.07	0.55
250– 500	2.59	6.32	16.86	3.50	3.21	1.12	–0.51
500– 750	3.38	5.73	36.33	–0.02	–5.73	7.53	0.27
750– 1,000	0.95	9.97	9.25	–1.07	–0.93	25.89	–0.16
1,000– 1,500	5.84	7.88	37.70	–0.91	–11.02	–1.46	0
1,500– 2,000	11.99	–0.54	30.90	–5.31	0.28	–10.69	0
2,000– 3,000	20.44	5.43	62.74	0	–20.02	–6.58	0
3,000– 5,000	17.40	–1.79	208.64	62.50	–57.14	1.79	0
5,000–10,000	0	–14.12	–322.22	–2 77.78	–121.97	0	0
10,000 and over	0	0	–3 009.30	0	0	0	0

Source: Same as for Table H-49.

assets, other than bank accounts and money on hand, were greater in 1941 than in 1935–1936 for the same level of money income. The difference was substantial in the farm population, moderate among urban families, and small, if not insignificant, in the rural nonfarm group. Changes in bank accounts and money on hand thus were generally at a lower level in 1941, for the same residence and money income class.

The relation of total change in assets to income is sufficiently linear to be described, in first approximation, by the intercept on the income axis and the simple rate of change. In rounded numbers these measures are:

	Income intercept	*Rate of change in assets with income*
Farm, 1935–1936	$ 500	0.50
Farm, 1941	500	0.50
Rural nonfarm, 1935–1936	1 000	0.30
Rural nonfarm, 1941	1 000	0.30
Urban, 1935–1936	1 500	0.25
Urban, 1941	1 750	0.25

These rough calculations suggest several significant inferences. Beginning at some minimum income, assets are acquired in amounts that are substantial in relation to income. Farm families in 1935–1936 and 1941 increased their assets by amounts equal to about half of the excess of money income over $500. Among rural nonfarm families the average increase in assets was nearly one-third of the income above $1,000, and among urban families the increase averaged one-fourth of the income over $1,500 or $1,750. The minimum income at which the acquisition of assets begins is positively related to the mean income of the group, while the rate of change in the net increase in assets declines with the general income position.

Any relations read from such summary tables must be the resultant of the variation of many intercorrelated factors. The residence groups for these dates differ not only with respect to the mean income, but also with respect to the distribution of the population by geographic location, class of worker, occupation, and other characteristics. The decline in the rate of acquisition of assets in relation to income from the farm to the urban community is probably to be associated with the proportion of self-employed and the variability of income experience, and thus corresponds with the differences in mean income only when those differences are correlated (inversely) with the relative number of self-employed and other factors which relate to income variability. In the farm group, by definition, all families are entrepreneurial; in the rural nonfarm group about one-fifth, and in the urban, one-tenth, are self-employed. The variations in the propensity to acquire assets, as shown in Table H-55, may easily be interpreted as resulting from differences in the number of self-employed.

This relationship between change in assets, on the one hand, and income and prevalence of self-employed in the population, on the other hand, can be established by detailed examination of data from the area surveys of the Consumer

H-55

NET CHANGE IN FAMILY ASSETS: 1935-1936 and 1941

Dollars

1935–1936				1941			
Money income	Total assets [1]	Bank accounts and money on hand	Other assets [1]	Money income	Total assets [1]	Bank accounts and money on hand	Other assets [1]
	1	2	3		4	5	6
			I. Farm families				
95	–91	–88	–3	$ 137	–49	–65	16
359	–17	–34	17	377	–17	–73	56
711	95	–1	96	628	94	1	93
				868	78	–26	104
1,124	248	77	171	1,226	439	–22	461
1,723	540	222	318	1,701	651	34	617
2,630	954	468	486	2,439	869	17	852
3,770	1 622	661	961	3,776	2 112	45	2 067
6,422	2 118	1 125	993	7,416	2 420	356	2 064
14,108	6 069	4 078	1 991	14,168	8 290	1 851	6 439
			II. Rural nonfarm families				
301	–54	–50	–4	291	–27	–31	4
706	–11	–18	7	740	–28	–57	29
1,156	29	6	23	1,238	104	–17	121
1,614	88	9	79	1,703	108	12	96
2,244	208	62	146	2,363	264	–64	328
3,193	461	68	393	3,685	635	111	524
4,304	815	254	561	6,084	1 320	620	700
6,610	2 259	1 226	1 033	19,494	5 295	1 085	4 210
			III. Urban families				
296	–63	–60	–3	323	–412	–219	–193
750	–35	–35	0	736	–41	–30	–11
1,182	–14	–28	14	1,257	1	–31	32
1,651	31	–9	40	1,756	124	–26	150
2,274	111	29	82	2,240	52	–71	123
3,259	337	198	139	2,745	127	–83	210
4,091	795	433	362	3,726	410	39	368
7,028	1 602	703	899	6,208	1 030	210	820
16,828	3 846	1 588	2 258	14,196	3 670	751	2 919

[1] Assets other than insurance.

Source: Tables H-49 to H-54.

Purchases Study of 1935–1936. Similar rough calculations for the North Central region, shown below, not only support the conclusion, but also indicate the extent of variability that exists within the national composities for the three residence groups:

	Proportion of self-employed	Increase in assets in relation to income	
		Income intercept	Rate of change
Chicago	10	$2 000	0.15
Columbus, Ohio	13	1 750	0.20
Middle-sized cities	12	1 000	0.25
Small cities	15	1 500	0.35
Villages	18	1 000	0.35
Farms, Illinois-Iowa	100	500	0.75

If the acquisition of assets varies with the class of worker, then obviously the balance sheets for the self-employed and other families should be studied separately. Unfortunately, data on assets and liabilities have been summarized separately for different workers only for a few income classes in one city, Chicago. The comparison of the changes in assets and liabilities among occupational groups in Chicago for 1935–1936 reveals a truly significant difference in the level and rate of increase in assets in relation to income. [1] In rough summary the asset changes are described by the following parameters:

	Increase in assets in relation to income	
	Income intercept	Rate of change
Independent business	$1 250	0.15
Wage earner	1 500	0.15
Salaried professional	1 500	0.12
Clerical	2 000	0.08
Salaried business	2 000	0.04
Independent professional	2 250	0.10

The occupational groups with the highest rates of change, the independent business and the wage earner, are characterized by the highest income variability.

These calculations, the comparison of national averages within residence groups, and regional averages show that variation in the rate of increase of assets

[1] Bureau of Labor Statistics, *Family Income and Expenditure in Chicago, 1935–36*, Bulletin No. 642, Volume II, Table 49.

with income does not result simply from a differentiation between the self-employed and wage and salaried workers; it must also be associated with the standard (or price) of living of the community and the income experience of the separate classes.

The relation between increase in assets and income level may be, to some degree, independent of consumer expenditures. It may represent a kind of controlling total on saving which has become characteristic of a group, and which has been determined by the general economic situation of the group.

4. Investments

The division of the total change in assets between bank accounts and money and other assets, which was altered significantly between 1935–1936 and 1941, must be traced to trends in the economic situation that are apparent to all or nearly all individuals in the population. The purchase of real estate, stocks, and bonds and additions to the investment in the family business at all income levels are clearly related to the date. Hence the explanation of the variations in the magnitude of such investments must be sought in trend variables from time series.

The change in assets other than insurance, bank accounts, and money displays a remarkably simple relation to income in all residence classes at both dates. The change is positive at practically all income levels, and with one exception (urban families with incomes under $500 in 1941) the few negative changes, at the lowest income brackets, are small in magnitude. Thus, a net increase in investment (noncash assets) begins at incomes scarcely above what might be called subsistence levels. Among farm families who receive subsistence from their farms, the increase in investment begins at very small money income levels. Rural nonfarm families start increasing their investments after money incomes reach $500 and urban families after incomes reach $1,000. The net increases appear to be simple fractions of the income above these minima and are of substantial magnitude. The average net investment of farm families in 1935–1936 was somewhat under 20 percent of money income and in 1941 the ratio was practically 40 percent. [2] Among rural nonfarm families, net investment was about 15 percent of income over $500 at all income levels at both dates. Urban families had average increases in investment amounting to about 10 percent of income over $1,000 in 1935–1936 and to about 15 percent in 1941.

Over most of the income range, investments of farm families are mainly in the farm business. The increase in all investments between 1935–1936 and 1941 is most marked in this item. The owned home is the principal investment among urban families, and purchases by corresponding income brackets were substantially increased between 1935–1936 and 1941. Net purchases of stocks and bonds do not amount to an important fraction of the total except in the high income brackets. Stocks and bonds probably represent an increasing proportion of total

[2] It should be emphasized that net investment means in general purchases minus sales of property without regard to the debt incurred in financing of purchases.

net investment, but the data are too fragmentary to support more than a rough estimate of the relation. Among farm families, purchases of stocks and bonds are infrequent and small. Among nonfarm families, net purchases of stocks and bonds vary little from zero until the total increase in investment apparently accounts for an average of about $400. Thereafter, stocks and bonds amount to about 40 percent of the amount by which the increase in investment exceeds $400. Such exceedingly tentative results do no more than state a problem for empirical study. If, as these data suggest, there are comparatively stable correlations between the net change in assets and income within different population groups, but a highly variable distribution of the total net change between liquid assets—money and bank accounts—and other assets, the net purchases of stocks and bonds must be explained by the same factors as account for the fluctuations in investment in real estate and farm and nonfarm businesses.

5. Change in Liabilities

In all of the residence groups there was a substantial rise in the level of the net change in liabilities at corresponding income positions between 1935–1936 and 1941. This increase, in the light of the stability in the net change in assets, must be associated with the similar rise in consumer expenditures. The change in liabilities subtracted from the total for expenditures and insurance premiums completes the account, and hence this algebraic sum must be the complement of the functions expressing the change in assets in relation to income. If the errors in reported balances are disregarded, these functions are the linear expressions given below in rounded numbers:

Residence class and date	Expenditures and insurance premiums minus liabilities	
	At zero income	Rate of change
Farm, 1935–1936 and 1941	$250	0.50
Rural nonfarm, 1935–1936 and 1941	300	0.70
Urban, 1935–1936	375	0.75
Urban, 1941	450	0.75

The change in liabilities thus appears as the reflection of the balance of consumption—past, present, and future—against the current income position. The lowest income groups in 1935–1936 incurred debts on the average; the highest income groups were reducing their indebtedness. This phenomenon is a composite resulting from the age cycle and the year-to-year variability of income. In 1941, only rural families with high incomes were reducing their indebtedness. Thus rising expenditures apparently are, at first financed by increasing liabilities.

Eventually, a higher level of expenditures must lead to a change in the rate of asset accumulation, as the area differences suggest.

The family balance sheet indicated by these data appears to be determined by a pair of complementary relations characteristic of a given group in the population—one for the increase in assets other than insurance, and the other for expenditure, insurance premium payments, and the increase in liabilities. Within this balance, the increase in investments and consumer expenditures appear to determine the changes in cash (currency and bank accounts) and in liabilities. It is, at present, impossible to confirm this sequence by relationship for later dates from existing cross-sectional survey data. The generalization, in any case, must ultimately be shown to explain the movements of time series.

6. Effect of Group Differences on the Aggregates

The data examined in this study do not lead to a complete outline of the distribution of the population by demographic characteristics, occupation, and income, which would be most effective in connection with the national aggregates. Single individuals, it appears from the small sample of records presented in Table H-49, differ significantly from families in the two summary relations—of assets and income and of expenditures (including insurance), liabilities, and income. Newly formed households probably differ from established households in the rate of change of assets contrasted with the rate of expenditures on consumption goods. A hypothesis explaining the determination of the two functions for any particular population group must wait for more extensive data collections. In the long run these functions may be an aspect of the general income experience of a group, but in the short run the comparison of 1935–1936 and 1941 suggests that the limiting pattern of the family balance sheet probably changes slowly.

To compare these results with time series aggregates would require specification of the groups that differ significantly in the balance of expenditures with changes in assets and liabilities, estimates of the number of families in each group, and, if possible, estimates of the mean income of each group.

With such information the aggregate change in assets other than insurance could be expressed as the weighted sum

$$Y = n_i a_i + n_i b_i x_i$$

where n_i is the number of families in the ith group, x_i is the average income of that group, and a_i and b_i are the parameters of the linear form relating the change in assets of the ith group to income. The aggregate change in assets may vary with (1) changes in the relative number of families in each group, (2) changes in the relative income among groups, and (3) changes in the relation of assets to income within groups. If changes of the third kind occur slowly, a_i and b_i could be determined from aggregative data. The detail in such an analysis would obviously depend on the number of years for which aggregate data are available.

Perhaps the main conclusions to be drawn from this study of the changes in

family assets and liabilities as associated with income relate to the subdivision of the balance sheet into changes in assets, insurance premiums, consumer expenditures, and in liabilities. The cross-sectional data for the two dates 1935–1936 and 1941 give a strong indication of the need for examining the movements of the aggregates not simply in terms of consumption and saving, but through combinations that represent more nearly the financial decisions of individuals.

PART III

THE PATTERN OF ESTATE TAX WEALTH

BY HORST MENDERSHAUSEN

I

INTRODUCTION

1. Review of Approaches

Up to the present time, studies of private wealth in the United States have been based on partial or indirect information. A comprehensive census of private wealth has never been taken. Nor does there exist a general wealth or property tax which would lead to periodical compilations of wealth distribution data. Students of wealth have found partial information in more or less comprehensive inventories of certain types of private wealth belonging to living persons or of estates of decedents. Indirect information has been derived from data on income distribution.

In 1939 C. L. Merwin surveyed earlier American studies of the distribution of wealth. [1] The listing of studies on the next page, partly based on Merwin's survey, includes additional information and references to more recent investigations.

This listing of studies reveals three major lines of approach:

Inventory approach. Inventories of selected wealth components have been allocated to individuals or certain classes of people in the Holmes and Ingalls studies (Nos. 1 and 4). This approach has been used as an auxiliary method by King, Doane, and Corey (Nos. 7, 8, and 9). More recently the Federal Reserve Board has undertaken to collect annually sample data on certain assets held by households (No. 14).

Income capitalization approach. Capitalization of the income received by individuals has been the main approach followed by Ingalls, King, Corey, Doane, Yaple, Lehmann, Stewart, and Painter (Nos. 5, 7, 8, 9, 10, 11, 12, and 13).

Estate projection approach. The distribution of wealth among decedents has been used as a more or less direct indicator of the distribution of wealth among the living by Spahr and King (Nos. 2, 3, and 6). Lehmann, Stewart, and Painter (Nos. 11, 12, and 13) have used this as an auxiliary approach, combined with income capitalization.

Each of the three approaches has certain advantages and disadvantages. Without going into detail, one may say that the main advantage of the inventory approach consists in its directness; its main disadvantage, in the usual limitation of the data to tangible property, certain population groups, etc. This disadvantage may be overcome by the taking of general inventories of private wealth on a sample basis—approximated in the current Federal Reserve Board studies—or by way of a census of private wealth.

[1] Merwin, "American Studies of the Distribution of Wealth and Income by Size," *Studies in Income and Wealth*, Volume III.

STUDIES OF PRIVATE WEALTH IN THE UNITED STATES [1]

Author	Date of: Publication	Date of: Wealth distribution	Basis of estimate	Classification unit	Method
(1) G. K. Holmes	1893	1890	Tangible wealth census estimate	Census family	Rough allocation
(2) C. B. Spahr	1896	1890	Estates probated in New York State	Estate classes	Distribution of wealth among decedents taken as a measure of its distribution among the living
(3) W. I. King	1915	1860, 1880 1890, 1900	Estates probated in Massachusetts and in 6 Wisconsin counties	Estate classes	Same
(4) W. R. Ingalls	1922	Various	Inventory statistics	Various	Rough allocation
(5) W. R. Ingalls	1924	1916	Income tax statistics	Taxpayers	Rough income capitalization
(6) W. I. King	1927	1912–1923	Probated estates in 24 countries (Federal Trade Commission Report, 1926)	Estate classes	Same, with reservations
(7) W. I. King	Unpublished	1921	Census data on farm wealth, federal income tax statistics, financial statistics	Property owner classes	Income capitalization
(8) Lewis Corey	1934	1928	Federal income tax and inventory statistics	Social classes	Income capitalization
(9) R. R. Doane	1935	1929–1932	Federal income tax and inventory statistics	Income classes	Some sort of income and tax capitalization
(10) Maxine Yaple	1936	1928–1932	Federal income tax statistics	Income classes	Income capitalization
(11) Fritz Lehmann	1937	1930	Federal income and estate tax statistics	Income classes	Dividend capitalization for income classes, plus correlation of equity and total wealth (net estate)
(12) Charles Stewart	1939	1923–1936	Same	Same	Same
(13) Mary S. Painter	Unpublished	1940	Same	Estate classes	Dividend capitalization for dividend classes plus correlation of equity and total wealth (gross estate)
(14) Federal Reserve Board	1946 and later years	1945–1949	Assets held by spending units	Income classes	Sample household inventories of selected wealth items

[1] Sources are listed in the bibliography.

The income capitalization method has the advantage of utilizing the relatively broad information available on the distribution of income for the derivation of a wealth distribution. Its main disadvantage is its indirectness. Income and wealth in the sense of net assets are far from being perfectly correlated among individuals or families. Very tenuous assumptions have to be made regarding that correlation, and complex estimating techniques have to be used.

The projection of the distribution of wealth among decedents—as revealed by probate court or inheritance tax data—into the general population has the advantage of resting on complete accounts of the wealth of a sizable number of individuals. This method is more straightforward than income capitalization. For past years, at least, it yields a more complete view of all types of wealth—in broad categories—than the inventory method. The main disadvantages of this method are:

(1) Certain biases in the wealth distribution among decedents—compared with that among the living—because the data are usually limited to the wealthier decedents. This results in estimates which, in the best case, describe only the "distribution of wealth among the wealthy."

(2) The difficulty of obtaining appropriate sets of mortality rates, needed to make the projection, with allowance for age, sex, and possibly other relevant factors.

In the present study a new attempt has been made to project the distribution of wealth among decedents into the entire population. This attempt is based on the federal estate tax data which so far have not been used for this purpose. [2] Moreover, a method of projection, hitherto neglected in American studies of wealth, will be applied—the "estate-multiplier" method. Described in detail in the following section, this method makes allowance for the fact that the age distribution of decedents differs from that of the living. Thus the present study is designed to push closer towards the limits of the third approach outlined above.

The discussion of the estate tax material below will show that these limits are rather narrow from the viewpoint of a general distribution of private wealth. The data are relevent to less than 1 percent of the population of the United States. But from an economic point of view this small population group is quite important. The wealthiest 1 percent own a major part of the privately held stock in business corporations, corporate and public bonds, mortgages, and other forms of assets. Moreover, in conjunction with inventory studies of the poorer majority of the population, such as the Federal Reserve Board's Survey of Consumer Finances, the data on estates at the top of the wealth pyramid, contained in the estate tax statistics, can be very useful in building up a comprehensive wealth distribution.

[2] About a decade ago, an attempt was made in a project financed by the WPA to tap the much broader material contained in the court records of probated estates. Transcripts of about 100,000 probated estates were collected for analysis, but funds ran out before the project was completed. (See Dwight B. Yntema, "Review of the 'Composition of Estates Survey,'" *Studies in Income and Wealth*, Volume XIV.)

2. Age-Wealth Correlation and the "Estate-Multiplier" Method

Since the early years of this century, economists and statisticians have pointed to the discrepancy between the wealth distributions among the living and those among decedents which is caused by differences in their age structures. The size of a person's wealth is naturally related to his age; and the age distribution of the living differs greatly from that of the decedents. This discrepancy forbids any directs inference from the wealth distribution of decedents to that of the living. Information on the age of decedents is needed if the former is to be used as a basis for an estimate of the latter, or, as A. A. Young put it, "Statistics of the size of estates admitted to probate are nearly worthless unless they are accompanied by statistics of the ages of the decedents."[3]

Studies of the age-wealth correlation among decedents in various foreign countries show a tendency for the average size of wealth to rise with the age of the decedent. Some of these data also suggest that the positive correlation of age and wealth may cease to hold from a certain advanced age onwards. The correlation is not necessarily linear and perfect: "Not only do many men grow richer as they grow older, but some men grow rich faster than others, while some men, especially among those with little property, grow poorer as they grow older."[4] Statistics from several of these studies are shown in Table E-1.

Each of these series shows average wealth increasing with the age of the decedent, at least up to eighty-five to ninety-five years of age. In the three instances where the highest age groups are shown separately, a decline of average wealth is apparent from a certain advanced age onwards.

It seems that Bernard Mallet, in a study published in 1908, was the first to apply a simple method of correcting for the age-wealth correlation in estimating the distribution of wealth on the basis of estate statistics. [5] In a survey of methods of estimating wealth distribution, Corrado Gini summarized the Mallet method as follows: "If for a certain year we denote the number of living persons in age group i as v_i, the number of decedents of that age as m_i, the total amount of the estates of these decedents as p_i, then the amount of private wealth of the age group may be estimated as

$$p_i \times \frac{v_i}{m_i}$$

"Given suitable data the only assumption needed in this procedure is that the decedents of each age group are a sample of the living of that group which is random with regard to the size—and composition, if the analysis extends to this

[3] Young, "Economic Problems, Old and New," *American Economic Review*, Supplement, Mar. 1917, pp. 106–107.

[4] *Ibid.*

[5] Gini, *L'ammontare e la Composizione della Richezza della Nazioni.* Knibbs, *The Private Wealth of Australia and Its Growth*, mentions that Mallet's application followed a suggestion made by T. A. Coghlan during a discussion at the Royal Statistical Society.

AVERAGE WEALTH PER ESTATE, BY AGE OF DECEDENT, IN SELECTED FOREIGN COUNTRIES

Age of decedents	England, 1906 (both sexes)	Norway, 1911 (both sexes)	Victoria, 1908–1915 (males)	New South Wales, 1911–1915 (males)	New Zealand, 1924–1928 (both sexes)	France, Paris, 1930–1931 (males)
	1	2	3	4	5	6
20–25	£ 829	Kr. 455	£ 500	£ 368	£ 119	—
25–30	1 088				224	Fr. 8 616
30–35		1 807	767	818	356	9 998
35–40	1 779				536	12 760
40–45		3 741	1 139	1 338	709	21 712
45–50	3 753				1 128	51 130
50–55		5 146	1 965	1 856	1 109	55 775
55–60	3 954				1 895	67 780
60–65		6 261	2 548	2 487	2 037	122 310
65–70	5 423				1 906	192 400
70–75			2 776	3 624	2 341	273 480
75–80					2 260	
80–85		7 532	3 242	4 773	2 563	
85–90	7 426				2 271	
90–95			2 963	2 025	2 581	441 330
95 and over					1 241	
Average	About 5 000	N.A.	952	889	817	120 197

Column 1 – Mallet, "A Method of Estimating Capital Wealth from the Estate Duty Statistics," *Journal of the Royal Statistical Society*, Mar. 1908, p. 74.

Column 2 – *Indtaegts og Formuesforhold efter Skattelignyer*, 1915.

Columns 3 and 4 – Knibbs, *The Private Wealth of Australia and Its Growth*, pp. 109-110.

Column 5 – *New Zealand Official Year Book*, 1930, p. 789.

Column 6 – Danysz, "Contribution à l'étude des fortunes privées d'après les déclarations de succession," *Bulletin de la Statistique Générale de la France*, Oct.-Dec. 1934, pp. 144-147.

N.A.: Not available.

aspect—of wealth." But Gini is quick to point out certain typical imperfections of the data. The declared values of estates of decedents are frequently smaller than the real values owing to death tax evasion, more or less fictitious gifts before death, and the cost of the last sickness. These imperfections of the data tend to produce underestimates of wealth.

On the other hand large numbers of small estates are not recorded under the usual death tax provisions. This circumstance obviously imparts an upward bias to the estate distribution, compared with the distribution of wealth in the population, and limits the range within which it can be considered as random with respect to size of wealth. Finally, the "estate-multiplier" method is not suited to

measuring the distribution of private wealth among households. Like income capitalization, this method relies on information pertaining to single individuals.

In a thorough study of private wealth of Australia, G. H. Knibbs discussed the problems of the "estate-multiplier" method, which he called the "devolution-rate method." Knibbs strongly suggested that the estimates of private wealth made by this method should be carried out separately for men and women. "Since experience has shown that the multiplier-rate at a given age differs between males and females, and that the average wealth possessed differs, the wealth possession by the sexes should be estimated separately in order to secure precision in the result." [6] Like Mallet, Knibbs showed an interest in computing the general multiplier ("devolution-rate") that indicates the relationship between aggregate values of probated estates and private wealth. He computed it for several years on the basis of Australian material, and examined its variations.

With the help of this method, estimates of the distribution of wealth have been made by Mallet, Gini, Knibbs, and others. Daniels and Campion have also used this method in their study of the distribution of private wealth in England and Wales; Derksen, in his study of private wealth in the Netherlands. [7] In New Zealand, the method is being used regularly to prepare the official estimates of private wealth. [8]

Practically all of the data thus far published in the United States on probated estates and on returns under the federal estate tax lack information on the age of the decedents. The only exceptions appear in the tabulations of federal estate tax returns filed in 1923, 1924, and 1925 in *Statistics of Income*. No attempt, however, has yet been made to apply the "estate-multipler" method to American data. W. C. Crum, who worked with the estate tax material for 1923–1925, limited himself to studying Pareto curves for the wealth distributions in the various age groups. [9]

W. I. King observed in one of his studies, "We would expect to find the average estate probated decidedly greater in value than the average amount of wealth possessed by the individual during life," [10] but he felt that the Federal Trade Commission data for 1912 to 1923 did not bear out this hypothesis and he refrained from looking further into the problem of age-wealth correlation. In concluding that the two distributions were substantially the same, King relied on an indirect test that had little bearing on the relationship between the wealth distribution among decedents and that among living persons.

The present study uses the published data on estate tax returns by age for the early twenties as well as unpublished data for returns filed in 1942, 1945, and

[6] Knibbs, *op. cit.*, p. 81.

[7] Daniels and Campion, *The Distribution of National Capital*; Derksen, "Berekening van het nationale vermogen uit de aangiften voor de successiebelasting," *De Nederlandsche Conjunctuur*, May 1939.

[8] See the annual issues of the *New Zealand Official Year Book*.

[9] Crum, *The Distribution of Wealth*, Cambridge, Mass., 1935.

[10] King, "Wealth Distribution in the Continental United States at the Close of 1921," *Journal of the American Statistical Association*, 1927, p. 141.

1947 which were made available by the Bureau of Internal Revenue. With the help of the estate-multiplier method, estimates of the wealth distribution in the upper wealth brackets have been prepared for the years 1922, 1924, 1941, 1944, and 1946.

The component of total private wealth which these estimates are designed to cover is called *estate tax wealth*. It is defined as the wealth of individuals living in a certain year whose estates, properly reported, would be subject to the federal estate tax if they died in that year.

II

THE FEDERAL ESTATE TAX STATISTICS AND THE DISTRIBUTION OF PRIVATE WEALTH: DATA AND PROCEDURES

In basing this study of private wealth on the statistics of federal estate tax returns, we naturally make it subject to the concepts and procedures applied in this field of taxation and statistics. These concepts and procedures are reviewed below to show the suitability as well as the limitations of statistics derived from estate tax returns for a study of private wealth.

We shall consider the suitability of the statistics, first, for estimating the wealth of decedents and, second, for estimating the wealth of the living. Since the present study is not limited to the level and distribution of wealth in a single year, the development both of certain estate tax provisions and of the published tabulations of returns demand attention.

1. Suitability of Federal Estate Tax Statistics for Estimating the Wealth of Decedents

a. *Source and period covered*

Since the Federal Revenue Act of 1916 imposed the estate tax, statistics of tax returns have been collected by the Bureau of Internal Revenue. Beginning with the year 1923, these statistics have been published in *Statistics of Income* on an annual basis, showing the number of returns filed during the calendar year, the size and the composition of estates, and certain characteristics of the decedents.

In the present study, the annual tabulations of returns filed from 1923 to 1945 and in 1947 have been examined, year by year, to establish the development of certain basic features, such as the distribution of returns by size and the composition of estates by type of property. In addition, the data on returns filed in 1923, 1925, 1930, 1940, 1942, 1945, and 1947 have been examined more intensively. Selection of these years was influenced partly by economic considerations, partly by the fact that certain tabulations—e.g. by age of decedent—were available for a few years only. [1]

b. *Year of filing of returns and inferred year of death*

Estate tax returns filed during a calendar year do not necessarily refer to deaths that occurred during that year. The Internal Revenue Code requires a return to

[1] Data for 1947 became available in late 1950. At that time the data on returns filed in 1946 had not yet been tabulated.

be filed for estates of a gross value exceeding a certain amount within fifteen months after the date of death. Prior to August 1935, the allowed time was twelve months: under certain conditions, extensions of the filing time are granted. [2] As a result, the dates of death covered by returns filed during a certain year are distributed over that year and some earlier years.

For the purposes of this study the date of death is more relevant than the date of filing; the relation of a decedent's wealth to demographic and economic variables, e.g. asset prices and mortality rates, is bound to the date of death, and not to the date of filing. [3] Since tabulations on a date-of-death basis are not available, it was necessary to assign the returns filed during a year to an inferred year of death of decedents. The inferred year of death chosen here is the calendar year preceding the year of filing. As a rule, the majority of returns filed pertain to deaths that occurred during the previous calendar year. For instance, of 15,187 returns filed in 1943, 75 percent pertained to deaths that occurred between September 12, 1941 and October 21, 1942, 21 percent to deaths at later dates, and 4 percent to deaths at earlier dates. A few of the latter went as far back as the 1920's. Similarly, of 11,605 returns filed in 1936, 48 percent pertained to deaths occurring after August 31, 1935, 49 percent to those occurring between November 5, 1934 and August 30, 1935, and 3 percent to earlier cases. [4] While the assignment of the estate tax returns to the inferred year of death (year of filing minus one) is not precise, this way of dating their annual distributions probably is as satisfactory an approximation as can be obtained. [5] The date of valuation of assets is identical with the date of death in all returns up to 1935, and in about 98 percent of the returns subsequently.

For the purpose of relating the estate tax data to asset price statistics, it has been assumed, on the basis of the information for 1936 and 1943, that of the estate tax returns assigned to a certain inferred year of death (x) two-ninths refer to cases of death in the subsequent year ($x + 1$), two-thirds to cases in the year itself (x), and one-ninth to cases in the preceding year ($x - 1$).

c. *Annual samples of returns*

In subsequent tables, only the inferred years of death are shown. In relating these statistics back to the tabulations of *Statistics of Income*, the reader will have to add one year to the year shown to obtain the year of filing.

Table E-2 shows the numbers of estate tax returns, by year of death, and their relation to the total number of deaths, and to the size of the population of the continental United States in the same years. These returns cover all the estates

[2] Approximately 85 percent of the returns filed in 1943 for estates of citizens and resident aliens were filed without extension of time. *Statistics of Income for 1942*, Part I, p. 266.

[3] See below, Section g, on valuation procedure.

[4] This type of information is available in useful form for these two years only. It was published in *Statistics of Income* incidental to changes in estate tax provisions that led to separate tabulations of returns preceding and following those changes.

[5] Incidentally, the year of filing minus one corresponds to the year shown on the cover of the relevant volume of *Statistics of Income*.

of citizens and resident aliens reported to the Bureau of Internal Revenue and published in the annual volumes of *Statistics of Income*, 1922 through 1942. Beginning with 1934, the returns also include the estates of nonresident citizens. Unpublished data for 1944 and 1946 (since published in *Statistics of Income*) were made available by the Bureau of Internal Revenue.

E-2 ESTATE TAX RETURNS: 1922 to 1946

Inferred year of death	Number of returns		
	Total	Per 1,000 deaths in the United States	Per 100,000 population in the United States
	1	2	3
1922	13 013	10.1	11.8
1923	12 403	9.2	11.1
1924	14 013	10.6	12.3
1925	13 142	9.7	11.3
1926	9 353	6.6	8.0
1927	8 079	6.0	6.8
1928	8 582	5.9	7.1
1929	8 798	6.1	7.2
1930	8 333	6.0	6.8
1931	7 113	5.2	5.7
1932	8 727	6.4	7.0
1933	10 353	7.7	8.2
1934	11 110	7.9	8.8
1935	11 605	8.3	9.1
1936	15 037	10.2	11.7
1937	15 932	11.0	12.4
1938	15 221	11.0	11.7
1939	15 435	11.1	11.8
1940	15 977	11.3	12.1
1941	16 215	11.6	12.2
1942	15 187	11.0	11.3
1943	14 303	9.8	10.7
1944	15 898	11.3	12.0
1945	N.A.	N.A.	N.A.
1946	20 899	15.0	14.8

N.A.: Not available.

Source: Annual volumes of *Statistics of Income*. The estate tax data in all subsequent tables are likewise derived from *Statistics of Income* unless otherwise indicated.

During the time span of twenty-five years, between 7,000 and 21,000 returns were filed annually. The smallest number (7,113) appears in 1931, the largest (20,899) in 1946. These returns represent roughly 1 percent, annually, of deaths in the United States, or roughly 0.1 per thousand of the population. These figures show a fair degree of continuity, although at least three breaks due to changes in the exemption limits are apparent, from 1925 to 1926, from 1932 to 1933, and from 1935 to 1936.

The data analyzed in this study are derived from these annual returns. The following discussion and tables refer to returns for estates of citizens and resident

aliens. Returns for estates of nonresident aliens, which are subject to different tax provisions, are not included.

d. *Exemption limits and representativeness of samples*

The smallness of the number of estates compared with the total number of deaths occurring annually in the United States is caused by the high exemption limit allowed under the estate tax law. From the initiation of the tax until February 1926, returns were required for estates of a gross value of more than $50,000. For deaths occurring between February 1926 and June 1932, the exemption limit was $100,000; between June 1932 and August 1935, $50,000; between August 1935 and October 1942, $40,000; and thereafter, $60,000. [6]

Obviously these high exemptions have greatly restricted the coverage of estate tax statistics. Their variations from time to time have produced certain variations in the size of the sample, causing a decline from 1925 to 1926 and an increase in 1932–1933 and from 1935 to 1936. It is noteworthy that between 1942 and 1944 the number of returns did not decrease notwithstanding a 50 percent increase in the exemption limit. While the raising of the limit tended to reduce the number of returns, this was counteracted by the abolition in 1942 of partial tax exemption for insurance. Previously, insurance receivable up to $40,000 was tax exempt and therefore excluded from the official calculation of gross estate.

The estate tax sample thus amounts to a practically complete enumeration of the estates of the wealthiest 1 percent of the decedents and permits a full analysis of the features of these estates. But it does not throw any light on the estates of the 99 percent of less wealthy decedents. Although this limitation is a severe one, the magnitude of the wealth of the wealthiest 1 percent makes the information contained in the sample important for a study of national wealth. Probably no better source of information can be found for this part of the total wealth distribution. There remain, however, various problems to be considered in this connection, namely, the coverage of wealth items, their valuation, and certain technical problems related to the published tabulations of the data.

e. *Components of estate; gross and net estate*

Each estate tax return requires a full enumeration of the component parts of the gross estate of the decedent under the headings of real estate, stocks and bonds, mortgages, notes and cash, insurance receivable by the estate or other beneficiaries, jointly owned property to the extent that it does not belong to others, and other miscellaneous property.

In addition, there are to be listed transfers of property during the decedent's

[6] Every year a certain number of returns reaches the Bureau of Internal Revenue which show gross estates of less than the minimum amounts required for filing. They are filed to avoid penalties for not filing which may be levied if the estates are later found to be in excess of the minimum. Since in many cases the valuation of assets is subject to personal judgment, and since the judgment of estate administrators may not be the same as that of Internal Revenue officials, it is considered safe to file a return in case of doubt. These returns are included in the tabulations of this study.

lifetime that were made (1) "in contemplation of death," "other than bona fide sales for an adequate and full consideration in money or money's worth," particularly, but not only, if made within two years of the decedent's death; (2) "conditioned upon the decedent's death," whereby title to the property was to pass from the decedent upon his death; (3) under reservation of use, possession, income, or enjoyment of the transferred property or other powers over it to the decedent up to his death, or of powers to amend or revoke the transfer at the time of death, or where such powers were relinquished by the decedent "in contemplation of death."

The concepts and quoted terms refer to the Internal Revenue Code of 1942.[7] The evolution which these concepts and the treatment of transfers by the tax authorities have undergone during the lifetime of the tax cannot be discussed here in detail. While the authorities have generally attempted to make as many transfers *inter vivos* as possible subject to the estate tax, taxpayers have striven to construct these transfers in such a manner as to escape taxation or, after 1932, to make themselves subject to the lower rates of the gift tax only. Since its inception the estate tax probably has stimulated transfers *inter vivos*; but it is unknown whether the extent to which such transfers remain outside estate taxation has changed during the twenty-three years under study.

Finally, property over which the decedent had power of appointment at the time of death (or where he released such powers previously in the form of a taxable transfer) must be listed on the estate tax return.

In the computation of net estate, on which the tax is levied, the following items may be deducted from gross estate: debts of the decedent; mortgages and liens on property included in the gross estate; property acquired by the decedent through taxable gift or inheritance during the five years preceding his death valued as of the date of acquisition; funeral and administration expenses; support of dependents and net losses during the settlement of the estate; charitable, public, and similar gifts and bequests; and last, but not least, the amount of specific exemption allowed (see above).

f. *Tabulations and working concepts*

The component items of gross and net estate have been tabulated with a fair degree of consistency in *Statistics of Income.* But in the course of time the published tabulations have become somewhat more detailed. Moreover, certain groupings of property significant only for tax purposes have been broken down into components of economic significance, so that the classification by economic components has become more complete. Table E-3 shows the classifications of estate components used for 1922 and 1946, the first and the last years covered in this study.

For the earlier years, the tabulations by types of property in this study show an item "unclassified by type" (item 14 of Table E-3). This item has been reduced in the course of time and finally eliminated as these properties were classified by

[7] U.S. Treasury Department, Bureau of Internal Revenue, *Regulation 105 Relating to the Estate Tax under the Internal Revenue Code*, 1942.

CLASSIFICATIONS OF COMPONENTS OF GROSS AND NET ESTATE USED IN *STATISTICS OF INCOME* FOR 1922 AND 1946

Item	*1922*	*1946*
	I. Gross estate	
1	Real estate	Real estate
	Federal government bonds	Federal government bonds
2	Wholly tax exempt	Wholly tax exempt
3	Partially tax exempt	Partially tax exempt
4	—	Taxable
5	State and municipal bonds	State and municipal bonds
6	Other bonds	Other bonds
7	Corporate stock	Corporate stock
8	Mortgages, notes, and cash	Mortgages and notes
9	—	Cash
10	Insurance	Taxable insurance
11	—	Interest in unincorporated business
12	—	Other intangibles
13	—	Tangible personal property
14	Unclassified (Including transfers, power of appointment (present value), property previously taxed, jointly owned property, and miscellaneous property)	—
	II. Deductions	
15	Insurance exemption	—
16	Funeral and administrative expenses	Funeral and administrative expenses
17	Debts of decedent, unpaid mortgages, net losses, and support of dependents	—
18	—	Debts and mortgages
19	—	Net losses during administration
20	—	Support of dependents
21	Property previously taxed (former transfer value)	Property previously taxed (former transfer value)
22	Charitable, public, and similar bequests	Charitable, public, and similar bequests (detail)
23	Specific exemption	Specific exemption

economic type and as items 11, 12, and 13 appeared in the tables. (See Table E-15).

The components shown in the tables of *Statistics of Income* had to be accepted as working concepts for this study. They are not ideal for the purpose, since they lack relevant detail under the headings of real estate (urban, rural; land, buildings) and corporate stock (e.g. common, preferred, closely held corporations) [8] but they are relatively satisfactory. Certain concepts had to be modified, and one concept added, to make the data more consistent and more meaningful for our purposes:

(1) Throughout this study, all of the *insurance* reported was counted as a component of *gross* estate. Amounts of gross estate shown in subsequent tables thus include taxable and tax exempt insurance. Classifications of returns in *Statistics of Income* by size of gross estate follow the same rule.

(2) The value of property previously taxed, calculated at the date of death of the decedent (or at optional alternative dates), is included in gross estate throughout.

(3) To establish the net worth of the estate, a new concept has been applied, *economic estate*. The value of economic estate has been computed as the difference between the value of gross estate and the value of debts, mortgages, and liens on the estate (briefly called "debts" henceforth). Up to 1936 the value of net losses to the estate during administration and of support of dependents was lumped together with debts in the tabulations of *Statistics of Income*. For these years, the total of these items was deducted from gross estate to establish the value of economic estate. [9]

(4) The concept of *net estate* used in this study is identical throughout with "net estate before specific exemption" as used by the Bureau of Internal Revenue. For the years 1922 through 1936, when published tabulations showed returns classified by net estate after specific exemption, the class limits have been raised by the amount of specific exemption generally applicable to the returns in given years. Accordingly, for the years 1922 through 1925 the class limits have been increased by $50,000; for 1926 through 1931, by $100,000; for 1932 through 1936, by $50,000.

Size classes used in *Statistics of Income* have become more detailed and numerous in the course of time. For 1922, seventeen classes were distinguished in

[8] Holdings of common and preferred corporate stock were listed separately for one year only, namely, in *Statistics of Income*, 1941.

[9] This procedure was given preference over two alternatives, viz. (a) reducing the lumped amounts for the earlier years by hypothetical allowances for losses and support of dependents, or (b) adding the known amounts of these items to debts in later years. The first course would have been of rather uncertain value; the second would have watered down the concept of economic estate as used in the more recent years.

The aggregate value of the net losses during administration and of support of dependents in later years generally has been less than 5 percent of the value of debts for all returns, and less than 10 percent for all taxable returns. As a result of the procedure chosen, the (dollar) level of "debts" shown for years before 1937 is likely to be too high within these limits. In proportion to gross estate values, this overstatement of debts in earlier years – and the corresponding understatement of economic estate – is not likely to exceed 1 percent.

tabulations of taxable returns by net estate. By 1944, the number had risen to thirty. For purposes of this study, fewer groupings of size classes are sufficient. They have been formed in such a way as to ensure a maximum of continuity of classification while minimizing the loss of information in the lower brackets of the samples.

The estimates of the wealth of the living, presented in Chapter IV, are expressed in terms of economic estate wealth, classified by net-estate-before-specific-exemption classes.

g. *Valuation of property and audit of returns*

Two important problems remain to be considered: the valuation of property and the effect of audit on the value of estates. The two problems are closely related.

The data published in *Statistics of Income* refer to the values of property that appear in the returns submitted by the administrators of estates. They do not reflect, therefore, changes of values caused by the audit in the tax collectors' offices or at the Bureau of Internal Revenue. These changes usually are upward revisions of estate values, offsetting understatements by the estate administrators. The fact that they are disregarded in the published statistics, therefore, causes a clear downward bias of these statistics with regard to the true wealth of the decedents.

The valuation of property is required to follow the general rule of "fair market value at the time of the decedent's death" or at the date one year after the decedent's death ("optional value").[10] Fair market value is further defined as "the price at which the property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell."

The official regulation stresses that "the fair market value of a particular kind of property includable in the gross estate is not to be determined by a forced sale price." And it proceeds to enumerate various techniques of establishing the fair market value, requiring "fair appraisal" for some types of property (e.g. interest in unincorporated business), "appraisal of a reputable and competent expert" for articles of artistic value, etc.

The "fair market value" principle appears simple and reasonable; but its application does not always lead directly to an unchallengeable dollars-and-cents figure. Unless some property belonging to the estate is actually sold during the year following the date of death, and the sales value put in the return under the "optional value" provision, the "price at which the property would change hands between a willing buyer and a willing seller," neither being under compulsion, is a matter of conjecture. Market price quotations for stocks and bonds and sales prices of similar types of real estate are useful guides; but the less ordinary the piece of property and the less active the trading in things of its kind or bulk, the

[10] U.S. Treasury Department, *Regulation 105...*, pp. 22ff. The optional value was introduced in 1935 and is used infrequently. For instance, 1½ percent of the returns filed in 1945, covering 2 percent of the aggregate value of gross estate, made use of the optional valuation date.

greater the uncertainty of its value and the greater the probable divergence between the estimates of different parties of varying interests. [11]

The final determination of values occasionally takes the form of a bargaining process between tax officials and the administrators or beneficiaries of the estate, with the former usually arguing for higher, the latter for lower, values. [12] Agreement to a higher value for one piece of property may be given in return for agreement to a lower value on another. Or agreement to a "blockage concession"—conceding a lower than market price on substantial amounts of stock held by the estate—may be coupled with an agreement that a certain transfer of property was made "in contemplation of death." Apart from checking the valuation of reported assets, the auditors have to examine whether all taxable assets are covered. Agreement may be voluntary or the result of litigation. But the latter is rather rare as the cost of proposed or threatened litigation usually induces the parties to come to a quick settlement.

Because of these difficulties of valuation the question whether, and to what extent, the tax returns understate the "correct" figures is much more difficult to answer for estate than for income tax returns. Indeed, it can be answered in quantitative terms only if it is assumed that the final values determined after audit of the returns by the Bureau of Internal Revenue, and after discussion between the Bureau and the executors, more nearly approximate the true values at the time of death than the figures entered in the original returns, which form the basis of all the Bureau's tabulations and statistics. This seems a reasonable assumption to make. If it is accepted, an upward adjustment in the estimates should be made. Unfortunately, not enough is known about the differences between unaudited and audited returns to make it with confidence, or for anything except total wealth.

[11] It is of interest to recall the discussion of the valuation problem by G. H. Knibbs: "It cannot be too strongly emphasized that by whatsoever means an estimate of the wealth of a community is compiled, the resultant figures can never be regarded as more than rough approximations. Normally the wealth of an individual at any given moment may, from certain points of view, be said to be represented by the market value of the property of various kinds of which he is then in possession, the tacit assumption made being that a market exists for each class of property. Although such a basis of valuation might be said to be inapplicable to the wealth of the whole community, because of the impossibility of treating it as all subject to sale at the same moment, it may nevertheless be supposed that the individual items of wealth might be sold under conditions conforming to the general state of the community. In this case the aggregate of the values can be taken to be the aggregate wealth expressed in terms of money.

"Apart from this assumption of a hypothetic possibility of sale, it is often not practicable to determine a reliable value for certain of the private possessions, even though these contribute largely to the well-being of the community. In most of such cases the cost would be too high to take for the purposes of a valuation, while the price likely to be realized at a forced sale would usually represent far less than the value of the possessions to the owner in the absence of such a sale. These and similar limitations apply to all valuations available for the purpose of wealth-estimates, whether such valuations are made in respect of probate returns, for war census purposes, or for the purposes of an inventory estimate." (Knibbs, *op. cit.*, p. 176.)

[12] This rule is not without exception. Cases are known in which beneficiaries preferred higher estate values in order to minimize the income tax on capital gains that they expected to realize on the sale of certain inherited properties.

Information on the results of the process of auditing is limited to a recent study by Harriss based on special tabulations of estate tax cases closed in 1941. [13] Harriss found, first, that the difference between total net estate in audited and unaudited returns amounted to about 10 percent and, secondly, that the percentage difference was about the same for estates in all size groups above $100,000.

Whether the understatement has varied considerably from 10 percent in other years and, particularly, how large it was for the returns filed in 1945 that have been examined in greatest detail in this study are not known. What is more important, the incidence of the understatement on different types of property has not yet been determined. Most likely the incidence is uneven, with least understatement of those assets that present few problems of valuation and little opportunity for concealment (e.g. bank deposits, mortgages, bonds, and insurance) and the greatest understatement for such assets as tangible personal property, real estate, and interest in unincorporated businesses. Stocks probably occupy an intermediate position, with valuation problems being practically absent for listed stocks but more intrusive for unlisted stocks.

h. *Effect of gifts before death*

We do not know how the estimated aggregate of total wealth and its distribution would be affected if transfers made for the purpose of evading the estate tax were included with the remaining estate at the time of death. We may be fairly certain, however, that the aggregate amount of "estate tax wealth" would be somewhat higher, and its distribution by size probably even more unequal than it now appears. Transfers *inter vivos* seem to rise more than proportionately with the size of estates. But to judge from the amounts reported since 1933 in gift tax returns and from a recent study matching estate tax returns filed in 1945 with the gift tax returns of the decedents for 1932 to 1944, [14] it is unlikely that the inclusion of gifts before death with estates left at death would sharply increase the amount of estate tax wealth or substantially alter its distribution by size.

The matching of the estate tax returns filed in 1944 with decedents' gift tax

[13] Harriss, "Wealth Estimates as Affected by Audit of Estate Tax Returns," *National Tax Journal*, Dec. 1949, pp. 316ff. Harriss studied a special tabulation of 17,825 cases closed in 1941, including 1,200 to 1,300 cases of nonresident aliens. Forty-two percent of these returns were filed in the same year, 1941; 49 percent in 1940; 7 percent in 1939; and the remaining 2 percent in earlier years. About 44 percent of the cases, mostly smaller estates, were closed with no change in tax; 56 percent had a different, usually higher, tax after audit. About 5 percent of all cases originally reported as nontaxable were closed as taxable.

Harriss estimated the increase in the value of net estate at about 10 percent of reported net estate before the deduction of specific exemption, for the sample as a whole. For net estates of $40,000 to $100,000, the percentage increase caused by audit tended to be smaller, viz. between 2 and 10 percent. For estates of higher values the net increase approximated 10 percent.

[14] See *Characteristics of Property Transfers during Life and at Death as Revealed by Special Analyses of 1945 Estate Tax Returns and Prior Gift Tax Returns*, Exhibit 5 to accompany statement of Secretary Snyder before the Committee on Ways and Means, House of Representatives, Feb. 3, 1950; also Pechman, "Analysis of Matched Estate and Gift Tax Returns," *National Tax Journal*, Volume III, 1950, pp. 153–164.

returns for the preceding thirteen years indicates an average of gifts reported between June 7, 1932 and December 31, 1944 of 7 percent of net estate transferred at death. Since these figures do not include gifts made by the decedents before June 7, 1932, gifts below the exemption limit, or cases in which the identity of decedents and donors could not be clearly established, the true ratio of wealth transferred through gifts to wealth left at death must exceed 7 percent, and may be estimated as at least 10 percent but not in excess of 15 percent. The same tabulation shows that the ratio of reported gifts to net estate transferred at death rises from 3 percent for estates of less than $100,000 to an average of somewhat over 11 percent for estates of $1,000,000. [15]

2. Basis for Estimating the Wealth of the Living

This section deals with the age and sex characteristics of the decedents covered by estate tax returns and the mortality rates applicable to annual samples of these returns in estimating the wealth of the living. The procedure followed in making the estimates and the meaning of the resulting wealth distribution are discussed. Finally the statistical reliability of the aggregate wealth estimates is considered.

a. *Distribution of decedents by age*

The estate tax return form asks for the age of the decedent at the date of death, but only for the years 1922, 1923, and 1924 (years of filing 1923, 1924, and 1925) do the tabulations in the *Statistics of Income* contain information on age. Hitherto unpublished data have been made available by the Bureau of Internal Revenue for 1941, 1944, and 1946 (years of filing 1942, 1945, and 1947). Thus, the distribution of estate tax decedents by age is available for only six years. For the three early years, the tables in *Statistics of Income* show the number of returns by age groups, usually ten-year intervals, and net estate classes. In this study, the average amounts of net and economic estate per return within the various net estate classes have been assumed to be invariant with respect to age. This assumption seems justified by a test made with the 1944 data. The unpublished tabulations for 1941 show the number of returns by similar age groups, but use five-year intervals above fifty years, and net estate before specific exemption classes. Amounts of average net and economic estate have been estimated in the same manner as for the early years. The unpublished tabulation for 1944 has the same form as that for 1941, but the total amount of net estate before specific exemption is shown for each cell. This additional information made possible the test mentioned above. In addition, for the first time the tabulations of 1944 show a cross breakdown of estates by age and type of property.

These distributions, shown in Table E-4, cover the bulk of the returns made for those years. Only a small number of returns lacked information on age (e.g. 4½ percent of the total in 1944) and they are excluded from these tabulations.

[15] *Characteristics of Property Transfers...*, p. 13.

DISTRIBUTION OF ESTATE TAX DECEDENTS BY AGE GROUPS IN INFERRED YEARS OF DEATH

Selected Years: 1922 to 1946

Percent

Age group	1922	1923	1924	1941	1944	1946
20 under 30[1]	0.3	0.3	0.4	0.1	0.7	0.4
30 under 40	1.9	1.6	1.6	0.8	1.3	1.0
40 under 50	6.3	6.2	5.7	3.8	4.6	4.8
50 under 60	15.6	16.1	16.6	11.1	13.2	14.8
60 under 70	27.7	28.1	28.4	24.2	24.1	24.6
70 under 80	30.1	29.6	28.8	34.8	31.9	30.8
80 and over	18.1	18.1	18.5	25.2	24.2	23.7
All age groups	100.0	100.0	100.0	100.0	100.0	100.0
Number of returns covered	11 658	11 394	12 917	15 448	15 181	19 975

[1] Combines groups "under 25" and "25 under 30" for 1922–1924, and "under 21" and "21 under 30" for 1941, 1944, and 1946. The age of most of the decedents, covered by the group is literally between 20 and 30, but in a few cases the decedent's age may have been under 20.

For each of the six years the majority of the decedents represented by these returns had reached an age of 60 years or more at the time of death. Fewer than 10 percent of the decedents were under 50 years of age. In the three years 1922 to 1924 there was only a slight shift of frequency from the "younger" age brackets (under 50 years) to the "middle" brackets (50 to 70 years). A greater change in age distribution occurred between the years in the twenties and the three more recent years. Averaging the three years in the twenties and those in the forties, frequencies declined in the age groups below 70 and rose in those above 70. The difference was most marked in 1941, but was less sharply defined thereafter.

This change from the early twenties to the middle forties probably reflects the aging of the population during this period—i.e. the relative increase in the proportion of the population over 50 years of age, due in part to the decline in death rates for all but the oldest age groups. The sample of decedents covered by estate tax returns has become an older group in the course of time. The slight "rejuvenation" of the sample from 1941 to 1946 is not entirely explicable. Higher frequencies appear in the 1944 and 1946 age groups under 60 years than in the corresponding 1941 age groups. It is probable that war casualities reflected in the returns ascribed to 1944 and 1946 explain the higher frequencies in the younger groups, but one would not expect the effect of this cause to reach up to the age bracket of "50 under 60."

The decedents represented by the estate tax data are on the average older than those in the general population. In Table E-5, the age distribution of estate tax decedents for 1944 is compared with that of all white decedents in the United

E-5 DISTRIBUTION OF DECEDENTS BY AGE GROUPS; ESTATE TAX RETURNS AND TOTAL WHITE POPULATION: 1944

Percent

Age groups [2]	Decedents	
	Estate tax returns	White population [1]
	1	2
Under 55	12.0	24.4
55 under 65	18.2	19.3
65 under 75	29.6	26.0
75 under 85	29.5	23.0
85 and over	10.7	7.3
All age groups	100.0	100.0
Average age, in years	71	65

[1] Excluding deaths in armed forces. Source: U.S. Department of Commerce, Bureau of the Census, *Vital Statistics-Special Reports*, Volume 25, No. 4, April 9, 1946.
[2] Above 15 years of age.

States above the age of 15. [16] The proportion younger than 55 is twice as high for all white decedents as for those in the estate tax sample. From 65 years upwards, the estate tax samples show higher frequencies. The average age of estate tax decedents in 1944 was 71 years; that of all white decedents (over 15) 65 years. This difference in age distribution reflects the lower mortality in the higher wealth brackets of the population, up to the highest age groups, or the greater longevity of the well-to-do. The difference would be even more striking if deaths in the total population had been used in the comparison instead of deaths in the white population.

Because of the rise of mortality rates with age—at least within the age brackets of interest here—even a random sample taken among decedents (random with regard to age) would show a much older age distribution than the living population group to which it corresponds. There is no reason to suppose that the sample of estate tax decedents is not a random sample (with regard to age) of owners of potentially taxable estates; but these decedents are certainly not representative of the general population with regard to age and age-specific mortality rates. The greater average longevity of the population group from which decedents represented by estate tax returns are derived naturally results in an age distribution for the sample which contrasts sharply with that of the total living population. This contrast is shown in Table E-6 in the considerable rise in the ratio of the number of estate tax returns to the total population, in the older age groups. If the two age distributions were the same, the average ratio between the number of returns and the total population—about 2 per 10,000 in the four years covered—would

[16] The high exemption under the estate tax results in returns being filed for only the wealthiest 1 percent of the population, who may be presumed to be almost exclusively white.

ESTATE TAX DECEDENTS AND TOTAL POPULATION
CLASSIFIED BY AGE GROUPS
Selected Years: 1922 to 1946

Age groups	1922			1941			1944			1946		
	Number of returns	U.S. population (mill.)	Returns per 10,000 population	Number of returns	U.S. population (mill.)	Returns per 10,000 population	Number of returns	U.S. population (mill.)	Returns per 10,000 population	Number of returns	U.S. population (mill.)	Returns per 10,000 population
	1	2	3	4	5	6	7	8	9	10	11	12
20 under 30	38	18.9	0.02	20	23.0	0.01	101	23.6	0.04	71	23.7	0.03
30 under 40	217	16.3	0.13	118	20.1	0.06	197	20.9	0.09	191	21.4	0.09
40 under 50	731	12.7	0.57	581	17.2	0.34	699	17.7	0.39	955	18.2	0.52
50 under 60	1 831	8.9	2.03	1 724	13.5	1.28	2 014	14.4	1.40	2 949	14.9	2.00
60 under 70	3 230	5.3	6.04	3 742	8.7	4.30	3 666	9.2	4.00	4 916	9.6	5.12
70 and over	5 629	3.0	19.14	9 259	5.4	17.15	8 504	5.9	14.51	10 893	6.2	17.51
All age groups covered	11 658	65.2	1.79	15 444	87.9	1.76	15 181	91.7	1.66	19 975	94.1	2.12

prevail throughout all the age groups. As a result of the difference in the age distributions, however, the ratio for 1922 varies from 2 per 1,000,000 for the youngest group to 2 per 1,000 for the oldest, and the ratio for 1944 from 4 per 1,000,000 for the youngest to 1½ per 1,000 for the oldest group.

The objective of this study, as has been said before, is to estimate from estate tax returns the private wealth in the upper wealth brackets. Since the age distribution of the living in these brackets is unknown, it can only be estimated with the help of suitable mortality rates. But it is certain that the variation of the ratio of returns from low to high age groups would be less if the ratio were computed on the basis of the number of owners of potentially taxable estates rather than the total population.

b. *Distribution of decedents by sex*

Certain studies of estates and wealth in foreign countries have shown that the pattern of wealth holding is not the same for the two sexes. Danysz' study of the estates of Paris decedents in 1930–1931 indicates that the average amount of the estate is larger for males than for females in all age groups above thirty years. [17] Daniels and Campion show similar results for England and Wales in 1924–1930. [18] In both studies, average estate values of female decedents in the age groups below thirty and thirty-five tend to equal or exceed those of males. Data derived from the taxation of capital in Sweden, on the other hand, show consistently higher average amounts of wealth for women in all age groups. [19] The Swedish material

[17] Danysz, "Contribution à l'étude des fortunes privées d'après les déclarations de succession," *Bulletin de la Statistique Générale de la France*, pp. 144–147.

[18] Daniels and Campion, *op. cit.*, p. 12.

[19] *Statistisk Arsbok for Sverige*, 1947, p. 305.

E-7 DISTRIBUTION OF ESTATE TAX RETURNS BY SIZE OF NET ESTATE AND SEX OF DECEDENT: 1922

Percent

Net estate class ($ thous.)	Men	Women
	1	2
Under 100	55.0	56.2
100- 200	25.2	24.3
200- 300	7.6	7.5
300- 500	5.9	5.7
500- 800	3.1	3.3
800-1,050	1.1	0.9
1,050-2,050	1.4	1.3
2,050-5,050	0.6	0.6
5,050 plus	0.1	0.2
All taxable returns	100.0	100.0
Number of taxable returns	7 087 (72.9%)	2 491 (75.7%)
Number of nontaxable returns	2 633 (27.1%)	802 (24.3%)
Number of all returns	9 720 (100.0%)	3 293 (100.0%)

and the study by Daniels and Campion show, moreover, that the distribution of individual owners over the various age groups differs between the two sexes.

Unfortunately, the information on sex distribution of estate tax decedents in the United States has not been made accessible except for two tabulations in each of the years 1922, 1923, and 1924. One of these tabulations shows the number of returns by sex, occupation, and size of net estate; the other, the number of returns by sex, age, marital status, and size of net estate. No tabulations of this nature are available for later years.

Table E-7 shows the number of returns for males and females distributed by size of net estate for 1922. There were about three times as many returns for males as for females. The distribution of taxable returns over the various net estate classes almost coincided for the two sexes, but there were relatively more nontaxable returns for males than for females. Whether the same relationship still prevails is unknown.

The age distributions of male and female decedents in 1922 are compared in Table E-8. It appears that the age groups below seventy years have a higher proportion of males, those above seventy, of females. The average age of female decedents is somewhat higher than that of males due, of course, to the greater longevity of women. The percentage of male estate tax decedents in the age group over seventy years is 45.6; of female decedents in the same age group, 56.5 percent.

Separate wealth estimates for men and women have been prepared by the estate-multiplier method for 1922 and the totals combined. The purpose was to establish whether the differences in age distribution and age-specific mortality

Age	Men		Women	
	Number	Percent of men's total	Number	Percent of women's total
Under 25	10	0.1	5	0.2
25 under 30	20	0.2	3	0.1
30 under 40	166	1.9	51	1.7
40 under 50	572	6.5	159	5.5
50 under 60	1 467	16.8	346	11.9
60 under 70	2 532	28.9	698	24.1
70 under 80	2 599	29.7	915	31.6
80 under 90	1 244	14.2	626	21.6
90 and over	149	1.7	96	3.3
All age groups	8 759	100.0	2 899	100.0
No age given	961	—	394	—

of the two sexes would cause a wealth estimate prepared on this basis to deviate from one obtained directly from the combined sample. [20]

c. *Mortality rates*

Age-specific mortality rates of the white population of the United States have been used in order to step up the sample distribution of estates to wealth estimates with the help of the estate-multiplier method. [21] Published rates were adjusted to fit the age breakdown used in the estate tax tabulations for the years 1922 and 1924. A comparable set of these rates is shown in Table E-9.

Although lower than the corresponding mortality rates for the entire U.S. population, the white population rates are likely to be too high for the population group holding potentially taxable estates. Another set of mortality rates has been obtained that in all probability comes closer to being representative of this population group than the figures for the entire white population. These rates, designated in Table E-9 as *selected-risk* mortality rates, are based on the experience of the Metropolitan Life Insurance Company with a group of risks called the "$5,000 whole life classification," which is composed predominantly of well-to-do individuals. The minimum policy issued in this group is $5,000 and the premium may not be paid less frequently than annually. Since applicants' qualifications are measured by more rigorous standards than in ordinary life insurance,

[20] Daniels and Campion's study of England and Wales found no marked difference in the degree of inequality of the distribution of capital among men and among women. The similarity of the two distributions in the high degree of inequality as measured by the Lorenz curve does not mean, however, that the two distributions are parallel. The average amount of capital held by men is shown to be more than twice the average amount held by women. *Op. cit.*, pp. 56–57.

[21] *Vital Statistics Rates in the United States 1900–1940* for 1922 and 1924, and special Census and Vital Statistics reports for 1941, 1944, and 1946.

MORTALITY RATES
Selected Years: 1922 to 1946

Deaths per 1,000 population

Age groups	United States white-population					Selected-risk			
	1922	1924	1941	1944[1]	1946[1]	1922	1941	1944[2]	1946[2]
	1	2	3	4	5	6	7	8	9
20 under 30	3.9	3.6	2.0	2.1	1.6	3.1	1.0	3.6	2.8
30 under 40	5.4	5.2	3.0	3.1	2.5	3.1	1.6	1.4	1.7
40 under 50	8.5	8.5	7.7	6.7	6.9	4.9	4.2	3.3	3.7
50 under 55	16.0	15.9				10.6	8.3	6.9	8.0
55 under 60			20.4	19.7	18.7		13.4	11.9	15.5
60 under 65	35.1	34.2				28.5	21.8	18.6	27.0
65 under 70			46.1	44.9	42.9		33.7	28.3	30.8
70 under 75	69.0	67.5				76.1	60.0	45.1	48.2
75 under 80			108.0	107.0	98.8		75.1	73.1	67.0
80 under 85	140.3	139.7				163.5	117.3	136.0	148.8
85 and over			223.0	221.4	234.8		191.6	207.4	92.8

[1] Excluding war casualties.
[2] Including war casualtics.

the members of this group represent a selection of relatively healthy individuals within their economic stratum. [22]

Mortality data have been derived from this material by the Metropolitan Life Insurance Company by relating dollar amounts of policies becoming due to dollar amounts of policies in force. Mortality rates based on lives are not available from this source at the present time. [23] As a result, the mortality rates used here are weighted with ratios of amounts of insurance held by decedents and living persons within each age group. This weighting is undesirable for our purposes. It is likely to cause random deviations of the available from the unavailable (true) mortality rates, and possibly a systematic bias. The probability of the latter, however, is

[22] The medical examination of applicants for this category is more thorough than for ordinary life insurance, and the admissible maximum mortality expectation is 110 percent of normal mortality, as against 125 percent for ordinary life insurance. In the mid-1930's a study undertaken by the company showed that 28 percent of the applications which came in after screening by the insurance agents were rejected by the company, 12 percent for medical reasons.

The influence of the selection of healthy individuals on the mortality statistics, however, is somewhat reduced by the fact that the experience of the first five years, following the issuance of policies, has been excluded in drawing up the statistics.

[23] According to an estimate of the company for 1947, there were about 250,000 lives insured in this classification, and about 2,750 cases of deaths.

reduced by the fact that the rates have been computed for five-year age brackets. Therefore, the systematic relation between age and the wealth ratio of decedents to living, which could produce bias, is largely neutralized. [24]

For all practical purposes, the population group covered by the selected risk data is male; but the rates shown in Table E-9 have been adjusted by the Actuarial Division of the Metropolitan Life Insurance Company to apply to both sexes. This has been done by assuming the same relation of male to female mortality and the same sex ratio as in the white population of the United States.

The series shown for 1941 is derived from insurance experience in the years 1938 to 1940. Data for 1941 and 1942 were not available. This inaccuracy in timing is probably insignificant, since in the opinion of the Metropolitan actuaries the mortality rate pattern remained about the same during that period. It will be noted that the selected-risk rates for 1944 and 1946 reflect war casualties while those for the total white population do not. The estate tax returns for 1944 and 1946, of course, do include some estates of veterans. If allowance is made for this factor in the selected-risk series for 1944 and 1946, it appears that quite uniformly both the white-population and the selected-risk mortality rates show declines in the lower age groups from the early twenties to the midforties, and increases in the top age group, in accordance with the rise in longevity during the interval. The level of the selected-risk rates is consistently lower than that of comparable white population rates except for the youngest group in 1944 and 1946 (effect of war casualties). This undoubtedly results from the greater average longevity of the well-to-do, combined with the selection of a particularly healthy group within that economic stratum.

The age-specific mortality rates for the two sexes, in 1922, in the white population are shown in Table E-10.

Inverse mortality rates derived from the indicated sources were used in the estate-multiplier procedure. As shown in Table E-11, these inverse rates (1,000 : mortality rates) are quite high for the younger age brackets and give a substantial weight to the rather small number of estates in these brackets. Since the selected risk rates seem better adapted to estimating estate tax wealth than any other data available at this time, the inverse rates derived from them are believed to be the most satisfactory for use as estate multipliers. The question remains, however, how well adapted they are. Unfortunately, not much is known of mortality conditions in different social-economic groups in general and of those in the wealthiest group in particular. Available evidence indicates that over a considerable part of the scale, at least in the younger and middle age brackets, age-specific mortality is an inverse function of economic level. But there exists no direct information

[24] From a stochastic point of view, the differences between mortality rates based on amounts of insurance and those based on numbers of policies are insignificant in all age groups. The same is probably the case for the differences between rates based on amounts of insurance and those based on lives.

We are indebted to the Actuarial Division of the Metropolitan Life Insurance Company for computations of the standard deviations of mortality rates and advice on other aspects of the mortality data derived from the insurance records.

E-10 MORTALITY RATES, MALE AND FEMALE, U.S. WHITE POPULATION: 1922

Deaths per 1,000 population

Age groups	Mortality rates		Inverse mortality rates	
	Male	Female	Male	Female
	1	2	3	4
20 under 30	3.9	3.9	256.4	256.4
30 under 40	5.6	5.3	178.6	188.7
40 under 50	9.0	7.9	111.1	126.6
50 under 60	17.2	14.7	58.1	68.1
60 under 70	37.4	32.7	26.7	30.6
70 under 80	72.2	65.7	13.9	15.2
80 and over	143.2	137.6	7.0	7.3

E-11 INVERSE MORTALITY RATES (MULTIPLIERS) CORRESPONDING TO TABLE E-9

Selected Years: 1922 to 1946

Deaths per 1,000 population

Age groups	United States white-population					Selected-risk			
	1922	1924	1941	1944	1946	1922	1941	1944	1946
	1	2	3	4	5	6	7	8	9
20 under 30	256.4	277.8	490.2	485.4	611.0	324.7	961.5	277.8	357.1
30 under 40	185.2	192.3	330.0	321.5	396.4	327.9	613.5	714.3	588.2
40 under 50	117.6	117.6	129.5	149.3	144.5	205.8	237.0	303.0	267.4
50 under 55	62.5	62.9				94.3	120.3	144.9	124.4
55 under 60			49.1	50.9	53.6		74.3	84.0	64.4
60 under 65	28.5	29.2				35.1	45.8	53.8	37.0
65 under 70			21.7	22.3	23.3		29.7	35.3	32.4
70 under 75	14.5	14.8				13.1	19.6	22.2	20.8
75 under 80			9.3	9.3	10.1		13.3	13.7	14.9
80 under 85	7.1	7.2				6.1	8.5	7.4	6.7
85 and over			4.5	4.5	4.2		5.2	4.8	10.8

RATIOS OF TOP-GROUP MORTALITY TO GENERAL WHITE MORTALITY
Selected Years: 1922 to 1944

E-12

Age group	Selected-risk to U.S. white-population rates			Top-fifth white male mortality to general white male mortality in Chicago
	1922	1941	1944	1940
20 under 30	0.80	0.50	1.71	0.76
30 under 40	0.57	0.53	0.45	0.66
40 under 50	0.58	0.71	0.66	0.77
50 under 55	0.66			
55 under 60		0.84	0.75	0.87
60 under 65	0.81			
65 under 70		0.96	0.79	0.88
70 under 75	1.10			
75 under 80		0.83	0.89	0.99
80 under 85	1.16			
85 and over		0.86	0.94	

on the mortality rate pertinent to the relatively high economic level we are dealing with in estimating estate tax wealth.

Some check, however, may be obtained by comparing the ratio of selected-risk to white-population death rates with certain findings of the Chicago Community Inventory for the year 1940. [25] The Inventory established mortality rates for samples of the Chicago population, representing five different economic groups, ranked by the rental value of their habitations. The highest economic group in the survey is the top fifth.

The relation of the mortality rates for the top fifth of the white male population to the rates for the total white male population in Chicago is shown in Table E-12. That table likewise shows the selected risk death rates for 1922, 1941, and 1944 as a percentage of the United States white population rates for those years. The year 1941 is most pertinent for comparison with the Chicago data. The comparison shows that in all but one age group the ratios of selected-risk to white-population death rates are lower than the Chicago rates. The direction of this deviation is in line with the general tendency of mortality rates to decline from poorer to wealthier population groups, which seems to work with some regularity over the five economic groups distinguished in the Chicago study. The relative economic level of the people covered by the selected risk sample is likely to be higher than that of the top fifth of the Chicago sample. Therefore, the relative mortality of

[25] Albert J. Mayer, *Differentials in Lengths of Life, City of Chicago: 1880–1940,* unpublished doctor's dissertation, University of Chicago.

that group should be less than that of the top 20 percent in Chicago. But the magnitude of the deviation remains questionable. Possibly the true mortality rates applicable to estate tax decedents should not be quite as low as those derived from the selected-risk data.

d. *Insurance correction*

There is one type of asset for which the simple procedure of multiplying amounts reported in estate tax returns by inverse death rates cannot be followed, viz. life insurance. While the distribution of all other assets may be assumed to be about the same among the persons of a given age dying during a certain interval and among the population group to which they belong (subject, of course, to the reservations with regard to manipulation), the distribution of life insurance is different because death automatically increases the value of the policy from its reserve to its face value. Hence, the life insurance assets of decedents are larger than the share in the equity of life insurance companies which the same persons held while alive. Using the standard procedure in this instance would seriously overstate the estimated insurance assets of the living.

Where the estate tax data permit segregation for each age group of the amount of life insurance from other assets (as was the case for the year 1944), it is possible to make a fairly satisfactory, though rough, correction for this type of bias. Data showing the ratio of reserves to face value for insurance holders of different age groups as of the end of 1948 were secured from one fairly large company, one of the few classifying the reserves against insurance in force by attained age of policyholders. [26] The average ratio for all age groups was 27.8 percent. This ratio was only slightly higher than the average ratio shown by eighty-two companies at the end of 1944—26.4 percent. [27] By adjusting the reserves-to-face-amount ratio of the reporting company to the average 1944 ratio for eighty-two companies, a set of factors was obtained that made it possible to reduce the amounts of insurance shown in the estates for each age group to equity (reserve) levels, at least by approximation.

For 1944 these factors ranged from 7 percent for policyholders in the 20–30 age group to about 36 percent in the 50–60group and 81 percent for policyholders 85 years and older (Table E-13). The correction reduced total estimated wealth in insurance form by 82 percent and total estate tax wealth (economic estate) by 10 percent, and its effect on the estimate of economic estate in some age and size groups was even more noticeable. (See below, Chapter v.)

Unfortunately, a correction for this type of bias was not equally feasible in the other years covered by this study. Life insurance assets by age of decedent were not available for any year other than 1944. Therefore, only partial and

[26] The data cover 96 percent of the outstanding ordinary life insurance of the company. The ratios have been obtained by dividing the mean reserve as of December 31, 1948 by the face value of insurance in force at that date.

[27] Data from Life Insurance Association of America.

RATIO OF INSURANCE EQUITY TO FACE VALUE BY AGE OF INSURED: 1944 [1]

Attained age	Percentage of equity to face value
20 under 30	7.0
30 under 40	10.7
40 under 50	20.6
50 under 55	32.8
55 under 60	40.5
60 under 65	47.9
65 under 70	54.5
70 under 75	60.4
75 under 80	66.7
80 under 85	73.7
85 and over	80.6
All age groups	26.4

[1] Sample company data for 1948, adjusted to average ratio in eighty-two companies for 1944.

rather tentative adjustments could be made in the wealth estimates for the years 1922, 1924, 1941, and 1946.

In 1941 the average ratio of ordinary reserve to ordinary insurance in force, for sixty-four companies, was 25.0 percent. For 1946, the average ratio of eighty-nine companies in 1948 was used: 25.9 percent. For 1922 and 1924, no corresponding ratios are available. We only have the ratios of *total* reserves to *total* life insurance in force (ordinary and industrial life and endowment insurance). They amounted to 16.9 percent in 1922 and 16.3 percent in 1924, compared with 29.4 percent in 1941 and 30.0 percent in 1944. In the later years, the reserve ratios for *ordinary* life insurance fell short of the *over-all* ratios by 12 to 15 percent.

The rise of the over-all reserve ratios from the early twenties to the forties may be attributed to several factors: (1) The decline in interest rates required proportionately larger reserves to cover the same amount of outstanding insurance. (2) The average age of the insured population increased, owing partly to the upward shift in the age distribution of the general population and probably also to the fact that insurance nowadays usually remains in force longer than was customary in the early twenties. Since the average insured person is somewhat older, his insurance may now be subject to somewhat higher reserve ratios. (3) Finally, changes in the composition of insurance by type and other factors may have contributed to the rise in the ratio.

In the twenties the reserve ratios for ordinary life insurance may have been somewhat closer to the over-all ratios than in the forties because of the lesser importance of other types of life insurance at that time. Assuming that they fell short of the over-all ratios by 10 percent, the reserve ratios for ordinary insurance may be estimated at 15.2 percent for 1922 and 14.7 percent for 1924. These ratios,

and that of 25.0 percent for 1941, have been used in the following ways to make corrections for insurance bias in the aggregate amounts of economic estate:

(1) The aggregate amount of uncorrected insurance held by the living in 1922, 1924, 1941, and 1946 has been estimated by multiplying the known aggregate amount of insurance of the decedents by the economic estate devolution rate for the year (uncorrected for insurance bias) and by the devolution rate index of uncorrected insurance[28] obtained for 1944. (See Table E-62.)

(2) The amount of uncorrected insurance thus obtained has been multiplied by the factors 0.152 for 1922, 0.147 for 1924, 0.250 for 1941, and 0.259 for 1946. The results are the estimated corrected aggregates of insurance among the living in those years.

(3) Replacing the uncorrected with the corrected insurance aggregates in total economic estate, estimates of the latter corrected for insurance bias are obtained. Devolution rates corrected for insurance bias have been computed on this basis.

For individual age groups and size groups, no satisfactory correction for insurance bias is possible in the years other than 1944. In the absence of information on the distribution of asset types over age and size groups, the only possible procedure would be to estimate those distributions on the basis of the 1944 pattern, and this seems quite unsatisfactory. Nevertheless, by way of an experiment, we have made an estimate on the assumption that the aggregate insurance correction was distributed over age and size classes in the same proportions as in 1944. The results of this experiment are shown below in Tables E-33 and E-34.

e. *Meaning and statistical reliability of estimates*

The estimates of private wealth prepared for this study should be understood as estimates of the aggregate economic estate (similar to "net worth") of individuals holding wealth in amounts potentially taxable under the law. The estate covered in the estate tax statistics do not necessarily cover the wealth of family units. The two differ to the extent that total wealth of family units is legally divided among its members. In practice, division of property is, of course, rather common in the wealthier segment of the population. Its occurrence will lead to an understatement of both the absolute and the relative wealth of the "rich" in two ways: (1) Division of property that leads to the formation of units below exemption limits will withdraw some part of the wealth from the reach of the estate tax and the statistics based on it. (2) Division of property may distribute the estimated wealth of one family unit over several tax cases, at least in the course of time.

Division of property will thus tend to produce an understatement of the total amount of estate tax wealth, and probably also an understatement of the degree of inequality of wealth among the families owning wealth in excess of the estate tax limitation. It will also raise the number of estate tax wealth holders over the affected number of family units.

[28] This is the ratio of the devolution rate of insurance to the devolution rate for economic estate, both taken before the insurance correction.

Assuming that no bias arises on account of the choice of mortality rates, it may be said that our estimates of estate tax wealth, derived by multiplying the amounts reported in federal estate tax returns by the reciprocals of age-specific mortality rates (after correction for overstatement of insurance involved in this method), are still affected by three major sources of downward bias: gifts *inter vivos* that escape the tax; the tendency of taxpayers to understate estate values; and the division of property among members of the family. Together these biases probably cause a substantial underestimate of aggregate wealth and its degree of inequality. In 1944 the aggregate amount is likely to have been understated by at least 20 percent on these counts. The lumping together of the estates of men and women, on the other hand, may produce some upward bias, probably of much smaller proportions, in the number of wealth holders and the amount of aggregate wealth—say, less than 5 percent.

While these causes of bias are intrinsic in the estate tax statistics, which we cannot modify with confidence without obtaining additional information, the effects of different sets of mortality rates on the estimates can be brought out by experiment. The results of such an experiment can be found in Chapter v, Section 3.

The estimates also deserve scrutiny from the point of view of sampling errors. The samples of the defined population group, caused by the incidence of death, are quite large in the older age groups but relatively small in the younger groups. The sampling errors of the estimates of average or total economic-estate wealth are therefore somewhat higher for the younger age groups than for the older ones.

III

THE WEALTH OF DECEDENTS SUBJECT TO THE ESTATE TAX

This chapter deals with the information contained in samples of estate tax returns. The aggregate amounts and the composition of the estates by type of property are examined for all returns filed from 1922 through 1946 (excluding the year 1945, for which data had not yet been published when the tables were compiled).

We shall first consider the assets making up the estates at their current values, and subsequently at constant (1929) prices as estimated by means of various asset price indexes. The distribution of estates by size is then shown for a series of years during the same interval, and the development of the aggregate amount of wealth of the estate tax decedents is analyzed. Next, for a few selected years, size and composition of estates are considered jointly and a pattern of property holdings for different levels of wealth is evolved. Finally, size of estates is considered *vis-a-vis* age of decedents, on the basis of 1944 data, and the correlation of these two variables is analyzed.

1. Aggregate Amount and Composition of Wealth by Type of Property, 1922 to 1946

a. *Development at current asset prices*

The aggregate amounts of gross estate shown in the annual summaries of estate tax returns vary between $2.0 billion (1932) and $4.2 billion (1946) in current asset prices. The amounts rise generally from 1922 to 1929, drop off sharply from 1930 to 1932, rise again to a secondary peak in 1937, then recede to a plateau from 1938 to 1942, and finally rise to the 1946 value, which is slightly in excess of that of 1929. The aggregates of economic estate vary between $1.7 billion (1932) and $4.0 billion (1946) and parallel the fluctuations in gross estate, except for the period from 1933 to 1935, as shown in Table E-14.

Aggregate gross and economic estate values are of course affected by the several changes in exemption limits, which were increased in 1926 and 1942, and decreased in 1932 and 1935. These changes explain the secondary trough in 1926, and at least part of the rises from 1932 to 1933 and from 1935 to 1936. The effect of these changes is also visible in the development of average gross estate per return. The raising of the exemption limit in 1926 increased the value of gross estate per return, and the lowering of the limit in 1932 and 1935 reduced it. The divergent effect of the last two changes in the limit on aggregate and average values of gross

GROSS AND ECONOMIC ESTATE, AGGREGATES FOR ALL ESTATE TAX RETURNS AND AVERAGE PER RETURN; CURRENT VALUES

1922 to 1946

Year	Number of returns	Gross estate		Economic estate	
		Aggregate ($ mill.)	Per return ($ thous.)	Aggregate ($ mill.)	Per return ($ thous.)
	1	2	3	4	5
1922	13 013	2 495	192	2 200	169
1923	12 403	2 350	190	2 081	168
1924	14 013	2 958	211	2 642	189
1925	13 142	3 386	258	3 065	233
1926	9 353	3 146	336	2 836	303
1927	8 079	3 503	434	3 111	385
1928	8 582	3 844	448	3 493	407
1929	8 798	4 109	467	3 723	423
1930	8 333	4 042	485	3 622	435
1931	7 113	2 796	393	2 404	338
1932	8 727	2 027	232	1 686	193
1933	10 353	2 244	217	1 930	186
1934	11 110	2 435	210	1 918	173
1935	11 605	2 296	198	2 024	174
1936	15 037	2 853	190	2 442	162
1937	15 932	3 141	197	2 824	177
1938	15 221	2 837	186	2 558	168
1939	15 435	2 727	177	2 469	160
1940	15 977	2 877	180	2 607	163
1941	16 215	2 825	174	2 566	158
1942	15 187	2 712	179	2 447	161
1943	14 303	2 913	204	2 694	188
1944	15 898	3 438	216	3 227	203
1945	N.A.	N.A.	N.A.	N.A.	N.A.
1946	20 899	4 228	202	3 993	191

Source: Annual volumes of *Statistics of Income*. Beginning with 1936 the amounts shown here for gross estate exceed those in the source by the amount of tax exempt insurance.

estate is partly, if not wholly, responsible for the divergence in aggregate and average values of economic estate in the midforties. As shown in Table E-14, average gross estate for all returns varied between $174,000 (1941) and $485,000 (1930), and average economic estate, between $158,000 and $435,000 in the same years.

The composition of the aggregate of all estates by type of property is shown in Table E-15. The percentages refer to the aggregates of gross estate in Table E-14. Throughout the years, the bulk of property covered by estate tax returns has been intangible property. The proportion of intangible property in gross estate varies between 75 percent in 1922 and 87 percent in 1930, remaining above 80 percent from 1925 to the end of the period. Real estate, the other major component varies between 25 percent in 1922 and 13 percent in 1930, remaining below 20 percent from 1925 to the end of the period. Tangible personal property, shown in the tabulations separately only from 1938 on, amounts to less than 2 percent of gross estate in each year.

E-15
(Part 1)

COMPOSITION OF GROSS ESTATE, BY TYPE OF PROPERTY, FOR ALL ESTATE TAX RETURNS

Current Values: 1922 to 1946

Type of property	Percent of gross estate, inferred year of death					
	1922	1923	1924	1925	1926	1927
	1	2	3	4	5	6
1. Real estate	24.7	23.5	22.0	19.1	18.2	17.4
Federal government bonds						
2. Wholly tax exempt	1.0	1.5	1.3	2.0	1.5	1.7
3. Partially tax exempt	3.4	3.6	3.3	2.4	2.3	1.5
4. Taxable	—	—	—	—	—	—
5. Total, federal government bonds	4.4	5.1	4.6	4.4	3.8	3.2
6. State and municipal bonds	3.3	3.1	3.1	4.3	3.7	3.9
7. Corporate bonds	7.2	6.6	7.9	7.5	7.3	6.8
8. Bonds, total	14.9	14.8	15.6	16.2	14.8	13.9
9. Corporate stock	31.3	31.4	32.9	37.4	38.9	43.3
10. Cash	—	—	—	—	—	—
11. Mortgages, notes, and cash [1]	12.9	13.0	12.2	11.5	11.4	11.0
12. Insurance [2]	3.1	3.2	3.3	2.7	2.8	3.0
13. Interest in unincorporated business	—	—	—	—	—	—
14. Other intangible property	—	—	—	—	—	—
15. Unclassified by type [3]	13.1	14.1	14.0	13.1	13.9	11.4
16. Intangible property, total	75.3	76.5	78.0	80.9	81.8	82.6
17. Tangible personal property	—	—	—	—	—	—
18. Total gross estate	100.0	100.0	100.0	100.0	100.0	100.0
19. Debts	11.8	11.5	10.7	9.5	9.9	11.2
20. Economic estate	88.2	88.5	89.3	90.1	90.1	88.8

Type of property	Percent of gross estate, inferred year of death					
	1928	1929	1930	1931	1932	1933
	7	8	9	10	11	12
1. Real estate	14.8	13.7	13.4	15.5	19.0	16.9
Federal government bonds						
2. Wholly tax exempt	1.2	1.7	1.9	1.8	2.3	2.9
3. Partially tax exempt	1.2	1.3	1.3	1.6	2.8	2.8
4. Taxable	—	—	—	—	—	—
5. Total, federal government bonds	2.4	3.0	3.2	3.4	5.1	5.7
6. State and municipal bonds	3.9	4.4	5.7	6.9	7.8	8.7
7. Corporate bonds	6.8	6.8	6.3	6.9	8.4	8.0
8. Bonds, total	13.1	14.2	15.2	17.2	21.3	22.4
9. Corporate stock	48.4	47.7	47.2	38.2	31.8	34.9
10. Cash	—	—	—	—	—	—
11. Mortgages, notes, and cash [1]	9.9	9.7	9.6	12.2	15.9	14.4
12. Insurance [2]	3.3	3.1	3.3	4.8	6.6	6.4
13. Interest in unincorporated business	—	—	—	—	—	—
14. Other intangible property	—	—	—	—	—	—
15. Unclassified by type [3]	10.5	11.6	11.3	12.1	5.4	5.0
16. Intangible property, total	85.2	86.3	86.6	84.5	81.0	83.1
17. Tangible personal property	—	—	—	—	—	—
18. Total gross estate	100.0	100.0	100.0	100.0	100.0	100.0
19. Debts	9.1	9.4	10.4	14.0	16.8	14.0
20. Economic estate	90.9	90.6	89.6	86.0	83.2	86.0

[1] Mortgages and notes only from 1941 to 1946.
[2] Includes tax exempt insurance.
[3] Includes, through 1927, jointly owned property, other miscellaneous property (intangible and tangible), as well as transfers, powers of appointment, estate previously taxed; from 1928 through 1931,

COMPOSITION OF GROSS ESTATE, BY TYPE OF PROPERTY, FOR ALL ESTATE TAX RETURNS
Current Values: 1922 to 1946

Type of property	Percent of gross estate, inferred year of death					
	1934	1935	1936	1937	1938	1939
	13	14	15	16	17	18
1. Real estate	15.8	15.4	15.6	14.8	15.3	15.5
Federal government bonds						
2. Wholly tax exempt	2.9	2.1	1.6	2.7	1.8	1.7
3. Partially tax exempt	3.0	2.9	3.4	3.4	3.4	3.9
4. Taxable	—	—	—	—	—	—
5. Total, federal government bonds	5.9	5.0	5.0	6.1	5.2	5.6
6. State and municipal bonds	7.3	6.1	5.9	7.0	8.6	6.1
7. Corporate bonds	8.2	8.0	6.9	6.3	5.8	5.7
8. Bonds, total	21.4	19.1	17.8	19.4	19.6	17.4
9. Corporate stock	37.0	40.2	40.9	40.6	38.0	39.6
10. Cash	—	—	—	—	—	—
11. Mortgages, notes, and cash [1]	14.5	13.7	13.9	13.7	14.9	15.0
12. Insurance [2]	5.9	5.6	5.5	5.2	5.7	6.0
13. Interest in unincorporated business	—	—	—	—	—	—
14. Other intangible property	—	—	—	—	5.3	5.2
15. Unclassified by type [3]	5.4	6.0	6.3	6.3	—	—
16. Intangible property, total	84.2	84.6	84.4	85.2	83.5	83.2
17. Tangible personal property	—	—	—	—	1.2	1.3
18. Total gross estate	100.0	100.0	100.0	100.0	100.0	100.0
19. Debts	21.2	11.9	14.4	10.1	9.8	9.5
20. Economic estate	78.8	88.1	85.6	89.9	90.2	90.5

Type of property	Percent of gross estate, inferred year of death					
	1940	1941	1942	1943	1944	1946
	19	20	21	22	23	24
1. Real estate	15.2	16.5	15.8	15.1	15.2	18.1
Federal government bonds						
2. Wholly tax exempt	1.8	1.3	1.3	0.7	0.7	.1
3. Partially tax exempt	3.8	3.8	3.4	2.8	2.4	1.3
4. Taxable	—	0.3	2.3	3.5	5.3	7.6
5. Total, federal government bonds	5.6	5.4	7.0	7.0	8.4	9.0
6. State and municipal bonds	6.6	6.4	6.3	5.5	5.7	3.9
7. Corporate bonds	5.1	5.0	4.8	4.4	4.0	2.6
8. Bonds, total	17.3	16.8	18.1	16.9	18.1	15.5
9. Corporate stock	39.9	37.6	36.4	39.2	39.5	38.4
10. Cash	—	11.2	11.4	10.3	9.5	10.4
11. Mortgages, notes, and cash [1]	16.2	5.5	4.9	4.1	3.6	3.3
12. Insurance [2]	5.9	6.1	6.9	7.1	7.0	6.8
13. Interest in unincorporated business	—	—	2.1	3.2	3.2	3.5
14. Other intangible property	4.2	4.8	2.7	2.9	2.7	2.8
15. Unclassified by type [3]	—	—	—	—	—	—
16. Intangible property, total	83.5	82.0	82.5	83.7	83.6	80.8
17. Tangible personal property	1.3	1.5	1.7	1.2	1.2	1.2
18. Total gross estate	100.0	100.0	100.0	100.0	100.0	100.0
19. Debts	9.4	9.2	9.8	7.5	6.1	5.5
20. Economic estate	90.6	90.8	90.2	92.5	93.9	94.5

the same items excluding jointly owned property; from 1932 to 1937, miscellaneous property (tangible and intangible), including debts due decedents, interest in business, claims, rights, royalties, pensions, leaseholds, judgments, shares in trust funds, household goods and personal effects, farm products, growing crops, livestock, farm machinery, automobiles, etc.

Within the category of intangible property, corporate stocks predominate. Their share in gross estate rises from 31 percent in 1922 to 48 percent in 1928–1929 and, after declining to 32 percent in 1932, fluctuates between 35 and 41 percent for the remainder of the period.

Bonds (total) constitute between 13 and 22 percent of gross estate throughout the period. Their share drops to the lowest level in 1928 and rises to a maximum in 1933. During the years following the Great Depression the percentage remains consistently higher than before 1930. Its rise during the Great Depression is due chiefly to the increasing relative importance of federal government and state and municipal bonds. Since the beginning of World War II, the share of federal bonds has resumed its rise while that of state and municipal bonds has diminished. The proportion of corporate bonds fluctuates between 6 and 8 percent from 1922 to 1937, but from then on drops steadily, to 4 percent in 1944, and to less than 3 percent in 1946.

Mortgages, notes, and cash constitute about 10 to 16 percent of gross estate from 1922 to 1940 with the minimal share occurring in 1928 to 1930, and the maximum in 1932 and 1940–1942. From 1941 on, cash is shown separately from mortgages and notes, and cash appears as the major part of their combined value. The share of mortgages and notes declines steadily from 1941 to 1946.

Insurance amounts to about 3 percent of gross estate in each of the years from 1922 to 1930, rises to 7 percent in 1932, and, after declining to 5 percent in the later thirties, returns to the 7 percent level from 1942 on.

Unclassified property, consisting largely of intangible property, is a fairly sizable part of gross estate during the early years. As a result of changes in the classification procedure (see note 3 to Table E-15), this item declines rather markedly after 1926 and sharply after 1931, with some of its former components appearing in other brackets of intangible property or in real estate. This gives excessive emphasis to the rise in some items from 1931 to 1932—in particular, mortgages, notes, and cash, and real estate—but it is probably not entirely responsible for these increases. In 1938, unclassified property disappears, and its place is taken by "other intangible property" and "tangible personal property."

The debts of decedents vary between 6 and 21 percent of gross estate, fluctuating between 9 and 14 percent from 1922 to 1931, rising to a peak of 21 percent in 1934, and remaining at 9 to 10 percent between 1937 and 1942.[1] From then until 1946, the average rate of indebtedness of the decedents falls rapidly. Correspondingly, economic estate fluctuates between 88 and 91 percent of gross estate from 1922 to 1930, drops to a minimum of 79 percent in 1934, and reaches its maximum of 94.5 percent of gross estate in 1946.

b. *Development at constant asset prices*

Table E-16 shows the amounts of gross estate and economic estate, estimated at

[1] Owing to the combination, before 1937, of net losses and support to dependents with debts of the estate, the debt percentages for these years are somewhat too high. The overstatement is believed to amount to one percentage point or less. See p. 290, footnote 9.

GROSS AND ECONOMIC ESTATE, AGGREGATES FOR ALL ESTATE TAX RETURNS AND AVERAGE PER RETURN

1929 Asset Prices: 1922 to 1946

Year	Gross estate		Economic estate	
	Aggregate ($ mill.)	Per return ($ thous.)	Aggregate ($ mill.)	Per return ($ thous.)
	1	2	3	4
1922	3 614	278	3 319	255
1923	3 313	267	3 043	245
1924	4 052	289	3 735	267
1925	4 444	338	4 123	314
1926	3 918	419	3 608	386
1927	3 935	487	3 543	439
1928	4 059	473	3 708	432
1929	4 109	467	3 723	423
1930	4 481	538	4 060	487
1931	3 726	524	3 334	469
1932	3 170	363	2 829	324
1933	3 407	329	3 093	299
1934	3 495	315	2 978	268
1935	3 095	267	2 822	243
1936	3 501	233	3 090	205
1937	3 873	243	3 556	223
1938	3 695	243	3 416	224
1939	3 575	232	3 317	215
1940	3 830	240	3 561	223
1941	3 822	236	3 563	220
1942	3 660	241	3 395	224
1943	3 671	257	3 453	241
1944	4 041	255	3 833	241
1945	N.A.	N.A.	N.A.	N.A.
1946	4 268	204	4 033	193

1929 asset prices. They were obtained by deflating the reported values of the various types of property with the help of the asset price indexes shown in Table E-18.

Deflated aggregate gross estate varies between $3,095 million (1935) and $4,481 million (1930), while deflated aggregate economic estate varies between $2,822 million (1935) and $4,123 million (1925). Compared with the corresponding undeflated series, the fluctuations are smaller, as expected. There is also a difference in the patterns of the deflated and undeflated series. In the deflated series, the major peaks appear in 1925 and 1930 while the undeflated series reached its peak in 1929, with 1928 and 1930 only slightly lower. The deepest trough in the deflated series appears in 1935, as against 1932 in the undeflated series; secondary ones appear in 1926–1927, 1932, 1938–1939, and 1942.

Before seeking the significance of these fluctuations and their timing, we must make allowance for the effect of changes in exemption limits. The drop in the level of values from 1925 to 1926 and the rises from 1932 to 1933 and from 1935 to 1936 must be ascribed either wholly or partially to those changes. The rise

E-17
(Part 1)

COMPOSITION OF DEFLATED GROSS ESTATE, BY TYPE OF PROPERTY, FOR ALL ESTATE TAX RETURNS

1929 Asset Prices: 1922 to 1946

Type of property	Percent of gross estate, inferred year of death					
	1922	1923	1924	1925	1926	1927
	1	2	3	4	5	6
1. Real estate	18.8	17.7	16.7	15.2	15.2	15.7
2. Federal government bonds	3.4	3.9	3.6	3.5	3.0	2.8
3. State and municipal bonds	2.3	2.2	2.3	3.2	2.9	3.4
4. Corporate bonds	5.3	4.9	5.9	5.8	5.9	6.0
5. Bonds, total	11.0	11.0	11.8	12.5	11.8	12.2
6. Corporate stock	50.1	49.8	50.0	51.5	50.5	49.6
7. Cash	—	—	—	—	—	—
8. Mortgages, notes, and cash [1]	8.9	9.2	8.9	8.8	9.1	9.8
9. Insurance [2]	2.1	2.3	2.4	2.0	2.3	2.6
10. Interest in unincorporated business	—	—	—	—	—	—
11. Other intangible property	—	—	—	—	—	—
12. Unclassified by type [3]	9.0	10.0	10.2	10.0	11.2	10.2
13. Intangible property, total	81.2	82.3	83.3	84.8	84.8	84.3
14. Tangible personal property	—	—	—	—	—	—
15. Total gross estate	100.0	100.0	100.0	100.0	100.0	100.0
16. Debts	8.2	8.1	7.8	7.3	7.9	10.0
17. Economic estate	91.8	91.9	92.2	92.8	92.1	90.0

Type of property	Percent of gross estate, inferred year of death					
	1928	1929	1930	1931	1932	1933
	7	8	9	10	11	12
1. Real estate	14.0	13.7	13.2	13.9	15.2	13.7
2. Federal government bonds	2.2	3.0	2.9	2.9	3.8	4.2
3. State and municipal bonds	3.6	4.4	5.0	5.1	5.3	6.0
4. Corporate bonds	6.4	6.9	5.6	5.2	5.6	5.1
5. Bonds, total	12.2	14.3	13.5	13.2	14.7	15.3
6. Corporate stock	51.4	47.7	51.4	50.5	52.3	53.9
7. Cash	—	—	—	—	—	—
8. Mortgages, notes, and cash [1]	9.4	9.6	8.7	9.2	10.2	9.5
9. Insurance [2]	3.1	3.1	3.0	3.6	4.2	4.2
10. Interest in unincorporated business	—	—	—	—	—	—
11. Other intangible property	—	—	—	—	—	—
12. Unclassified by type [3]	9.9	11.6	10.1	9.6	3.4	3.3
13. Intangible property, total	86.0	86.3	86.8	86.1	84.8	86.3
14. Tangible personal property	—	—	—	—	—	—
15. Total gross estate	100.0	100.0	100.0	100.0	100.0	100.0
16. Debts	8.6	9.4	9.4	10.5	10.8	9.2
17. Economic estate	91.4	90.6	90.6	89.5	89.2	90.8

COMPOSITION OF DEFLATED GROSS ESTATE, BY TYPE OF PROPERTY, FOR ALL ESTATE TAX RETURNS

1929 Asset Prices: 1922 to 1946

Type of property	Percent of gross estate, inferred year of death					
	1934	1935	1936	1937	1938	1939
	13	14	15	16	17	18
1. Real estate	13.8	14.6	16.7	15.7	15.6	15.7
2. Federal government bonds	4.6	4.0	4.3	5.2	4.2	4.3
3. State and municipal bonds	4.9	4.0	4.1	4.9	5.5	3.8
4. Corporate bonds	5.2	5.1	4.6	4.2	3.6	3.4
5. Bonds, total	14.7	13.1	13.0	14.3	13.3	11.5
6. Corporate stock	53.5	53.6	49.3	49.6	50.3	51.7
7. Cash	—	—	—	—	—	—
8. Mortgages, notes, and cash [1]	10.1	10.1	11.3	11.1	11.5	11.5
9. Insurance [2]	4.1	4.2	4.5	4.2	4.4	4.6
10. Interest in unincorporated business	—	—	—	—	—	—
11. Other intangible property	—	—	—	—	4.0	4.0
12. Unclassified by type [3]	3.8	4.4	5.1	5.1	—	—
13. Intangible property, total	86.2	85.4	83.3	84.3	83.4	83.2
14. Tangible personal property	—	—	—	—	1.0	1.1
15. Total gross estate	100.0	100.0	100.0	100.0	100.0	100.0
16. Debts	14.8	8.8	11.7	8.2	7.6	7.2
17. Economic estate	85.2	91.2	88.3	91.8	92.4	92.8

Type of property	Percent of gross estate, inferred year of death					
	1940	1941	1942	1943	1944	1946
	19	20	21	22	23	24
1. Real estate	14.8	14.8	13.2	12.7	12.4	12.4
2. Federal government bonds	4.1	3.8	5.0	5.3	6.8	8.3
3. State and municipal bonds	3.9	3.6	3.6	3.2	3.5	2.7
4. Corporate bonds	3.0	2.8	2.7	2.6	2.5	1.9
5. Bonds, total	11.0	10.2	11.3	11.1	12.8	12.9
6. Corporate stock	53.4	53.4	53.7	53.5	52.0	47.3
7. Cash	—	8.3	8.5	8.1	8.1	10.3
8. Mortgages, notes, and cash [1]	12.1	4.0	3.7	3.2	3.0	3.2
9. Insurance [2]	4.4	4.5	5.0	5.6	5.9	6.8
10. Interest in unincorporated business	—	—	1.6	2.6	2.7	3.5
11. Other intangible property	3.2	3.5	2.0	2.3	2.3	2.8
12. Unclassified by type [3]	—	—	—	—	—	—
13. Intangible property, total	84.2	84.1	85.6	86.4	86.8	86.8
14. Tangible personal property	1.0	1.1	1.2	0.9	0.8	0.8
15. Total gross estate	100.0	100.0	100.0	100.0	100.0	100.0
16. Debts	7.0	6.8	7.2	5.9	5.2	5.4
17. Economic estate	93.0	93.2	92.8	94.1	94.8	94.6

from 1942 to 1946 is due, at least in part, to the inclusion of all insurance in the official computation of gross estate, which more than offsets the raising of the exemption limits.

Eliminating these effects, the main pattern of the deflated and undeflated series indicates a rise of the aggregate values represented in the samples from the early to the late twenties, and a return to the lower levels in the thirties and early forties. This broad pattern is also apparent in the development of the values of gross and net estate per return. But while the pattern varies little in the series of aggregate values, there are deviations in the series of average values. A remarkable decline in average value occurs between 1944 and 1946, when a moderate drop in undeflated values is associated with a substantial rise in the deflator.

The deflation of the reported value of estates has been carried out item by item, using various price indices. (See following section.) More specifically, the series for real estate, other bonds, and corporate stock have been deflated. All other components of gross estate have been left unchanged, i.e. they have been treated as equivalents of cash. The relative importance of different types of property varies, of course, as a result of this deflation process, as shown in Table E-17.

Compared with the pattern of current values, shown in Table E-15, the proportion of various types of property in deflated gross estate is lower for all items except corporate stock. The percentages of the latter are higher throughout the period. Obviously, the greater rise before 1929 and the sharper decline in stock prices after 1930, compared with other assets, account for this result. Since the value of gross estate is raised throughout in the transition to constant prices, the ratio of indebtedness is lowered. For the base year, 1929, the percentage shares of the various components are, of course, the same as in Table E-15.

The components of deflated gross estate show both similarities and dissimilarities compared with those of undeflated gross estate. The proportion of corporate stock to deflated gross estate fluctuated between 47 and 54 percent. It reached the highest level in 1933–1935 and in 1942–1943. In 1928–1931 it hovered about the middle of the range. This suggests that the peak reached by the corporate stock segment of undeflated gross estate at the end of the 1920's was due to the high stock prices prevailing at that time.

The share of all bonds fluctuated between 11 and 13 percent from 1922 to 1928, rose during subsequent years, chiefly as a result of the greater proportion of state and municipal bonds, and returned to the levels of the 1920's in the 1940's. The share of federal government bonds fluctuated between 2 and 9 percent, showing a substantial rise in the late years.

Corporate bonds constituted 5 to 7 percent of deflated gross estate between 1922 and 1929. Subsequently their share dropped from year to year and reached 1.9 percent at the end of the period. The general downward trend of their dollar value in the estate tax samples after 1932 is emphasized by the deflation process.

Mortgages, notes, and cash constituted 9 to 10 percent of deflated gross estate up to 1935 and rose gradually to 12 and 13 percent in the last six years of the period. The share of insurance rose fairly regularly from 2 to 7 percent over the entire period.

c. *Asset price indices and an estimated general estate-asset price index*

The following price indices have been used in deflating the components of gross estate:

(1) A Treasury index of U.S. Government bond prices, for federal government bonds;

(2) An index of municipal bond prices from Standard and Poor's Corporation, for state and municipal bonds;

(3) An index of corporate bond prices from the same source, for other bonds;

(4) A price index of house furnishings, part of the cost of living index of the Bureau of Labor Statistics, for tangible personal property.

(5) To deflate real estate values, we have used William M. Hoad's index of single-family house prices, new and old, in Toledo, Ohio.[2] While limited to one city and one type of real estate, this index provides the least unsatisfactory approximation to a real estate price index that is available. It covers the years 1921 to 1938, and has been extended with the help of the index of asking prices for single-family houses in Washington, D.C. (based on newspaper advertisements) prepared by the National Housing Agency.[3]

(6) Corporate stock has been deflated by a composite of the common and preferred stock indices of Standard and Poor's Corporation. The two have been combined by giving the common stock index the weight 84, and the preferred stock index the weight 16, according to the dollar value of common and preferred stock in estates for which returns were filed in 1942—the only year for which a breakdown has been published. Tentatively, these weights were adjusted for individual years to reflect variations in the proportions of common and preferred stock shown in the annual balance sheets of corporations filing returns under the corporation income tax. These weight adjustments were based on the par values of common and preferred stock, which were regarded as measures of the quantity of stock certificates issued by the corporations. The effects of the weight adjustments on the composite index, however, were quite small, and it seemed preferable to disregard this rather tenuous refinement.

All of these indices were put on a 1929 = 100 basis, after having been smoothed by a three-year moving average. The smoothing was applied to bring the indices into better rapport with the annual estate values, which, it will be remembered, reflect cases of death over several years. Information on the dating of estate tax returns filed in 1936 and 1943 suggested that the moving average should have a sequence of weights of 1, 6, and 2.

The desirability of such a smoothing process was indicated by an initial experiment with unsmoothed indexes. This experiment showed a considerable drop in deflated gross estate values from 1928 to 1929, owing to a great decline

[2] Hoad, *Real Estate Prices, A Study of Residential Real Estate in Lucas County, Ohio*, unpublished doctoral dissertation, University of Michigan, 1942.

[3] The index of house prices obtained from these sources is very similar for the years 1939 to 1946 to a housing price index of the United Industrial Associates, in House Document 647, 80th Congress, *High Cost of Housing*.

E-18

DEFLATORS OF ESTATE VALUES, 1922 to 1946 [1]

1929 = 100.0

Year	Federal Government bonds	State and municipal bonds	Corporate bonds	Tangible personal property	Real estate	Corporate stocks	Estate-asset price index
	1	2	3	4	5	6	7
1922	90.0	98.3	94.0	109.4	90.7	43.1	69
1923	91.1	99.5	95.1	112.1	94.4	44.8	71
1924	93.8	100.2	96.7	111.2	96.2	48.1	73
1925	96.0	101.3	98.6	109.0	96.1	55.3	76
1926	98.5	102.6	100.4	106.6	96.5	61.9	80
1927	101.5	102.6	101.9	104.0	99.0	77.7	89
1928	101.3	101.4	101.6	101.7	100.5	89.2	95
1929	100.0	100.0	100.0	100.0	100.0	100.0	100
1930	98.8	101.5	101.4	96.0	91.6	82.9	90
1931	88.3	100.6	101.0	86.7	83.5	56.7	75
1932	85.1	95.0	96.7	77.8	80.0	38.8	64
1933	87.7	95.5	102.4	77.6	81.1	42.7	66
1934	90.6	103.4	110.2	82.9	79.2	48.2	70
1935	93.7	111.7	117.6	85.3	78.2	55.7	74
1936	95.2	116.1	121.6	88.0	76.0	67.6	81
1937	95.5	117.1	122.8	92.8	76.3	66.3	81
1938	97.0	119.9	124.3	92.6	75.0	58.1	77
1939	99.2	123.0	126.9	91.1	75.1	58.5	76
1940	101.6	128.0	129.3	91.8	77.2	56.1	75
1941	104.0	132.4	131.1	98.8	82.2	52.0	74
1942	104.0	131.4	132.2	109.1	88.5	50.3	74
1943	104.7	135.5	133.9	114.7	94.4	58.2	80
1944	105.7	139.7	134.9	123.6	103.7	64.6	85
1945	107.0	143.0	136.1	132.8	122.6	74.8	N.A.
1946	107.2	142.1	136.7	146.8	144.0	80.2	99

[1] Three-year moving averages of the original data, with the current year carrying the weight 6, the preceding year the weight 1, and the following year the weight 2.

Column 1 – U.S. Government bond price index:
1921–1941: *Banking and Monetary Statistics*, p. 475.
1942–1947: Averages of three types of U.S. Government bonds from Standard and Poor's *Statistics, Security Price Index Record*, 1948, pp. 140–144.

Column 2 – High-grade municipal bond price index:
1921–1941: *Banking and Monetary Statistics*, p. 475.
1942–1947: *Federal Reserve Bulletin*, various issues.

Column 3 – 1921–1947: High-grade corporate bond price index, *ibid.*

Column 4 – 1921–1947: Index of house furnishings from *Statistical Abstract of the U.S.*, 1947, p. 293.

Column 5 – Index of prices for single-family houses, new and old:
1921–1938: Hoad, *Real Estate Prices.*
1939–1947: Index of asking prices for single-family houses in Washington, D.C. (Based on newspaper advertisements.) Compiled by the National Housing Agency and its successor, the Housing and Home Finance Agency.

Column 6 – 1921–1947: Common stock price index from Standard and Poor's *Statistics, Security Price Index Record*, 1948, p. 84.

Column 7 – 1921–1947: Table E-14, col. 2 divided by Table E-16, col. 1.

in stock values. From 1929 to 1930, the experimental series of deflated stock and total estate values rose considerably. These movements were contrary to common knowledge and suggested that the timing of the asset price series was too narrow for estate values, which are dated according to the inferred year of death but pertain, of course, to deaths occurring over several years. This discrepancy was most noticeable in the case of stocks in 1929, but its presence was suspected for all asset types throughout the period. Therefore, all of the price index series were smoothed by moving averages. The numerical values of the several smoothed indices used as deflators appear in Table E-18. The last column of that table shows a tentative index of estate-asset prices, derived from the deflated and undeflated series of gross estate by dividing the second by the first. This index rose by about 30 points from 1922 to 1929, dropped below the 1922 level in 1932, rose steadily to 1936–1937, and then dropped gradually to 1941. After 1942 it rose strongly and nearly reached its 1929 peak level again in 1946.

2. Level of Wealth of Decedents and Distribution of Returns by Size of Net Estate, 1922 to 1946

Information on the distribution of all estate tax returns by size of net estate has been brought together for the various years in Table E-19. Differences in annual tabulations have been reduced to a minimum so that a series of almost constant net-estate-before-specific-exemption classes could be formed. Still, there remains a good deal of variation in the detail given for several years which could not be eliminated except by arbitrary interpolation of class limits.

The gap in the sequence of years between 1933 and 1937 is due to a lapse in the tabulations of *Statistics of Income*, which in turn is explained by the reorganization of the estate tax procedure in 1933, i.e. the introduction of the "additinal tax." Existing tabulations of returns by size of net estate cover only part of the returns filed for those years.

Once more the effect of the changes in the exemption limit is clearly visible in the percentage distribution of returns. From 1925 to 1926, the entire distribution shifted upward. Then in 1932, it shifted downward. After 1942, the raising of exemptions and the new treatment of insurance caused another upward shift. As a result of these shifts, the evolution of the percentage distribution of all returns over the various years holds little interest from the point of view of economic development. It is shown here chiefly as a matter of general information.

The information as to distribution by size, however, can be used to assess the trend of the wealth of decedents, and also to throw some light on the development of the true size distribution of returns. The value of net estate has been established for the 500th, the 2,000th, and the 3,500th largest estate tax return in each of the twenty-one years for which size distributions of all returns are available. In each of these years, such returns can be found by cumulation from the upper end of the distribution and by interpolation within one of the positive

DISTRIBUTION OF ESTATE TAX RETURNS BY SIZE OF NET ESTATE

1922 to 1946

Percent

Net estate classes ($ thous.)	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931
No net estate	26.4	24.7	24.1	20.3	25.5	24.3	21.2	20.1	23.6	28.2
Under 50 [1]										
50– 60	40.7	41.6	40.6	40.4	28.8	27.0	26.7	25.7	25.9	26.3
60– 80										
80– 100										
100– 150	18.4	19.0	13.3	14.0	13.2	12.7	13.8	14.1	13.3	12.6
150– 200 [2]			6.1	7.0						
200– 300 [2]	5.6	5.9	6.5	7.1	13.5	13.2	13.2	14.0	13.2	12.6
300– 400 [2]	4.3	4.5	4.5	5.1	9.0	10.9	11.6	11.4	10.9	9.9
400– 500 [2]										
500–1,000 [3]	3.1	2.9	3.2	4.0	6.8	7.5	9.0	9.2	7.9	7.0
1,000–2,000 [3]	1.0	1.0	1.2	1.4	2.0	2.5	2.7	3.3	3.2	2.1
2,000–5,000 [3]	0.4	0.3	0.4	0.6	0.9	1.4	1.3	1.7	1.4	0.9
5,000 and over [3]	0.1	0.1	0.1	0.1	0.3	0.5	0.5	0.5	0.6	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Net estate classes ($ thous.)	1932	1933	1937	1938	1939	1940	1941	1942	1943	1944	1946
No net estate	56.2	61.9	17.0	16.6	16.4	16.6	16.8	16.2	15.0	12.7	12.8
Under 50 [1]			16.7	18.0	18.9	18.6	18.5	14.0	1.4	0.3	0.1
50– 60	17.0	15.1	12.2	12.4	12.4	12.7	13.2	9.7	0.9	0.2	0.1
60– 80			15.4	15.3	15.4	15.2	15.4	18.8	25.9	26.1	26.9
80– 100			8.8	8.8	8.8	8.9	8.7	10.5	15.1	15.8	16.0
100– 150	8.3	6.9	11.5	11.2	10.5	10.9	10.7	12.5	17.6	19.3	18.8
150– 200 [2]	7.9	6.6	5.5	5.3	5.5	5.2	4.9	5.5	8.0	8.4	8.1
200– 300 [2]	5.4	4.3	5.3	4.9	5.0	5.0	4.7	5.2	7.0	7.2	7.5
300– 400 [2]			2.3	2.3	2.3	2.3	2.1	2.6	3.2	3.2	3.3
400– 500 [2]	3.6	3.5	1.3	1.4	1.3	1.2	1.3	1.2	1.6	1.8	1.7
500–1,000 [3]			2.4	2.5	2.1	2.1	2.4	2.5	2.7	3.3	3.2
1,000–2,000 [3]	1.0	1.1	1.1	0.9	0.9	0.8	0.9	1.0	1.1	1.0	1.0
2,000–5,000 [3]	0.5	0.5	0.4	0.3	0.4	0.4	0.3	0.2	0.4	0.5	0.4
5,000 and over [3]	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] From 1937 on, this class reads: 40–50.

[2] From 1932 to 1933, these classes read:
150– 250
250– 450
450–1,050, and from there on as from 1922 through 1925.

[3] From 1922 through 1925, these classes read:
500–1,050
1,050–2,050
2,050–5,050
5,050 and over;
from 1926 through 1931 they read:
500–1,100
1,100–2,100
2,100–5,100
5,100 and over.

net estate classes. [4] The values of these selected returns, obtained by interpolation, are shown in Table E-20. [5]

The amount of net estate before specific exemption shown by the 500th largest return in the sample varied between about $415,000 in 1932 and $1,050,000 in 1929. The 2,000th and the 3,500th largest returns show minima in 1932 of about $121,000 and $57,000, respectively, and maxima of about $347,000 and $200,000 in 1929. A fairly steady upward movement is apparent from 1922 to 1929, followed by a rapid decline to 1932. After the break in the series, a secondary peak appears in 1937, then a decline to 1939, and thereafter a slow rise to 1941 followed by a more rapid one from 1943 to 1946.

In 1941 and 1942 each of the three series shows practically the same value as in 1922, the net rise from 1922 to 1929 being offset by the net decline from 1929 to 1942. The fluctuations of the three series, however, are of different amplitude. The 500th largest return roughly doubles in value from 1922 to 1929, the 3,500th increases by about 50 percent, and the 2,000th shows an intermediate rate of increase. On that long upswing in the business cycle, the higher ranking returns show greater relative increases than the lower ones. From 1929 to 1932, on the other hand, the lower ranking returns fall faster and by more than the higher ranking ones, and from 1932 to 1937 their rise is more vigorous. From 1937 to 1942, the fluctuations of the three index series are very similar. From 1942 to 1946, however, the lower ranking returns rise faster; the value of the 3,500th in 1946 exceeds the 1929 level, while that of the 500th still is 25 percent below the 1929 level. In all of the years exept 1925 and 1930, the index of the 2,000th return falls in between those of the 500th and 3,500th returns, usually staying closer to the former than to the latter.

In the lower part of Table E-20 the values of the 500th, 2,000th, and 3,500th returns have been deflated with the help of the over-all index of asset prices shown in Table E-18 in order to eliminate, even if only in a rough-and-tumble fashion, the influence of asset price fluctuations on the size of the estate. The deflated values naturally show smaller fluctuations during the period than the undeflated values. Even after deflation, however, the upward trend in the size of estates between 1922 and 1929, the sharp decline between 1929 and 1933, and the recovery between 1939 and 1946 persist. The relative position of the 500th, 2,000th, and 3,500th returns, as indicated by the value index on the 1929 basis, naturally is the same after deflation as before since the identical deflator is applied to all three series. However, even if a deflator is used which takes account of the differences in the composition of the 500th, 2,000th, and 3,500th returns by types of

[4] Selection of a return below the 3,820th largest one would have led into a nontaxable class in 1932.

[5] Graphic interpolation along straight lines drawn between observations plotted on semi-logarithmic paper. In interpolating for the 3,500th return in 1931, 1932, and 1933, we assumed that estate values in the lowest class were distributed fairly symmetrically between the amount of specific exemption and the upper limit of the class, that is, between $100,000 and $150,000 in 1932, and between $50,000 and $100,000 in 1933 and 1934.

E-20 INTERPOLATED VALUES OF NET ESTATE OF THE 500TH, 2,000TH, AND 3,500TH LARGEST ESTATE TAX RETURNS

1922 to 1946

Year	Value of net estate ($ thous.)			Value index (1929 = 100)		
	500th return	2,000th return	3,500th return	500th return	2,000th return	3,500th return
	1	2	3	4	5	6
			A. Current values			
1922	570	193	130	54	56	65
1923	540	190	122	51	55	61
1924	660	223	137	63	64	68
1925	747	239	145	71	69	72
1926	800	280	180	76	81	90
1927	850	285	170	81	82	85
1928	920	324	187	88	93	93
1929	1 050	347	200	100	100	100
1930	980	300	180	93	86	90
1931	675	235	140	64	68	70
1932	415	121	57	40	35	28
1933	480	123	661	46	35	30
—	—	—	—	—	—	—
1937	610	207	132	58	60	66
1938	566	190	122	54	55	61
1939	540	190	122	51	55	61
1940	550	193	125	52	56	62
1941	562	193	125	54	56	63
1942	552	195	127	53	56	64
1943	575	227	147	55	65	74
1944	680	258	170	65	74	85
1945	—	—	—	—	—	—
1946	783	304	206	75	88	103
			B. Deflated values (1929 asset price basis)			
1922	826	280	188	79	81	94
1923	761	268	172	72	77	86
1924	904	305	188	86	88	94
1925	983	314	191	94	90	96
1926	1 000	350	225	95	101	112
1927	955	320	191	91	92	96
1928	968	341	197	92	98	98
1929	1 050	347	200	100	100	100
1930	1 089	333	200	104	96	100
1931	900	313	187	86	90	94
1932	648	189	89	62	54	44
1933	727	186	92	69	54	46
—	—	—	—	—	—	—
1937	753	256	163	72	74	82
1938	735	247	158	70	71	79
1939	711	250	161	68	72	80
1940	733	257	167	70	74	84
1941	759	261	169	72	75	84
1942	746	264	172	71	76	86
1943	728	287	186	70	82	94
1944	800	304	200	76	88	100
1945	—	—	—	—	—	—
1946	791	307	208	75	88	104

assets, the relative position of the three series seems to be generally unaffected.[6]

The different rates of change in the indices of high and low ranking returns suggest changes in the degree of inequality of estate values over the years, at least within the range of the upper 3,500 returns. It appears that the degree of inequality increased during the first ten years, on the upgrade and on the downgrade of the business cycle, and that it decreased during the second fifteen years, following the Great Depression, especially after 1942. (See Chapter IV, Section 1-c.)

3. Size and Composition of Estates in Selected Years

The composition of estates typically varies with the size of the estates. The nature of this variation is discussed in the following sections.

a. *Composition by size of net estate, 1922, 1929, 1939, 1944, and 1946*

The composition of estates in different net estate classes is shown in Tables E-21 to E-25 for the years 1922, 1929, 1939, 1944, and 1946. In addition to the percentages for the various types of assets, these tables show the amounts of gross estate per return on which the percentages have been based.

In 1922 (Table E-21) the percentages of real estate, of mortgages, notes, and cash, and of insurance decline fairly regularly with increasing estate size. On the other hand, the percentages of federal government bonds, state and municipal bonds, corporate stock, and intangible property as a whole rise with increasing size of estate. The percentage of corporate bonds increases from the lower to the middle estate classes and drops in the highest classes; that of unclassified property varies irregularly. Finally, the rate of indebtedness decreases as the size of net estate increases.

This pattern reappears with considerable regularity in the tables for 1929, 1939, 1944, and 1946. The relative importance of real estate, of cash, mortgages, and notes, of insurance, of interest in unincorporated business (in 1944 and 1946), and of debts owed by the estate decreases with rising net estate. The relative importance of federal government bonds increases with rising estate size in all years, though somewhat irregularly; that of state and municipal bonds and of corporate stock increases regularly. The percentage of corporate bonds consistently shows the "rise and fall" pattern with a maximum in the middle net-estate brackets. Unclassified and other intangible property varies irregularly with the size of net estate.

The regularity of this pattern indicates a notable constancy in the typical composition of estates of similar dollar value. Compared with a small net estate, a large one shows *relatively* less real estate, mortgages, notes, cash, insurance, interest in unincorporated business, and indebtedness.[7] It shows *relatively* more stocks and government bonds, particularly state and municipal bonds, but little more, or even less, corporate bonds.

[6] Such a specific deflator was calculated and applied to the years 1922, 1939, and 1944.

[7] See Section b of this chapter on the effect of classification on size of indebtedness.

E-21

COMPOSITION OF GROSS ESTATE, BY SIZE OF NET ESTATE

Current Values: 1922

	Grand total	Non-taxable	Net estate before specific exemption ($ thous.)							
			Under 100	100–200	200–300	300–500	500–1,000	1,000–2,000	2,000–5,000	5,000 and over
	1	2	3	4	5	6	7	8	9	10
Number of returns	13 013	3 435	5 302	2 389	725	561	404	131	55	11
Gross estate per return ($ thous.)	192	78	87	173	303	470	827	1 734	3 616	10 195
			Percentage distribution							
Real estate	24.7	37.8	36.1	27.9	23.6	20.1	16.7	14.0	14.0	11.8
Intangible property, total	75.3	62.2	63.9	72.1	76.4	79.9	83.3	86.0	86.0	88.2
Bonds, total	14.9	8.0	10.7	12.9	15.6	16.1	18.6	18.7	19.2	26.7
U.S. Government bonds	4.4	2.7	4.1	4.5	4.6	4.6	4.7	5.1	3.8	8.2
State and municipal bonds	3.3	1.7	1.1	1.4	1.7	3.0	4.6	5.0	7.9	12.0
Corporate bonds	7.2	3.6	5.5	7.0	9.3	8.5	9.3	8.6	7.5	6.5
Corporate stock	31.3	15.6	18.5	25.4	32.0	38.1	40.6	46.1	48.6	36.7
Mortgages, notes, and cash	12.9	13.1	19.4	16.7	14.2	10.8	8.6	7.9	8.4	5.3
Insurance	3.1	6.1	3.4	3.9	2.8	3.3	1.9	2.6	0.9	0.4
Unclassified	13.1	19.4	11.9	13.2	11.8	11.6	13.6	10.7	8.9	19.1
Gross estate	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Debts of decedents	11.8	34.0	10.0	10.1	9.0	9.7	8.2	8.7	8.2	7.3
Economic estate	88.2	66.0	90.0	89.9	91.0	90.3	91.8	91.3	91.8	92.0

COMPOSITION OF GROSS ESTATE, BY SIZE OF NET ESTATE

Current Values: 1929

	Grand total	Non-taxable	Net estate before specific exemption ($ thous.)							
			Under 150	150–200	200–300	300–500	500–1,000	1,000–2,000	2,000–5,000	5,000 and over
	1	2	3	4	5	6	7	8	9	10
Number of returns	8 798	1 770	2 258	1 236	1 235	1 006	814	288	149	42
Gross estate per return ($ thous.)	467	170	158	220	311	478	899	1 819	3 630	12 308
Percentage distribution										
Real estate	13.7	26.1	23.0	20.2	18.3	15.1	12.1	10.0	7.3	4.8
Intangible property, total	86.3	73.9	77.0	79.8	81.7	84.9	87.9	90.0	92.7	95.2
Bonds, total	14.2	8.3	11.5	12.8	14.0	14.8	13.4	12.9	16.9	19.4
U.S. Government bonds	3.0	1.6	2.1	2.5	2.5	2.7	2.3	2.4	4.3	5.3
State and municipal bonds	4.4	1.7	1.2	1.7	2.4	3.0	3.6	4.6	7.7	9.7
Corporate bonds	6.8	5.0	8.2	8.6	9.1	9.1	7.5	5.9	4.9	4.4
Corporate stock	47.7	27.0	32.0	36.2	38.3	43.1	51.4	54.5	58.5	64.6
Mortgages, notes, and cash	9.7	11.3	17.8	15.1	13.7	11.2	9.5	6.3	5.2	3.8
Insurance	3.1	7.2	4.8	4.8	4.3	3.6	3.0	2.4	1.3	0.4
Unclassified	11.6	20.1	10.9	10.9	11.4	12.2	10.6	13.9	10.8	7.0
Gross estate	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Debts of decedents	9.4	30.7	9.9	9.9	8.1	9.1	9.0	7.1	5.4	4.6
Economic estate	90.6	69.3	90.1	90.1	91.9	90.9	91.0	92.9	94.6	95.4

E-23

COMPOSITION OF GROSS ESTATE, BY SIZE OF NET ESTATE
Current Values: 1939

	Grand total	Non-taxable	Net estate before specific exemption ($ thous.)							
			Under 100	100–200	200–300	300–500	500–1,000	1,000–2,000	2,000–5,000	5,000 and over
	1	2	3	4	5	6	7	8	9	10
Number of returns	15 380	2 528	8 522	2 460	772	561	321	139	64	13
Gross estate per return ($ thous.)	177	79	80	181	313	476	857	1 677	3 639	11 095
	Percentage distribution									
Real estate	15.4	34.0	24.0	16.4	13.2	11.2	8.9	6.1	5.1	3.0
Tangible personal property	1.3	2.3	1.5	1.3	0.9	1.1	1.2	0.8	1.2	0.5
Intangible property, total	83.3	63.7	74.5	82.3	85.9	87.7	89.9	93.1	93.7	96.5
Bonds, total	17.4	8.0	12.0	15.3	16.7	19.1	21.3	24.7	26.6	26.3
U.S. Government bonds	5.6	2.0	4.8	5.3	5.3	5.6	5.7	5.7	7.5	10.7
State and municipal bonds	6.1	1.1	1.8	3.1	3.6	6.2	8.9	12.5	16.5	14.5
Corporate bonds	5.7	4.1	5.4	6.9	7.8	7.3	6.7	6.5	2.6	1.1
Corporate stock	39.7	23.6	27.4	35.5	42.7	46.7	50.0	52.6	54.7	49.4
Mortgages, notes, and cash	15.0	15.1	22.0	18.4	15.7	11.9	10.8	9.0	8.0	4.6
Insurance	6.0	11.0	8.4	8.4	6.2	5.2	3.3	2.6	1.5	0.1
Other intangibles	5.2	6.0	4.7	4.7	4.6	4.8	4.5	4.2	2.9	16.1
Gross estate	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Debts of decedents	9.5	53.3	7.8	6.4	7.4	6.1	4.7	3.5	5.1	2.3
Economic estate	90.5	46.7	92.2	93.6	92.6	94.0	95.3	96.5	94.9	97.7

COMPOSITION OF GROSS ESTATE, BY SIZE OF NET ESTATE

Current Values: 1944

	Grand total	Non-taxable	Net estate before specific exemption ($ thous.)							
			Under 100	100–200	200–300	300–500	500–1,000	1,000–2,000	2,000–5,000	5,000 and over
	1	2	3	4	5	6	7	8	9	10
Number of returns	15 878	2 018	6 735	4 396	1 149	793	525	161	73	28
Gross estate per return ($ thous.)	216	94	90	164	293	454	812	1 643	3 543	9 644
			Percentage distribution							
Real estate	15.2	29.6	26.3	18.9	14.2	11.7	9.2	6.8	3.3	4.7
Tangible personal property	1.2	1.5	1.4	1.2	1.2	1.0	0.9	1.2	1.3	1.1
Intangible property, total	83.6	68.9	72.3	79.9	84.6	87.3	89.9	92.0	95.4	94.2
Bonds, total	18.1	12.8	11.2	13.6	15.6	17.6	19.6	26.4	22.3	38.6
U.S. Government bonds	8.4	7.3	7.1	7.6	8.4	8.3	9.5	10.0	7.0	12.7
State and municipal bonds	5.7	2.0	0.9	1.6	2.3	4.0	5.4	12.8	13.3	22.7
Corporate bonds	4.0	3.5	3.2	4.4	4.9	5.3	4.7	3.6	2.0	3.2
Corporate stock	39.5	23.5	25.2	33.2	40.4	46.2	50.1	47.7	60.5	44.7
Cash	9.6	12.6	13.4	11.4	9.1	8.5	7.4	7.8	6.2	4.8
Mortgages and notes	3.6	4.3	4.9	4.5	3.8	3.5	2.6	3.1	1.5	1.7
Insurance	6.9	8.2	10.2	10.1	8.7	6.4	4.4	2.9	2.2	1.3
Interest in unincorporated business	3.2	4.3	4.7	4.3	4.1	2.7	2.4	1.5	0.6	1.0
Other intangibles	2.7	3.2	2.7	2.8	2.9	2.4	3.4	2.6	2.1	2.1
Gross estate	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Debts of decedents	6.1	22.9	6.3	5.5	5.6	5.0	4.5	3.6	6.0	2.1
Economic estate	93.9	77.1	93.7	94.5	94.4	95.0	95.5	96.4	94.0	97.9

E-25

COMPOSITION OF GROSS ESTATE, BY SIZE OF NET ESTATE

Current Values: 1946

	Grand total	Non-taxable	Net estate before specific exemption ($ thous.)							
			Under 100	100–200	200–300	300–500	500–1,000	1,000–2,000	2,000–5,000	5,000– and over
	1	2	3	4	5	6	7	8	9	10
Number of returns	20 899	2 667	8 954	5 609	1 556	1 030	669	221	84	19
Gross estate per return ($ thous.)	202.1	86.6	90.5	161.6	287.1	452.1	794.0	1 507.9	3 396.2	10 786.3
			Percentage distribution							
Real estate	18.1	28.9	28.9	21.8	17.6	13.8	11.3	10.1	6.7	3.3
Tangible personal property	1.2	1.7	1.4	1.2	1.1	1.1	1.3	1.1	0.7	0.7
Intangible property, total	80.7	69.4	69.7	77.0	81.3	85.1	87.4	88.8	92.6	96.0
Bonds, total	15.5	11.7	10.6	12.5	14.1	15.9	17.0	20.7	27.0	26.4
U.S. Government bonds	9.0	8.3	8.2	8.9	9.3	9.3	9.8	9.4	10.7	6.7
State and municipal bonds	3.9	0.8	0.6	1.0	1.4	3.2	4.1	8.4	14.6	18.0
Corporate bonds	2.6	2.6	1.8	2.6	3.4	3.4	3.1	2.9	1.7	1.7
Corporate stock	38.4	25.0	24.0	31.9	38.2	44.5	49.6	50.1	52.5	58.9
Cash	10.4	13.6	14.1	12.1	9.7	9.0	8.7	7.3	6.0	4.9
Mortgages and notes	3.2	3.6	4.2	3.7	3.9	3.2	2.5	2.4	1.8	1.2
Insurance	6.8	7.8	9.2	9.5	8.2	6.3	4.6	3.3	2.3	0.3
Interest in unincorporated business	3.6	5.0	5.0	4.6	4.2	3.2	2.4	1.7	1.0	0.3
Other intangibles	2.8	2.7	2.6	2.7	3.0	3.0	2.6	3.3	2.0	4.0
Gross estate	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Debts of decedents	5.5	18.5	5.2	5.3	5.7	5.4	4.4	3.7	4.0	0.3
Economic estate	94.5	81.5	94.8	94.7	94.3	94.6	95.6	96.3	96.0	99.7

These data give additional emphasis to certain observations made in the first section of this chapter, where it was pointed out that the percentage of real estate in gross estate declined from the early twenties to later years. When the data in Table E-21 are compared with those in Tables E-22 to E-25, it is seen that this holds true for all levels of wealth at least up to 1944. Between 1944 and 1946 the percentage of real estate rises again in nearly all classes. Likewise, the higher relative importance of government bonds—in particular, state and municipal bonds—in aggregate gross estate in the years after the Great Depression is substantiated by a comparison within corresponding net estate classes. The percentages of gross estate in corporate stock in 1922 are low compared with those in subsequent years; those of 1929 are mostly, but not consistently, higher than those of 1939, 1944, and 1946.

It will also be seen that the class of nontaxable returns, comprising estates below exemption limits, usually fits into the pattern described above. The average amount of gross estate of returns in this class is close to, and sometimes higher than, that of the lowest class with net estate. But the rate of indebtedness in the nontaxable class is always much higher than that of the first "positive" class.

The findings of this section may be compared with data developed for 1930 by Daniels and Campion in their study of the distribution of wealth in Great Britain, which are shown in Table E-26. As in the United States, the percentages of government securities and stocks increased with the size of the estate of the decedent, while the percentages of cash, insurance, household goods, and house property declined.

b. *Composition by size of gross estate, 1939 and 1944*

The proportion of various types of assets making up estates is shown by size of gross estate for 1939 and 1944 in Tables E-27 and E-28. Because of the higher exemption limit in 1944, the lowest gross estate class in that year shows fewer returns than that in 1939. (The 1944 returns, however, cover some deaths occurring before 1942.) In all the other classes, the 1944 returns are more numerous than the 1939 returns. The amounts of gross estate per return show a remarkably high degree of coincidence in the corresponding classes in 1939 and 1944.

In both 1939 and 1944, the composition of estates by type of asset varies with the size of gross estate in much the same manner as with size of net estate. The percentages of real estate and of mortgages, notes, and cash decline with increasing size of gross estate. Those of federal government bonds, state and municipal bonds, corporate stock, interest in unincorporated business (1944), and intangible property as a whole increase. No increase in the proportion of U.S. Government bonds is noticeable in the estate classes below $200,000, their slow increase beginning at about that level. The percentage shares of tangible property and of other intangible property are fairly constant. Once more, the share of corporate bonds shows a tendency to rise up to the middle brackets and then to decline towards the highest brackets.

In the case of insurance, a declining percentage with rising gross estate is noticeable from $150,000 upwards; in the brackets below that amount, the per-

E-26

DISTRIBUTION OF ASSETS HELD BY PERSONS IN GREAT BRITAIN DECEASED IN 1930

Percentages of total gross assets in each group

Type of assets	Gross assets (£)						
	Total (over 100)	100–1,000	1,000–5,000	5,000–10,000	10,000–25,000	25,000–100,000	Over 100,000
	1	2	3	4	5	6	7
British Government securities issued since 1914	15.4	11.0	16.6	14.7	14.4	14.8	17.0
Other government and municipal securities [1]	7.6	1.3	4.9	7.2	9.5	10.0	7.8
Stocks and shares	31.5	5.6	15.6	25.8	33.8	39.3	41.0
Cash (including savings bank deposits)	7.3	19.9	11.2	7.6	6.1	4.8	4.4
Money lent on mortgages, bonds, and other securities	8.7	9.5	11.7	11.3	10.3	8.5	5.5
Trade assets	3.2	3.7	3.7	4.0	3.2	2.4	3.3
Insurance policies	3.9	9.8	5.7	4.0	3.1	2.4	3.1
Household goods	2.0	4.5	2.3	2.0	1.9	1.6	1.4
Land, ground rents, and mineral rights	4.1	2.3	2.8	3.2	3.1	4.4	5.8
House property and business premises	13.4	30.1	23.0	17.5	13.0	10.0	5.9
Other property	2.9	2.2	2.5	2.8	1.6	1.8	4.9
Total gross assets	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] Includes British Government securities issued up to 1914 inclusive, British municipal securities and dominion and foreign securities (government and municipal).

Source: Daniels and Campion, *The Distribution of National Capital*, p. 61.

centage of insurance tends to increase. The greater detail of this tabulation thus brings out a fact that was hidden by the lumping together of low bracket estates in the "under $100,000" class in the tabulations by net estate.

The proportion of indebtedness, however, shows an entirely different picture from the net estate tabulations. It remains fairly constant over the various gross estate classes. This indicates that the decline of the debt percentage with rising net estate, found in the previous section, is merely a technical implication of the classification by net estate. It is caused by the obvious negative relationship between debts and net estate.

COMPOSITION OF GROSS ESTATE, BY TYPE OF PROPERTY

Current Values: 1939

	Gross estate classes ($ thous.)														
	Grand total	40 under 60	60 under 70	70 under 80	80 under 90	90 under 100	100 under 120	120 under 150	150 under 200	200 under 300	300 under 500	500 under 1000	1000 under 2000	2000 under 5000	5000 and over
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number of returns	15 328	4 275	1 625	1 286	1 039	833	1 250	1 172	1 138	1 138	787	472	212	80	21
Gross estate per return ($ thous.)	177	50	65	75	85	95	109	134	172	242	380	683	1 363	3 017	10 433
	Percentage distribution														
Real estate	15.4	29.5	27.3	26.1	24.1	23.2	21.5	21.2	18.0	16.5	13.8	10.8	7.4	6.7	2.8
Tangible personal property	1.3	1.8	1.7	1.6	1.5	1.7	1.6	1.3	1.2	1.3	1.0	1.1	1.2	1.2	0.7
Intangible property, total	83.3	68.7	71.0	72.3	74.4	75.1	76.9	77.5	80.8	82.2	85.2	88.1	91.4	92.1	96.5
Bonds, total	17.4	11.7	11.6	10.9	11.8	12.0	12.2	11.7	13.9	14.5	18.0	18.7	25.4	27.4	22.6
U.S. Government bonds	5.6	5.0	4.7	3.9	4.2	5.2	4.5	4.1	4.9	4.5	6.2	5.0	6.8	7.1	8.0
State and municipal bonds	6.1	1.4	1.8	1.5	1.7	2.0	1.8	1.9	2.5	2.8	4.9	6.9	12.8	16.4	11.7
Corporate bonds	5.7	5.3	5.1	5.5	5.9	4.8	5.9	5.7	6.5	7.2	6.9	6.8	5.8	3.9	2.9
Stocks	39.7	22.2	26.3	28.5	27.3	25.9	28.8	31.2	34.2	37.4	41.2	49.3	48.9	51.2	58.1
Mortgages, notes, and cash	15.0	28.4	23.4	22.2	20.2	19.7	19.3	19.0	16.9	16.2	13.7	10.5	10.4	7.9	3.9
Insurance	6.0	2.6	5.3	6.2	10.4	12.8	11.4	10.8	10.8	9.3	7.2	4.1	3.1	1.9	0.1
Other intangibles	5.2	3.8	4.4	4.6	4.7	4.7	5.2	4.8	5.0	4.8	5.1	5.5	3.6	3.7	11.8
Gross estate	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Debts of decedents	9.4	7.4	9.5	10.6	11.2	10.9	10.2	11.3	11.1	9.7	9.6	9.0	4.8	11.7	9.9
Economic estate	90.6	92.6	90.5	89.4	88.8	89.1	89.8	88.7	88.9	90.3	90.4	91.0	95.2	88.3	90.1

COMPOSITION OF GROSS ESTATE, BY TYPE OF PROPERTY

Current Values: 1944

	Gross estate classes ($ thous.)														
	Grand total	40 under 60	60 under 70	70 under 80	80 under 90	90 under 100	100 under 120	120 under 150	150 under 200	200 under 300	300 under 500	500 under 1000	1000 under 2000	2000 under 5000	5000 and over
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Number of returns	15 878	90	2 097	1 964	1 564	1 219	1 928	1 824	1 659	1 457	1 025	671	243	101	36
Gross estate per return ($ thous.)	216	50	65	75	85	95	109	134	172	242	381	683	1 342	2 854	9 525
Percentage distribution															
Real estate	15.2	36.6	29.1	27.5	27.4	25.8	23.6	22.5	18.8	17.7	13.3	10.8	7.8	3.8	4.0
Tangible personal property	1.2	1.2	1.5	1.5	1.3	1.3	1.4	1.2	1.2	1.2	1.1	1.0	1.2	1.2	1.1
Intangible property, total	83.6	62.2	69.4	71.0	71.3	72.9	75.0	76.3	80.0	81.1	85.6	88.2	91.0	95.0	94.9
Bonds, total	18.1	5.9	11.0	11.1	10.9	11.4	11.6	12.4	13.5	14.9	16.5	18.9	23.2	24.3	35.0
U.S. Government bonds	8.4	2.5	7.4	7.3	7.0	7.6	7.0	7.7	7.4	8.3	7.9	9.6	9.6	7.2	11.6
State and municipal bonds	5.7	—	0.6	0.7	0.8	0.8	0.9	1.0	1.4	1.7	3.4	4.4	9.6	14.5	20.6
Corporate bonds	4.0	3.4	3.0	3.1	3.1	3.0	3.7	3.7	4.7	4.9	5.2	4.9	4.0	2.6	2.8
Stocks	39.5	17.0	21.6	24.4	23.7	25.1	27.1	29.0	33.2	36.3	42.9	47.6	50.3	55.1	50.1
Mortgages and notes	3.6	8.3	5.2	4.6	4.8	5.1	5.1	4.3	4.4	4.1	3.9	2.9	2.5	2.0	1.6
Cash	9.6	16.6	15.8	14.1	14.0	13.6	13.1	11.7	11.4	9.7	8.9	7.9	6.9	7.5	4.3
Insurance	6.9	2.9	8.9	10.3	10.7	10.4	10.9	11.3	10.5	8.7	7.3	4.9	3.5	2.3	1.2
Other intangibles	2.7	5.4	2.4	2.0	2.4	2.5	2.9	2.8	2.5	3.1	2.8	3.0	3.0	3.1	1.9
Interest in unincorporated business	3.2	6.1	4.5	4.5	4.8	4.8	4.3	4.8	4.5	4.3	3.3	3.0	1.6	0.7	0.8
Gross estate	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Debts of decedents	6.1	18.1	4.8	5.5	6.6	5.9	6.6	6.9	6.4	7.1	6.5	6.3	7.0	3.5	4.6
Economic estate	93.9	81.9	95.2	94.5	93.4	94.1	93.4	93.1	93.6	92.9	93.5	93.7	93.0	96.5	95.4

AVERAGE VALUE OF NET ESTATE BY AGE
Selected Years: 1922 to 1946

Age	1922		1941		1944		1946	
	Number of returns	Average net estate ($ thous.)	Number of returns	Average net estate ($ thous.)	Number of returns	Average net estate ($ thous.)	Number of returns	Average net estate ($ thous.)
	1	2	3	4	5	6	7	8
20 under 30	38	109	24	115	101	133	71	162
30 under 40	217	125	118	121	197	132	191	124
40 under 50	731	128	581	96	699	139	955	135
50 under 60	1 813	152	1 724	112	2 014	153	2 949	145
60 under 70	3 230	153	3 742	137	3 666	187	4 916	163
70 under 80	3 514	178	5 374	140	4 838	188	6 153	182
80 and over	2 115	171	3 885	135	3 666	189	4 740	190
All age groups	11 658	161	15 448	133	15 181	180	19 975	171
Age not stated	1 355	133	767	89	717	117	924	130
All returns	13 013	158	16 215	131	15 898	178	20 899	169

4. Size of Net Estate and Age of Decedents

The data on net estate by age of decedents, available for several years, indicate a general positive correlation between the two variables. Several aspects of this correlation will now be examined.

a. *Average value of net estate by age*

Table E-29 shows that the average amount of net estate tends to increase from the lower to the higher age groups in 1922, 1941, 1944, and 1946. The average amount for all age groups appears near that of the age of seventy in 1922, near sixty in 1941 and 1944, and again closer to seventy in 1946. Returns without indication of the age of the decedent typically show an amount of net estate below the general average.

The progression of average net estate with age is characterized by two features:

(1) The progression is not regular. The pattern varies in 1941, with the age groups of 40 to 60 showing smaller average net estates than the two younger groups. In 1946 the average net estate of age groups 30 to 60 is less than that of the group from 20 to 30.

(2) The progression is weakened, or turns into regression, in the most advanced age groups. In 1922 and 1941, average net estate declines between the age groups 70 to 80 and 80 and over. In 1944, the progression is small but persistent from the 60 to 70 group upwards;[8] in 1946, however, it is quite pronounced.

[8] Even with a finer breakdown, the progression for 1944 is found to continue up to the top age group distinguished in the basic tabulations, i.e. 85 years and over.

E-30

AVERAGE AGE OF DECEDENTS WITH TAXABLE ESTATE, BY SIZE OF NET ESTATE
1922 and 1944

Net estate class ($ thous.)	1922		1944	
	Number of returns	Average age	Number of returns	Average age
	1	2	3	4
Under 100	7 741	68	8 285	70
100 under 200	2 182	69	4 242	70
200 under 300	663	69	1 121	71
300 under 500	512	70	763	72
500 under 1,000	376	69	510	73
1,000 under 2,000	122	69	160	74
2,000 under 5,000	52	73	72	74
5,000 and over	10	72	28	74
Total, all taxable returns with age given	11 658	68	15 181	71

E-31

NUMBER OF ESTATE TAX RETURNS CLASSIFIED BY AGE AND SIZE OF NET ESTATE
1944

Net estate classes ($ thous.)	Age groups							
	20 under 30	30 under 40	40 under 50	50 under 60	60 under 70	70 under 80	80 and over	All age groups
	1	2	3	4	5	6	7	8
Under 60	5	21	118	293	461	604	474	1 976
60 under 80	29	59	200	539	927	1 230	946	3 930
80 under 100	19	37	107	327	574	762	553	2 379
100 under 150	24	47	140	384	717	928	711	2 951
150 under 200	16	12	43	177	338	406	299	1 291
200 under 300	5	7	48	135	275	383	268	1 121
300 under 500	1	10	22	91	193	249	197	763
500 under 1,000	1	2	16	51	120	178	142	510
1,000 under 2,000	1	2	3	11	35	60	48	160
2,000 under 5,000			1	5	17	30	19	72
5,000 and over			1	1	9	8	9	28
All net estate classes	101	197	699	2 014	3 666	4 838	3 666	15 181

Like some of the foreign data referred to in the introductory chapter, the American material for most years indicates that average wealth falls, or at best rises little, near the upper end of the age scale. As a rule, portions of the estates of older persons seem to be distributed during their lifetime. Yet Andrew Carnegie's advice to rich men "to die poor" and to supervise the distribution of their estates while alive does not seem to be followed too literally. The average net estate of the top age group remains above the general average in each of the years for which data are available. This is particularly noticeable in 1946.

b. *Average age by size of net estate*

Table E-30 shows that the average age of decedents in the various net estate classes increases slowly but rather regularly in the 1944 returns, rising from seventy years for net estates under $100,000 to seventy-four years in the three highest classes. The average age for all returns with information on age is seventy-one years. In 1922, however, gradual progression in age of decedents occurs in the first four net estate classes up to $500,000. The average is lower in the next two estate classes but rises to a maximum in the second highest net estate class and then drops slightly in the highest class.

c. *Correlation of age and size of net estate*

When the progressions of average age with net estate and of average net estate with age are charted for the year 1944, both appear rather regular compared with those for other years, but indicate a low degree of correlation between the two variables. The covariation of the variables covers only a fractional part of their respective total variations.

The correlation frequency distribution for age and net estate in 1944 is shown in Table E-31.

The correlation coefficient for the 1944 data, grouped in seven age and eleven net estate classes, is $r = 0.13$. The low value of the coefficient indicates that age explains only an unimportant part of the variation in size of net estate in individual cases.

IV

DISTRIBUTION OF WEALTH AMONG LIVING PERSONS IN THE UPPER WEALTH BRACKETS

This chapter analyses the estimates of the wealth of living persons potentially liable to the federal estate tax. These estimates, obtained by the estate-multiplier method, have been prepared for the years 1922, 1924, 1941, 1944, and 1946. The first section deals with the aggregate and average amounts of wealth, in terms of economic estate, and their distribution by size of net estate. The second section deals with the share of the various age groups in the aggregate amounts of wealth. In the third section, separate wealth estimates for men and women are examined for the year 1922. The fourth section deals with the wealth of defined top wealth groups in the selected years. The reader will note that, as the discussion proceeds, several refinements and adjustments for biases are introduced.

1. Level of Wealth and Distribution by Size, 1922, 1924, 1941, 1944, and 1946

a. *Aggregates and averages*

The estimates of the number of wealth holders, and of average and aggregate amounts of wealth, are very sensitive to variations in the assumed death rate pattern. For 1922, use of the white-population death rates yield estimates of 407,000 wealth holders, with an aggregate economic estate of $67.6 billion (before correction for insurance bias), or $166,000 per wealth holder. Using the selected-risk death rates, the estimate obtained comprises 577,000 wealth holders with an economic estate of $93.9 billion, or $163,000 per wealth holder. (See Tables E-32 and E-33.) The lower death rates of selected-risk groups result in an estimate of aggregate wealth nearly 40 percent higher than that resulting from use of the white-population death rates. The average amount per wealth holder, however, is slightly lower with the selected-risk death rates, reflecting the greater weight given to the younger age groups by the use of those rates. (See Section 2 below.)

For 1944, a similar pattern emerges. Using white-population death rates, we obtain 630,383 wealth holders, holding $114 billion of economic estate, or an average of $181,000 per wealth holder. Selected-risk death rates yield an estimate of 868,542 wealth holders with an aggregate economic estate of $154.5 billion, or an average of $178,000 each. The aggregate amount of wealth estimated on the basis of the selected-risk death rates is about 36 percent larger than that estimated with the white-population death rates.

DISTRIBUTION OF WEALTH HOLDERS AND ECONOMIC-ESTATE WEALTH, BY SIZE OF NET ESTATE

Selected Years: 1922 to 1946

White-population death rates before insurance correction

Net-estate classes ($ thous.)	1922		1924		1941		1944		1946	
	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth
	1	2	3	4	5	6	7	8	9	10
Under 60	.	.	.	.	50.5	17.2	13.1	5.4	14.7	6.2
60 under 80	.	.	.	.	15.1	8.6	27.1	11.6	28.0	12.6
80 under 100	.	.	.	.	9.0	6.6	16.1	8.8	16.0	9.4
Under 100	69.4	33.7	67.3	27.6	74.6	32.4	56.3	25.8	58.7	28.2
100 under 150	.	.	12.2	9.9	10.1	10.2	20.5	15.5	18.6	14.4
150 under 200	.	.	5.9	7.1	4.9	6.9	8.7	9.6	8.1	9.4
100 under 200	17.3	16.2	18.1	17.0	15.0	17.1	29.2	25.1	26.7	23.8
200 under 300	5.3	8.8	6.1	9.9	4.0	8.0	6.4	10.0	7.1	11.2
300 under 500	3.8	9.7	4.4	11.3	3.0	9.7	4.3	10.0	4.1	10.3
500 under 1,000	2.3	13.1	2.8	13.1	2.3	12.5	2.6	10.6	2.1	10.7
1,000 under 2,000	1.5	9.0	0.8	7.4	0.7	8.7	0.8	7.0	0.9	7.6
2,000 under 5,000	0.3	5.9	0.4	8.1	0.3	6.5	0.3	5.7	0.3	6.2
5,000 and over	0.1	3.6	0.1	5.6	0.1	5.1	0.1	5.8	0.1	1.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of wealth holders	407 235		455 402		502 993		630 383		820 412	
Amount of economic-estate wealth, aggregate ($ mill.)	67 639		77 898		69 513		113 954		140 344	
Per holder ($ thous.)	166		171		138		181		171	

For reasons discussed above (see Chapter II, Section 2-c) it may be assumed that the best estimate for each year would fall somewhere between the two estimates made here (not allowing for certain biases unconnected with the choice of mortality rates noted above), but would probably come closer to the estimates based on selected-risk rates than to those based on white-population rates.

A tentative correction for insurance bias of the aggregate amounts of economic estate carried out in the manner discussed above (Chapter II, Section 2-d) yields the amounts shown at the bottom of Tables E-34 and E-35.

It is of interest to note here that W. I. King's estimate for December 31, 1921 showed 630,304 property owners holding wealth of more than $50,000. Their aggregate amount of wealth was estimated at $104.7 billion. [1] These figures are

[1] King, "Wealth Distribution in the Continental United States at the Close of 1921," *Journal of the American Statistical Association*, 1927, p. 152.

E-33 DISTRIBUTION OF WEALTH HOLDERS AND ECONOMIC-ESTATE WEALTH, BY SIZE OF NET ESTATE

Selected Years: 1922 to 1946

Selected-risk death rates before insurance adjustment

Net-estate classes ($ thous.)	1922		1941		1944		1946	
	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth
	1	2	3	4	5	6	7	8
Under 60	.	.	50.7	17.9	13.6	6.3	15.2	6.4
60 under 80	.	.	15.0	7.3	27.4	11.7	27.8	12.7
80 under 100	.	.	9.1	6.8	16.2	8.5	16.0	9.5
Under 100	70.0	34.7	74.8	32.0	57.2	26.5	59.0	28.6
100 under 150	.	.	10.0	10.2	20.5	14.6	18.4	14.5
150 under 200	.	.	5.1	7.4	8.0	8.4	8.1	9.5
100 under 200	17.0	16.2	15.1	17.6	28.5	23.0	26.5	24.0
200 under 300	5.2	8.9	3.7	7.4	6.4	9.8	6.9	11.0
300 under 500	3.7	9.5	2.9	9.4	4.3	10.4	4.0	10.2
500 under 1,000	2.8	12.8	2.3	13.1	2.4	10.8	2.3	10.6
1,000 under 2,000	0.9	9.0	0.8	8.9	0.8	7.3	0.8	7.1
2,000 under 5,000	0.3	5.4	0.3	6.7	0.3	5.5	0.3	6.4
5,000 and over	0.1	3.4	0.1	4.9	0.1	6.6	0.1	2.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of wealth holders	577 212		646 026		868 542		975 558	
Amount of economic-estate wealth, aggregate ($ mill.)	93 934		88 092		154 503		164 713	
Per holder ($ thous.)	163		136		178		169	

somewhat larger than our estimates of wealth holders and economic estate wealth, respectively, for 1922, based on selected-risk death rates; but allowance for various biases in our estimates would raise them from an aggregate economic estate of $93.9 billion to $116.5 billion, or a somewhat larger figure than King's. (See Table E-39.)

Using the income capitalization method, Charles Stewart found, for 1922, 594,211 recipients of incomes larger than $5,000 owning $99.7 billion of wealth. [2] Our estimate for 1922, using selected-risk death rates, is well above this figure; that based on white population rates is lower.

The wealth estimate for 1941, with both white-population and selected-risk death rates, shows surprisingly small amounts of wealth, compared with 1944 and 1922. This may be due in part to the low exemption limits applying to that year,

[2] Stewart, "Income Capitalization as a Method of Estimating the Distribution of Wealth by Size Groups," *Studies in Income and Wealth*, Volume III, p. 113.

DISTRIBUTION OF ECONOMIC-ESTATE WEALTH, BY SIZE OF NET ESTATE, BEFORE AND AFTER TENTATIVE CORRECTION FOR INSURANCE BIAS

E-34

Selected Years: 1922 to 1946

White-population death rates

Net-estate classes ($ thous.)	1922		1924		1941		1944		1946	
	Economic estate		Economic estate		Economic estate		Economic estate		Economic estate	
	Before: Tentative correction	After: Tentative correction	Before: Tentative correction	After: Tentative correction	Before: Tentative correction	After: Tentative correction	Before: Tentative correction	After: Tentative correction	Before: Tentative correction	After: Tentative correction
	1	2	3	4	5	6	7	8	9	10
Under 100	33.7	34.1	27.6	27.6	32.4	32.9	25.8	25.6	28.2	28.3
100 under 200	16.2	14.7	17.0	15.5	17.1	14.6	25.1	23.3	23.8	21.9
200 under 300	8.8	8.6	9.9	9.7	8.0	7.5	10.0	9.7	11.2	11.1
300 under 500	9.7	9.7	11.3	11.3	9.7	9.7	10.0	10.0	10.3	10.4
500 under 1,000	13.1	13.4	13.1	13.5	12.5	13.2	10.6	11.0	10.7	11.2
1,000 under 2,000	9.0	9.4	7.4	7.8	8.7	9.4	7.0	7.5	7.6	8.2
2,000 under 5,000	5.9	6.2	8.1	8.6	6.5	7.1	5.7	6.4	6.2	6.8
5,000 and over	3.6	3.9	5.6	6.0	5.1	5.6	5.8	6.5	1.9	2.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Economic estate, aggregate amount ($ mill.)	67 639	63 648	77 898	72 835	69 513	62 562	113 954	101 191	140 344	125 748

DISTRIBUTION OF ECONOMIC-ESTATE WEALTH, BY SIZE OF NET ESTATE

E-35

Selected Years: 1922 to 1946

Selected-risk death rates

Net-estate classes ($ thous.)	1922		1941		1944		1946	
	Economic estate		Economic estate		Economic estate		Economic estate	
	Before: Tentative correction	After: Tentative correction	Before: Tentative correction	After: Tentative correction	Before: Tentative correction	After: Tentative correction	Before: Tentative correction	After: Tentative correction
	1	2	3	4	5	6	7	8
Under 100	34.8	25.2	32.0	32.5	26.6	26.5	28.6	28.8
100 under 200	16.2	14.7	17.6	15.2	24.7	23.0	24.0	22.2
200 under 300	8.9	8.7	7.4	6.8	10.0	9.8	11.0	10.8
300 under 500	9.5	9.5	9.4	9.3	10.4	10.4	10.2	10.2
500 under 1,000	12.8	13.2	13.1	13.8	10.4	10.8	10.6	11.1
1,000 under 2,000	9.0	9.4	8.9	9.6	6.8	7.3	7.1	7.6
2,000 under 5,000	5.4	5.7	6.7	7.4	5.2	5.5	6.4	7.0
5,000 and over	3.4	3.6	4.9	5.4	6.0	6.6	2.1	2.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Economic estate, aggregate amount ($ mill.)	93 934	88 391	88 092	79 371	154 503	138 905	164 713	147 583

which helped to lower the amount of wealth per wealth holder. But it will be seen in the following section that, even within the top wealth groups, the amount of wealth shown for 1941 is much less than for 1944 and frequently less than for 1922, although the asset price index for 1941 was slightly higher than that for 1922 and less than 15 percent below that for 1944.

It appears from Table E-14 above that the decedents of 1941 showed a relatively small amount of gross estate per return, but this probably explains only a minor part of the decrease. The main explanation is likely to be found in the peculiar age composition of 1941 decedents coming under the estate tax. Table E-4 above showed consistently lower frequencies for the age groups up to sixty years in 1941 compared with 1922, 1924, and 1944, and consistently higher frequencies for the older groups than in those other years. While the low proportion of decedents in the brackets below forty may represent the low of prewar mortality, there is no apparent explanation for the peculiar age distribution of the 1941 estate tax decedents in the group above forty. The relatively high average age of the 1941 group of decedents leads to relatively few wealth holders and relatively small amounts of wealth. The age groups with large estate multipliers (inverse death rates) seem underrepresented compared with the other years.

This circumstance probably accounts for a major part of the considerable difference between our wealth estimate for 1941 compared with an unpublished estimate for 1940 made by Mary S. Painter with the help of the dividend capitalization method. That study showed 1,277,000 wealth holders with gross estates in excess of $16,500; 665,000 with gross estates in excess of $40,000; and total gross-estate estimates of $141 billion and $124 billion, respectively. These figures are well above our final estimates for 1941 presented in Table E-39 below, i.e. $78.1 and $98.8 billion, respectively, with white-population and selected-risk death rates.

For 1946, we obtain larger numbers of wealth holders and greater amounts of estate tax wealth than for 1944 by both methods, but the average amounts per wealth holder are lower than in 1944.

The increases in numbers of wealth holders and aggregate wealth from 1922 to 1946 are less pronounced with the selected-risk death rates (by 69 percent and 75 percent, respectively) than with the white-population death rates (by 101 and 107 respectively). This probably reflects the greater decline in the white-population death rates of the younger age groups from 1922 to 1946, which, as we have seen above, must be ascribed at least in part to the omission of war casualties from these rates. The average amount of wealth per wealth holder, using either white-population or selected-risk rates, is only slightly higher in 1946 than in 1922.

For the year 1924, only the white-population death rates have been used. Number of wealth holders, aggregate wealth, and average amount of wealth are somewhat higher than in the corresponding estimates for 1922.

Tentatively, a correction for insurance bias has been applied to the distribution of economic estate by size of net estate, and the effect of the correction is shown in Tables E-34 and E-35. As noted above (Chapter II, Section 2-d), this correction can only be regarded as experimental since it was necessary to assume

that the aggregate insurance correction for all size groups in each year was distributed over individual size groups in the same percentage pattern as in 1944. We have no way of judging how reasonable this assumption is.

As the tables show, the correction quite regularly raises the percentage shares of the groups with more than $500,000 of net estate and lowers the shares of the groups with from $100,000 to $300,000 of net estate. The share of the lowest groups (below $100,000) is raised in some cases, lowered in others, and that of the group from $300,000 to $500,000 remains constant. The similarity of the pattern reflects the application of the same relative distribution factors (to varying amounts of insurance) in each of these years. The constancy of the percentage in the last mentioned class stems from the similarity of the share of this group in the 1944 pattern of insurance correction (10.3 percent) and its share in the uncorrected distribution of economic estate in the various years (9 to 11 percent).

In general, it may be said that the correction for insurance bias of the size distribution by this method leads to showing a greater concentration of wealth in the brackets above $500,000.

b. *Devolution rates*

Knibbs designated by the term "devolution rate" the general multiplier relating the wealth estimate for a community to the wealth of the decedents from which the estimate had been derived. This rate can be computed for the number of wealth holders (ratio of wealth holders to decedents) and for their wealth (ratio of estate tax wealth to economic estate of decedents). The personal and economic-estate devolution rates are shown in Table E-36 for various years.

The personal devolution rate is based on the number of decedents with information on age that entered into the computations. The economic-estate devolution rate is based on the total economic estate of all decedents in the respective annual estate tax sample reduced by two-thirds of the ratio of the number of decedents without information on age to all decedents. [3]

The devolution rates for the estimates based on white-population death rates range from about 30 to 40. For 1941 the rates are low for reasons discussed above. The rates pertaining to the estimates based on selected-risk death rates are generally higher—between 40 and 50—but once more those for 1941 are low compared with other years.

The devolution rates may also be used to correct for a certain downward bias in our estimates of wealth holders and economic-estate wealth caused by the lack

[3] The economic estate of decedents with or without information on age is not directly available from the data except for 1944 and 1946. In those years, the net estate of decedents without information on age was 3 percent of that of all decedents. The corresponding percentage for the number of decedents was 4.5 percent. It is impossible to tell whether the discrepancy between the two percentages would apply to the earlier years as well, although some discrepancy of that nature is likely since information on age apparently had a greater chance of being neglected in returns covering small estates than in those for larger ones. Applying the 1944–1946 relation to the earlier years the economic estate for all decedents has been reduced by two-thirds of 10.4 percent in 1922, of 7.8 percent in 1924, and 4.7 percent in 1941 to obtain the denominators of the devolution rates.

E-36 DEVOLUTION RATES BEFORE INSURANCE CORRECTION

Selected Years: 1922 to 1946

Death rates used	Number of wealth holders / Number of decedents[1]	Amount of economic-estate wealth / Amount owned by decedents[1]
	1	2
White-population		
1922	34.9	33.8
1924	35.3	31.2
1941	32.6	27.8
1944	41.5	36.8
1946	41.1	36.4
Selected-risk		
1922	49.5	46.9
1941	50.0	35.2
1944	57.2	49.3
1946	48.8	42.7

[1] With information on age.

of information on the age of some of the decedents. Assuming that the joint age-wealth distribution of these decedents was about the same as that of decedents of known age, we may estimate the estate tax wealth corresponding to the total estate tax samples by multiplying the total sample data by the devolution rates derived from the cases with known age. This has been done in Table E-37. The results of this adjustment (i.e. the figures of cols. 1, 3, and 6) have not been carried forward to any of the later tables of this chapter.

In Table E-38 the economic-estate devolution rates have been recomputed on the basis of wealth estimates tentatively corrected for insurance bias. These rates, designated as *B* to distinguish them from those before insurance adjustment (*A*), naturally are somewhat lower than the ones derived from the uncorrected estimates. They range around 30 for the white-population estimates and around 40 for the selected-risk estimates. Corresponding to these rates we find (col. 3) the estimated amounts of estate tax wealth adjusted for insurance bias. These amounts are still uncorrected for bias due to undervaluation (prior to audit), gifts *inter vivos*, and division of property. Correction for these biases can only be made in a very rough manner. In the light of the discussion above (Chapter II, Section 2-e), we have estimated the necessary correction as an increase in the wealth figure by 20 percent.

Table E-39, finally, shows aggregate economic-estate wealth after that correction, and a set of devolution rates (C) corresponding to these final estimates. The aggregates rise from $84 billion or $117 billion, depending on the death rates used, in 1922, to $157 billion or $184 billion in 1946. The economic-estate devolution rates, except for 1941, cluster around 40 and 50, respectively, for the two death rates.

WEALTH ESTIMATES CORRESPONDING TO TOTAL ESTATE TAX SAMPLES, INCLUDING DECEDENTS WITHOUT AGE INFORMATION, BEFORE INSURANCE CORRECTION

E-37

Selected Years: 1922 to 1946

Death rates used	Number of decedents in samples	Personal devolution rate	Estimated number of wealth holders	Amount of economic estate in sample ($ bill.)	Economic-estate devolution rate *A*	Estimated amount of economic estate of living ($ bill.)
	1	2	3	4	5	6
White-population						
1922	13 013	34.9	454 154	2.2	33.8	74.4
1924	14 013	35.3	494 659	2.6	31.2	81.1
1941	16 215	32.6	528 609	2.6	27.8	72.3
1944	15 898	41.5	659 767	3.2	36.8	117.8
1946	20 899	41.1	858 949	4.0	36.4	145.6
Selected-risk						
1922	13 013	49.5	644 144	2.2	46.9	103.2
1941	16 215	50.0	810 750	2.6	35.2	91.5
1944	15 898	57.2	909 366	3.2	49.3	157.8
1946	20 899	48.8	1 019 871	4.0	42.7	170.8

WEALTH ESTIMATES FOR TOTAL ESTATE TAX SAMPLES AFTER TENTATIVE INSURANCE CORRECTION

E-38

Selected Years: 1922 to 1946

Death rates used	Aggregate economic estate of living before correction	Tentative insurance correction	Corrected aggregate economic estate	Corrected economic-estate devolution rate *B*
	$ mill.			
	1	2	3	4
White-population				
1922	74 400	4 392	70 008	31.8
1924	81 100	5 243	75 857	29.2
1941	72 300	7 220	65 081	25.0
1944	117 800	12 828	104 972	32.8
1946	145 600	15 143	130 457	32.6
Selected-risk				
1922	103 200	6 094	97 106	44.1
1941	91 500	9 141	82 359	31.7
1944	157 800	15 930	141 870	44.3
1946	170 800	17 764	153 036	38.3

Column 1 – Col. 6 of Table E-37.
Column 2 – From Tables E-34 and E-35. Difference adjusted to represent full sample.
Column 3 – Col. 1 minus col. 2.
Column 4 – Col. 3 of this table divided by col. 4 of Table E-37.

E-39

FINAL ESTIMATES OF ESTATE TAX WEALTH, AFTER TENTATIVE ADJUSTMENTS FOR ALL BIASES

Selected Years: 1922 to 1946

Death rates used	Economic-estate wealth ($ bill.)	Devolution rate *C*
	1	2
White-population		
1922	84.0	38.2
1924	91.0	35.0
1941	78.1	30.0
1944	126.0	39.4
1946	156.5	39.1
Selected-risk		
1922	116.5	53.0
1941	98.8	38.0
1944	170.2	53.2
1946	183.6	45.9

Column 1 – Col. 3 of Table E-38 plus 20 percent.

Column 2 – Col. 1 of this table divided by col. 4 of Table E-37.

For the purpose of making rough estimates for intermediate years, the number 40 might be used as a tentative multiplier of economic estate, as shown in the annual estate tax returns, on the white-population death rate basis, and the number 50 for estimates on the selected-risk death rate basis. For the number of wealth holders, the figures 35 and 45 would seem to be usable but resulting estimates must, of course, be considered very tentative.

c. *Size distribution*

The percentage distributions of wealth holders and aggregate wealth in the various years are shown in Tables E-32 and E-40. Characteristically, the percentages for net estates below $100,000 are higher in the estimates based on selected-risk death rates. As a result, the level of the cumulative percentages is usually higher, in each class, for the selected-risk than for the white-population estimates. The two distributions are quite similar in 1922 as well as in 1944 and 1946.

In the course of time the degree of inequality of the size distribution changes somewhat. Taking the estimates based on white-population death rates, the degree of inequality in the distribution of estate tax wealth rises from 1922 to 1924 and 1941, and then drops sharply to 1944 and 1946. In view of the peculiarities noted for the 1941 data, the meaning of the sharp break after 1941 is much in doubt. But omitting this year, we find less inequality in the 1944 and 1946 distributions than in those for 1922 and 1924. This pertains of course to all returns for each of the several years, which, as has been noted before, extended over a changing range of wealth classes owing to changes in exemptions.

DISTRIBUTION OF WEALTH HOLDERS AND WEALTH, BEFORE INSURANCE CORRECTION

Selected Years: 1922 to 1946

Percentages of total, cumulated from the bottom

Net estate classes ($ thous.)	1922		1924		1941		1944		1946	
	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth
	1	2	3	4	5	6	7	8	9	10
White-population death rates										
1. Under 60	n.a.	n.a.	n.a.	n.a.	50.5	17.2	13.1	5.4	14.7	6.2
2. Under 80	n.a.	n.a.	n.a.	n.a.	65.6	25.8	40.2	17.0	42.7	18.8
3. Under 100	69.4	33.7	67.3	27.6	74.6	32.4	56.3	25.8	58.7	28.2
4. Under 150	n.a.	n.a.	79.5	37.5	84.7	42.6	76.8	41.3	77.3	42.6
5. Under 200	86.7	49.9	85.4	44.6	89.6	49.5	85.5	50.9	85.4	52.0
6. Under 300	92.0	58.7	91.5	54.5	93.6	57.5	91.9	60.9	92.5	63.2
7. Under 500	95.8	68.4	95.9	65.8	96.6	67.2	96.2	70.9	96.6	73.5
8. Under 1,000	98.7	81.5	98.7	78.9	98.9	79.7	98.8	81.5	98.7	84.2
9. Under 2,000	99.6	90.5	99.5	86.3	99.6	88.4	99.6	88.5	99.6	91.8
10. Under 5,000	99.9	96.4	99.9	94.4	99.9	94.9	99.9	94.2	99.9	98.0
11. All returns	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Selected-risk death rates										
1. Under 60	n.a.	n.a.			50.7	17.9	13.6	5.7	15.2	6.4
2. Under 80	n.a.	n.a.			65.7	25.2	41.0	17.6	43.0	19.1
3. Under 100	70.0	34.8			74.8	32.0	57.2	26.6	59.0	28.6
4. Under 150	n.a.	n.a.			84.8	42.2	77.7	42.4	77.4	43.1
5. Under 200	87.0	51.0			89.9	49.6	85.7	51.3	85.5	52.6
6. Under 300	92.2	59.9			93.6	57.0	92.1	61.3	92.4	63.6
7. Under 500	95.9	69.4			96.5	66.4	96.4	71.7	96.4	73.8
8. Under 1,000	98.7	82.2			98.8	79.5	98.8	82.1	98.7	84.4
9. Under 2,000	99.6	91.2			99.6	88.4	99.6	88.2	99.5	91.5
10. Under 5,000	99.9	96.6			99.9	95.1	99.9	94.0	99.8	97.9
11. All returns	100.0	100.0			100.0	100.0	100.0	100.0	100.0	100.0

The same relation between the years appears in the estimates based on selected-risk death rates. Once more, the 1946 distribution appears the least unequal of the lot.

d. *Sampling stability of wealth estimates*

The sampling stability of several of the estimated distributions has been calculated as follows:

The standard error of the estimated average amounts of wealth in 1922—$163,000 or $166,000, depending on the mortality rates used—is about $3,000. For 1924, the standard error of the average of $171,000 (based on selected-risk death rates) is about $3,600; for 1944, the standard error of the average of $178,000 (based on selected-risk death rates) is about $3,100.

From a sampling viewpoint, differences of about $7,000 or more between these average amounts of wealth have no greater probability of occurrence than 5 percent. No allowance is made here for the sampling error of the mortality rates that were used in making the estimates.

2. Distribution of Wealth among the Various Age Groups

Table E-41 shows the distribution of the estimated number of estate tax wealth holders in each year for the various age groups, while Table E-42 measures the relative frequencies of wealth holders per thousand of population of corresponding age. As a rule, the number of wealth holders per thousand of population of the same age increases uniformly and rapidly from the lower to the higher age groups. The over-all rate increases from 1922 to 1946, and reaches about 10 per 1,000 for the selected-risk estimates in the late years.

The percentage shares of the various age groups in the estimated amounts of aggregate wealth are shown in Table E-43 for the various years. The distributions usually show a peak in one of the middle age brackets and drop off in both directions. In 1922 and 1924 and, at least on the basis of selected-risk rate estimates, in 1941, 1944, and 1946 the group from fifty to sixty years holds the largest percentage of wealth among the several ten-year-interval age groups. As a rule, the two lowest age groups hold a greater share of total wealth in the estimates based on selected-risk death rates.

Table E-44 shows the shares of the various age groups in aggregate economic estate after a tentative correction for insurance bias. A comparison with Table E-43 indicates that the correction lowers the shares of the younger age groups (below fifty-five or sixty years) and raises those of the older groups.

NUMBER OF ESTATE TAX WEALTH HOLDERS BY AGE

E-41

Selected Years: 1922 to 1946

Thousands

Age groups	White-population death rates					Selected-risk death rates			
	1922	1924	1941	1944	1946	1922	1941	1944	1946
	1	2	3	4	5	6	7	8	9
20 under 30	9.7	14.2	11.8	49.0	43.4	12.3	23.1	28.1	25.4
30 under 40	40.2	41.0	38.9	63.3	75.7	71.2	72.4	140.7	112.3
40 under 45	86.0	86.3	167.3	228.0	293.3	150.4	137.7	211.8	255.4
45 under 50									
50 under 55	113.3	134.7				171.0	85.5	120.0	149.9
55 under 60			125.9	140.9	212.9		75.3	99.6	112.3
60 under 65	92.1	106.9				113.4	71.0	85.2	83.5
65 under 70			106.1	100.2	132.9		65.1	73.5	86.1
70 under 75	66.0	72.4				59.0	52.9	53.4	63.8
75 and over			52.9	48.9	65.7		63.0	56.2	86.9
Total	407.2	455.4	502.9	630.4	823.8	577.2	646.0	868.5	975.6

ESTATE TAX WEALTH HOLDERS PER THOUSAND OF POPULATION

E-42

Selected Years: 1922 to 1946

Age groups	White-population death rates					Selected-risk death rates			
	1922	1924	1941	1944	1946	1922	1941	1944	1946
	1	2	3	4	5	6	7	8	9
20 under 30	0.5	0.7	0.5	2.1	1.8	0.7	1.0	1.2	1.1
30 under 40	2.5	2.4	1.9	3.0	3.5	4.4	3.6	6.7	5.3
40 under 45	6.8	6.5	6.8	8.9	11.2	11.8	8.0	12.0	14.0
45 under 50									
50 under 55	12.7	14.5				19.2	11.6	15.4	18.8
55 under 60			11.5	11.9	17.2		12.3	15.0	16.2
60 under 65	17.0	19.1				21.0	14.5	16.4	15.3
65 under 70			16.3	14.5	18.5		17.1	18.4	20.8
70 under 75	22.0	23.3				19.6	19.6	18.5	21.1
75 and over			19.6	16.3	20.5		23.3	18.9	27.2
Total	6.2	6.7	5.7	6.9	8.8	8.9	7.3	9.5	10.4

E-43 DISTRIBUTION OF ECONOMIC-ESTATE WEALTH BY AGE GROUPS [1] BEFORE INSURANCE ADJUSTMENT

Selected Years: 1922 to 1946

Age groups	1922		1924	1941		1944		1946	
	White-population death rates	Selected-risk death rates	White-population death rates	White-population death rates	Selected-risk death rates	White-population death rates	Selected-risk death rates	White-population death rates	Selected-risk death rates
	1	2	3	4	5	6	7	8	9
20 under 30	1.8	1.6	3.7	2.3	3.6	6.5	2.7	5.7	2.6
30 under 40	8.4	10.8	6.5	7.5	11.5	8.4	13.7	7.7	11.5
40 under 45	18.2	22.9	17.2	27.3	16.5	33.4	22.0	31.8	26.2
45 under 50					(27.7)		(35.4)		(41.6)
50 under 55	28.6	31.1	27.1	26.1	23.7	23.3	24.8	26.9	26.9
55 under 60					(24.0)		(22.3)		(20.1)
60 under 65	23.9	21.3	25.7	24.7	23.5	18.9	21.6	18.1	17.4
65 under 70					(21.7)		(17.8)		(15.3)
70 under 75	14.9	9.7	14.5	10.4	16.4	8.1	12.0	8.2	11.2
75 under 80					(9.9)		(7.0)		(6.4)
80 under 85	4.2	2.6	5.3	1.7	4.8	1.4	3.2	1.6	4.2
85 and over					(1.6)		(1.1)		(2.5)
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] The figures in parentheses for 1941, 1944, and 1946 (selected-risk rates) relate to the age groupings used for white-population death rates in those years.

E-44 DISTRIBUTION OF ECONOMIC-ESTATE WEALTH BY AGE GROUPS AFTER TENTATIVE CORRECTION FOR INSURANCE BIAS

Selected Years: 1922 to 1946

Age groups	1922		1924	1941		1944		1946	
	White-population death rates	Selected-risk death rates	White-population death rates	White-population death rates	Selected-risk death rates	White-population death rates	Selected-risk death rates	White-population death rates	Selected-risk death rates
	1	2	3	4	5	6	7	8	9
20 under 30	1.2	1.1	3.2	1.3	2.9	6.2	2.9	5.5	2.9
30 under 40	8.2	10.6	6.0	6.9	11.5	7.8	14.3	8.9	10.8
40 under 45	16.9	22.0	15.6	23.7	13.8	30.2	23.1	33.6	24.8
45 under 50									
50 under 55	28.5	31.2	26.9	27.2	22.9	24.1	25.1	26.1	25.8
55 under 60									
60 under 65	24.9	22.1	27.0	27.3	25.3	21.0	20.6	17.0	18.2
65 under 70									
70 under 75	15.8	10.2	15.6	11.6	18.2	9.1	11.1	7.5	12.6
75 under 80									
80 under 85	4.5	2.8	5.7	2.0	5.4	1.6	2.9	1.4	4.9
85 and over									
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

3. Distribution of Wealth by Age and Sex

Since the available tabulations by sex and size of net estate do not contain the information needed to compute economic estate, Table E-45 shows separate wealth estimates for men and women in 1922 in terms of net estate. The results cannot be compared directly with the economic-estate distribution for 1922, presented above. For better comparison, the aggregate net-estate wealth for 1922 has been computed on the basis of white-population rates and is shown in Table E-45 in addition to estimates for the two sexes. These estimates are not corrected for insurance bias.

ESTIMATES OF NET-ESTATE WEALTH BY SEX: 1922 E-45

White-population death rates

	Number of wealth holders	Aggregate wealth ($ mill. of net estate)	Net estate per wealth holder ($ thous.)
	1	2	3
Men	299 603	43 990	147
Women	95 905	14 332	150
Total	407 235	60 037	147

The larger number of male wealth holders chiefly reflects the preponderance of men in the estate tax sample. But the ratio of men to women among the wealth holders is slightly larger (3.12) than the corresponding ratio in the sample (3.02). This is the net effect of the somewhat older age composition of the female groups, partly counterbalanced by the lower female mortality rates in the older groups (Chapter II, Sections 2-b and 2-c).

The aggregate wealth of men, in terms of net estate, is about three times that of women in 1922; but net estate per wealth holder is slightly higher for women than for men—$150,000 and $147,000, respectively.

It will be noted that the totals of male and female wealth holders and of aggregate wealth for men and women are somewhat smaller than the corresponding figures derived from the combined sample. This is due to the fact that the mortality rates used for the combined sample reflect male mortality and female mortality according to their weight in the (white) population. This gives stronger emphasis to the lower female mortality rates than the share of women in the sample of estate tax returns warrants. It must be concluded that the lumping together of returns for men and women and the use of mortality rates based on the proportion of the two sexes in the population causes an upward bias in the wealth estimates for the various years. For 1922, this overstatement amounts to $1.7 billion, or 3 percent of the aggregate net-estate wealth of men and women estimated independently.

E-46 DISTRIBUTION OF AGGREGATE NET-ESTATE WEALTH, BY AGE AND SEX: 1922

Percent

Age groups	Men	Women
	1	2
20 under 30	2.0	1.1
30 under 40	8.4	8.8
40 under 50	17.7	20.1
50 under 60	29.7	23.5
60 under 70	23.9	23.6
70 under 80	14.6	16.4
80 and over	3.7	6.5
Total	100.0	100.0

E-47 DISTRIBUTION OF NET-ESTATE WEALTH, BY SIZE OF NET ESTATE AND BY SEX: 1922

White-population death rates

Net estate ($ thous.)	Men				Women			
	Wealth holders		Net-estate wealth		Wealth holders		Net-estate wealth	
	Percent	Cumulative percent	Percent	Cumulative percent	Percent	Cumulative percent	Percent	Cumulative percent
	1	2	3	4	5	6	7	8
Under 100	69.2	69.2	32.6	32.6	69.9	69.9	32.4	32.4
100 under 200	17.5	86.7	16.4	49.0	16.5	86.4	15.1	47.5
200 under 300	5.2	91.9	8.6	57.6	5.5	91.9	8.9	56.4
300 under 500	3.8	95.7	9.9	67.5	3.8	95.7	9.7	66.1
500 under 1,000	3.0	98.7	13.9	81.4	2.7	98.4	11.9	78.0
1,000 under 2,000	0.9	99.6	8.6	90.0	1.2	99.6	11.3	89.3
2,000 under 5,000	0.3	99.9	5.8	95.8	0.4	100.0	7.8	97.1
5,000 and over	0.1	100.0	4.2	100.0	0	100.0	2.9	100.0
Total	100.0	—	100.0	—	100.0	—	100.0	—
Number of wealth holders	299 603				95 905			
Amount of net estate wealth, aggregate ($ mill.)	43 990				14 332			
Per holder ($ thous.)	147				150			

We do not know whether the error in later years is of the same magnitude as for 1922. On the one hand, the relative difference between the death rates of men and women seems to have widened. [4] This would tend to increase the error. On the other hand, in the 1940's women probably were reported among estate tax decedents more nearly in the same proportion as in the population on which the average death rates for both sexes is based than in 1922, which would tend to reduce the error.

Table E-46 shows the distribution of aggregate net estate over the age groups for the two sexes. Among women, the top age groups (above 70 years) and the two lower-middle age groups (between 30 and 50 years) held greater shares than among men. Male wealth was more strongly concentrated in the age groups from 50 to 70 years. Table E-47 shows the proportions of male and female wealth holders in each net-estate class, these proportions having been quite similar in 1922. However, 22 percent of the net-estate wealth held by women fell into the categories of $1 million and over, whereas less than 19 percent of that held by men was in the top net-estate classes.

4. The Wealth of Comparable Groups of Top Estate Holders in 1922, 1924, 1941, 1944, and 1946

The wealth estimates discussed in the preceding sections are based on all relevant estate tax returns tabulated by the Bureau of Internal Revenue. The present section, in contrast, presents rough estimates for more limited numbers of wealth holders in the top groups of wealth distribution in the five years—two near the beginning and three near the end of the period under study. These estimates are usually less affected by changes in the exemption limits than the comprehensive estimates, and thus, apart from their intrinsic interest, provide a somewhat greater degree of comparability from year to year.

Four alternative definitions of the top wealth groups have been used: (a) wealth units of more than $100,000 at current asset prices; (b) wealth units of more than $100,000 at constant (1944) asset prices; (c) the top 100,000 wealth units; and (d) the wealthiest 1 percent of the population. [5]

a. *Wealth units of more than $100,000 of net estate (current asset prices)*

The number of wealth holders with assets exceeding $100,000 of net estate at current prices and their economic-estate wealth have been derived from the complete distributions. The results are shown in Tables E-48, E-49, and E-50(A).

[4] In 1922, the specific death rate for white males in the registration states was 11 percent above that for females; by 1940 the difference had risen to 26 percent. (See *Vital Statistics Rates in the United States, 1900-1940*, p. 127.)

[5] Because of the experimental nature of the correction for insurance bias in the various size classes, this correction has not been applied to the estimates included in this section. It would, of course, lower the value of aggregate economic estate in all size classes, but the reduction would fall less heavily on the top size groups than on the lower groups (see Table E-53).

E-48

DISTRIBUTION OF ECONOMIC-ESTATE WEALTH IN ESTATES OF MORE THAN $100,000 OF NET ESTATE, BY SIZE OF NET ESTATE, BEFORE INSURANCE ADJUSTMENT

Selected Years: 1922 to 1946

White-population death rates

Percent of total economic estate

Net estate ($ thous.)	1922		1924		1941		1944		1946	
	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth
	1	2	3	4	5	6	7	8	9	10
100 under 150	N.A.	N.A.	37.3	13.7	39.6	15.1	47.0	20.9	45.0	20.1
150 under 200	N.A.	N.A.	18.1	9.8	19.3	10.2	20.1	12.9	19.7	13.0
100 under 200	56.5	24.4	55.4	23.5	58.9	25.3	67.1	33.8	64.7	33.1
200 under 300	17.4	13.3	18.7	13.7	15.8	11.8	14.7	13.4	17.3	15.6
300 under 500	12.4	14.7	13.3	15.6	12.0	14.4	9.7	13.5	10.0	14.4
500 under 1,000	9.5	19.6	8.6	18.1	9.0	18.5	5.7	14.2	5.0	15.0
1,000 under 2,000	3.1	13.6	2.5	10.3	3.0	12.8	1.8	9.4	2.1	10.6
2,000 under 5,000	0.9	8.9	1.3	11.1	1.0	9.6	0.7	7.8	0.8	8.7
5,000 and over	0.2	5.5	0.2	7.7	0.3	7.6	0.3	7.9	0.1	2.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of wealth holders (thous.)	124.8		149.1		127.8		275.0		338.4	
Amount of economic-estate wealth:										
Aggregate ($ mill.)	44 878		56 411		47 018		84 602		100 787	
Per holder ($ thous.)	360		378		368		308		298	

E-49

DISTRIBUTION OF ECONOMIC-ESTATE WEALTH IN ESTATES OF MORE THAN $100,000 OF NET ESTATE, BY SIZE OF NET ESTATE, BEFORE INSURANCE ADJUSTMENT

Selected Years: 1922 to 1946

Selected-risk death rates

Percent of total economic estate

Net estate ($ thous.)	1922		1941		1944		1946	
	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth	Wealth holders	Economic-estate wealth
	1	2	3	4	5	6	7	8
100 under 150	N.A.	N.A.	39.7	15.0	47.9	21.5	45.0	20.4
150 under 200	N.A.	N.A.	20.6	10.8	78.8	12.1	19.8	13.3
100 under 200	56.7	24.8	60.3	25.8	66.7	33.6	64.8	33.7
200 under 300	17.5	13.6	14.6	10.8	14.9	13.6	16.8	15.4
300 under 500	12.2	14.7	11.7	13.9	10.1	14.2	9.8	14.3
500 under 1,000	9.4	19.6	9.1	19.3	5.7	14.1	5.7	14.8
1,000 under 2,000	3.1	13.8	3.0	13.1	1.8	9.3	2.0	9.9
2,000 under 5,000	0.9	8.3	1.1	9.9	0.6	6.9	0.8	9.0
5,000 and over	0.2	5.2	0.2	7.2	0.3	8.2	0.1	2.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of wealth holders (thous.)	172.7		162.3		371.5		399.8	
Amount of economic-estate wealth:								
Aggregate ($ mill.)	61,280		59,898		113,438		117,512	
Per holder ($ thous.)	355		369		305		294	

WEALTH HOLDERS AND ECONOMIC-ESTATE WEALTH IN SELECTED TOP GROUPS, BEFORE INSURANCE CORRECTION

Selected Years: 1922 to 1946

	White-population rates					Selected-risk rates			
	1922	1924	1941	1944	1946	1922	1941	1944	1946
	1	2	3	4	5	6	7	8	9
A. Wealth units of more than $100,000 of net estate at current asset prices									
Number of wealth holders (thous.)	125	149	128	275	338	173	162	372	400
Economic-estate wealth ($ bill.)	45	56	47	85	101	61	60	113	118
Economic-estate wealth per wealth holder ($ thous.)	360	378	368	308	298	355	369	305	294
B. Wealth units of more than $100,000 of net estate at constant (1944) asset prices									
Equivalent amount ($ thous.)	123	116	115	100	85	123	115	100	85
Number of wealth holders (thous.)	108	131	113	275	372	150	143	372	439
Economic-estate wealth ($ bill., current)	42	54	45	85	104	58	57	113	122
Economic-estate wealth per wealth holder ($ thous., current)	389	412	398	309	279	387	399	305	278
C. Top 100,000 wealth holders									
Number of wealth holders (thous.)	100	100	100	100	100	100	100	100	100
Economic-estate wealth ($ bill.)	41	,50	44	58	64	50	51	71	84
Economic-estate wealth per wealth holder ($ thous.)	410	500	440	580	640	500	510	711	840
D. Wealthiest 1 percent of the population									
Number of wealth holders (thous.)	408	423	540	571	575	408	540	571	575
Economic-estate wealth ($ bill.)	68	76	71	110	122	80	83	131	135
Economic-estate wealth per wealth holder ($ thous.)	167	180	131	193	212	196	154	229	235

The number of wealth holders and total wealth rise more strongly from 1922 to 1946 than in the tables covering all potentially taxable estates (see Tables E-32 and E-33). Economic estate per wealth holder drops, however, from 1922 to 1946 in contrast to its rise in the more comprehensive tables. The percentage distribution of wealth holders and wealth in the net-estate classes above $100,000 shows that in 1944 a larger percentage of wealth holders held economic estates of $100,000 to $200,000 than in any of the other years.

b. *Wealth units of more than $100,000 of net estate at constant (1944) asset prices*

With the help of the estate-asset price index (see Table E-18), the equivalent of $100,000 of assets has been computed for the three other years in constant (1944) prices. For this purpose aggregates of wealth holders and of economic estate had to be obtained through interpolations within certain size classes. For the sake of simplicity these interpolations have been made on the assumption that the wealth holders in the interpolated class are evenly distributed over the range of the class. The total obtained and the wealth per wealth holder are shown in Table E-50(B).

c. *Wealth of top 100,000 wealth units*

The top 100,000 wealth holders have been counted off in each year. Interpolations within certain classes were made with the help of Lorenz curves for the total distributions. The results are shown in Table E-50(C). For the years 1922, 1924, and 1941, the figures are rather similar to those in constant asset prices. In those years the top 100,000 wealth holders came close to representing the wealth holders with more than $100,000 at constant (1944) asset prices, at least in the estimates based on white-population rates. In 1944 and 1946, however, wealth holders on the constant asset price basis appear far more numerous.

d. *Wealth of wealthiest 1 percent of the population*

In a recent study of income distribution, Simon Kuznets established for various years the population represented by certain numbers of top income tax returns. His data indicate that for 1922 the top 408,000 income tax returns represented about the top 1 percent of the population income-wise. The corresponding numbers are: for 1924, 423,000; 1941, 540,000; 1944, 571,000; and for 1946, 575,000.[6] Assuming that the family size of the top income recipients can be taken as an estimate of that of the top wealth holders, we have counted off these numbers from the top of our estimated wealth distributions. In 1922 (white-population rates) the number is about the same as that of all wealth holders shown in the total wealth distribution. For all other years it is smaller than the number of wealth holders in the total distribution. The interpolation procedure followed has been the same as for the preceding sections. The results are shown in Table E-50(D).

It will be seen that for the top wealth group thus defined the amount of economic-estate wealth per wealth holder increases steadily from 1922 to 1946 except for 1941. The considerably lower amount found for 1941 is related to the peculiar age composition of the estate tax decedents in that year, and is probably also influenced by that year's relatively low asset prices.

The movement of economic estate per wealth holder shows some broad characteristics that differ from those of the movements in the variously defined top groups. For the most narrowly defined and numerically constant group (the top 100,000), this amount rises steadily from 1922 to 1946, except for 1941. The

[6] Kuznets, *Shares of Upper Income Groups in Income and Savings*. The figures shown have not been published and were kindly made available by the National Bureau of Economic Research.

rise is exceptionally marked after the decline in 1941, with average holdings for 1946 more than 50 percent larger in dollar amount than those for 1922.

In the next largest and expanding group, the wealth units of more than $100,000 of net estate, the average holdings turn downwards in 1941 and the decline continues after that year, with 1946 holdings considerably below those of 1922. This phenomenon is especially pronounced when the group is defined in terms of holdings of constant asset values.

In the third largest and relatively constant group, the wealthiest 1 percent, the movement from 1922 to 1946 again shows the rising trend noted in the first case, but the rise is less pronounced and the year 1941 shows a stronger deviation, being actually below 1922, contrary to what takes place in the other groups.

In the total estate tax samples, however, as will be recalled, rather small increases in average holdings occurred from 1922 to 1924, with a pronounced drop in 1941 and a virtual return in 1944 and 1946 to the levels of the early 1920's.

V

DISTRIBUTION OF WEALTH AMONG LIVING PERSONS, BY TYPE OF ASSET, IN 1944

1. The Special Tabulation and Procedure

This part of the study is based on a special tabulation of estate tax returns filed in 1945, prepared by the Bureau of Internal Revenue. [1] The number of returns and information on the various assets owned by decedents were cross-tabulated by age of decedent and by size of gross estate for 15,167 estate tax returns containing information on age. [2] The distribution of wealth pertains to the inferred year of death, 1944.

The estate-multiplier method was applied to these data, using the inverse selected-risk death rates for 1944 (Table E-11) as multipliers for all assets except insurance. Applying the insurance correction factors of Table E-13 to these inverse rates, we obtained a set of multipliers for that type of asset. The multipliers for insurance and for all other types of assets are shown in Table E-51. [3]

E-51 ESTATE MULTIPLIERS FOR INSURANCE AND FOR ALL OTHER ASSETS: 1944

Age groups	Multipliers for insurance[1]	Multipliers for all other assets[2]
	1	2
20–30	19.4	277.8
30–40	78.6	714.3
40–50	63.6	303.0
50–55	47.8	144.9
55–60	34.4	84.0
60–65	25.8	53.8
65–70	19.4	35.3
70–75	13.3	22.2
75–80	9.2	13.7
80–85	5.5	7.4
85 and over	3.9	4.8

[1] Based on Tables E-11 and E-13.
[2] From Table E-11.

[1] We are greatly indebted to the staff of the Bureau of Internal Revenue's Statistical Unit, who prepared this special tabulation.

[2] Such information was lacking for 711 returns. Estimates allowing for these returns will be found in Table E-62. Fourteen of the returns containing information on age, and included in the basic tabulations for 1944 used in Chapter IV, were omitted in the special tabulation for unknown reasons. The omissions affect six age groups. As a result the aggregates in the present chapter for the year 1944 are somewhat smaller than those appearing in Chapter IV.

[3] For purposes of comparison a few of the tables in this chapter show estimates of insurance assets obtained with the general multipliers, i.e. without correction for the insurance bias. Such estimates are marked "Insurance (unadjusted)."

COMPOSITION OF GROSS ESTATE, BY TYPE OF ASSET AND AGE OF DECEDENT: 1944

	All returns	20 under 30	30 under 40	40 under 50	50 under 55	55 under 60	60 under 65	65 under 70	70 under 75	75 under 80	80 under 85	85 and over	Age not stated
	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Number of returns	15 878	101	197	697	826	1 186	1 581	2 083	2 405	2 430	2 047	1 614	711
	Percentage of gross estate (including tax exempt insurance)												
2. Real estate	15.1	14.3	16.3	14.5	14.1	14.3	17.3	13.6	15.1	15.9	15.3	13.2	21.9
3. Tangible personal property	1.2	0.7	1.7	1.3	1.1	1.2	1.2	1.3	1.3	1.2	1.0	1.0	1.2
4. Intangible personal property	83.7	85.0	82.0	84.2	84.8	84.5	81.5	85.1	83.6	82.9	83.7	85.8	76.9
Federal government bonds													
5. Total	8.4	7.5	6.6	7.0	5.3	7.5	6.4	6.9	7.0	8.8	10.2	13.6	8.5
6. Wholly tax exempt	.7	—	0.2	1.6	0.2	0.2	0.3	0.2	0.4	0.8	1.7	1.5	0.3
7. Partially tax exempt	2.4	1.4	1.7	1.6	1.1	2.6	1.4	2.0	1.9	2.3	2.5	4.9	3.2
8. Taxable	5.3	6.1	4.7	3.8	4.0	4.7	4.7	4.7	4.7	5.7	6.0	7.2	5.0
9. State and municipal bonds	5.7	2.3	4.1	.9	2.6	8.0	3.1	9.0	4.8	5.2	5.2	8.3	3.8
10. Corporate bonds	4.0	4.1	3.0	2.8	2.0	2.6	2.7	3.3	4.1	4.2	5.3	5.6	5.0
11. Corporate stock	39.5	33.1	31.2	32.1	34.1	31.7	37.5	39.9	43.4	42.3	41.5	40.9	31.7
12. Cash	9.6	6.8	6.5	8.6	8.0	8.3	8.9	9.2	10.4	10.6	10.0	9.3	11.3
13. Mortgages and notes	3.6	2.0	4.4	2.0	2.6	2.6	3.0	3.3	3.6	4.2	4.3	4.1	4.3
14. Insurance (gross)	7.0	14.4	15.0	18.1	18.3	14.9	11.3	7.6	5.5	3.5	3.0	1.3	5.4
15. Unincorporated business	3.2	8.7	5.9	8.9	7.8	5.7	4.3	3.0	2.5	2.1	2.0	0.9	3.6
16. Other intangible property	2.7	6.1	5.3	3.8	4.1	3.2	4.3	2.9	2.3	2.0	2.2	1.8	3.3
17. Debts and mortgages	6.1	5.5	8.5	10.2	10.2	8.9	7.6	5.9	7.5	5.0	3.7	2.6	6.7
18. Economic estate	93.9	94.5	91.5	89.8	89.8	91.1	92.4	94.1	92.5	95.0	96.3	97.4	93.3

Some features of the uninflated sample data may be commented on briefly. Table E-52 shows the composition of gross estate by various age groups. There appear to be some fairly regular tendencies. [4] The share of corporate stock in total estate tends to be higher for decedents over 60 than for those under 60 years of age. The share of corporate bonds is lowest around 50 years of age and rises towards both ends of the age scale. The percentages of cash, mortgages, and notes tend to rise with age, though rather irregularly. The percentage of insurance in gross estate rises regularly with age up to "50 under 55" but falls rapidly from there on and with equal regularity. The proportion of assets in unincorporated business declines fairly regularly from the youngest to the oldest age classes, as does that of other intangible property. In the age groups from 45 to 55, debts and mortgages of decedents reach their highest value relative to gross estate, and economic estate, correspondingly, its lowest relative value.

2. Estimate of Wealth in Upper Brackets, by Type of Asset, Age, and Size of Gross Estate

a. *Aggregate dollar amounts of wealth*

Wealth estimates for living persons based on all estate tax returns with information on the age of the decedent are shown in Table E-53, classified by type of asset and size of gross estate. Applying the estate-multiplier method, we find that there were 867,442 wealth holders, and their total economic estate amounted to $136 billion.

The supplementary information at the bottom of Table E-53 indicates the effect of the insurance correction for the various estate sizes. The greatest percentage of correction relative to economic estate appears in the class of $100,000–$150,000 of gross estate. The insurance adjustment amounts to more than 10 percent of economic estate in the classes between $60,000 and $300,000.

b. *Wealth per wealth holder*

Reduced to a per wealth holder basis, the estimated amounts of wealth are shown in Table E-54. The average amount of economic estate is $156,000. Of this amount, $142,000 is in intangible property, mostly corporate stock, $28,000 in real estate, and $2,000 in tangible personal property.

c. *Estimates of wealth checked with state and municipal bond holdings*

It would be of great interest to check the estimates of aggregate wealth against estimates derived by other methods. For most types of assets that does not appear possible, but a check can be made for state and municipal bonds. According to our estimate, the wealth holders represented by estate tax decedents reporting age in 1944 owned $6,873 million of such bonds. After correcting for the group of decedents without information on age (see Table E-62), the total comes to $7,020

[4] These tendencies are, of course, affected by the size of estate, which is not shown as a separate variable in the table. (See below, Sections 2-e and 2-f of this chapter.)

ESTATE TAX WEALTH, ALL AGE GROUPS COMBINED, BY SIZE OF GROSS ESTATE: 1944

$ mill.

	Gross estate classes ($ thous.)											
	Total	Under 60	60 under 80	80 under 100	100 under 150	150 under 200	200 under 300	300 under 500	500 under 1,000	1,000 under 2,000	2,000 under 5,000	5,000 and over
	1	2	3	4	5	6	7	8	9	10	11	12
Number of wealth holders	867 442	4 991	216 096	159 131	220 750	95 695	74 856	52 516	28 797	10 306	3 166	1 138
Gross estate plus tax exempt insurance	149 591	241	13 046	12 058	22 789	14 344	16 456	18 212	18 803	13 670	9 030	10 941
Real estate	24 717	64	3 636	3 136	5 351	2 641	2 873	2 652	2 109	1 316	392	546
Tangible personal property	2 101	2	273	196	340	212	268	219	192	186	119	93
Intangible property	122 773	175	9 136	8 726	17 098	11 491	13 315	15 341	16 502	12 168	8 519	10 302
Federal government bonds, total	11 439	8	898	920	1 692	981	1 341	1 173	1 608	1 055	564	1 198
Wholly tax exempt	998	—	13	10	24	13	32	54	72	76	50	656
Partially tax exempt	2 936	1	191	206	440	288	314	280	604	173	159	279
Taxable	7 505	7	694	704	1 228	680	995	839	932	806	355	263
State and municipal bonds	6 873	1	74	56	122	165	344	317	689	1 325	1 092	2 689
Corporate bonds	4 977	10	280	299	624	507	605	739	663	446	185	618
Corporate stock	58 034	64	2 882	2 929	6 585	5 021	6 056	8 367	9 214	6 701	5 344	4 870
Cash	14 009	29	1 884	1 572	2 647	1 632	1 492	1 434	1 403	881	596	439
Mortgages and notes	4 955	16	520	450	945	614	477	561	466	620	171	115
Insurance (gross)	6 626	2	819	809	1 558	862	867	762	516	245	139	48
Unincorporated business	9 656	39	1 290	1 184	1 991	1 120	1 258	1 195	1 222	175	150	32
Other intangible property	6 204	6	489	507	933	589	877	793	721	720	278	293
Debts and mortgages	13 664	38	1 095	1 133	2 437	1 447	1 650	2 009	1 803	982	481	589
Economic estate	135 927	203	11 950	10 925	20 352	12 897	14 806	16 203	17 000	12 688	8 549	10 352
Gross estate per wealth holder ($ thous.)	172	48	60	76	103	150	220	347	653	1 326	2 852	9 614
Economic estate per wealth holder ($ thous.)	157	41	55	69	92	135	198	309	590	1 231	2 700	9 097
Supplementary information												
Insurance (unadjusted)	21 890	5	2 905	2 949	5 601	2 903	2 734	2 282	1 501	617	295	100
Economic estate (unadjusted)	151 191	206	14 036	13 064	24 395	14 939	16 673	17 723	17 985	13 060	8 704	10 404
Adjusted percent of unadjusted economic estate	89.9	98.5	85.1	83.6	83.4	86.3	88.8	91.4	94.5	97.2	98.2	99.5
Amount of insurance adjustment	15 264	3	2 086	2 140	4 043	2 041	1 867	1 520	985	372	156	52
Percentage distribution of insurance adjustment	100.0	—	13.7	14.0	26.5	13.4	12.2	10.0	6.5	2.4	1.0	0.3

AVERAGE ESTATE TAX WEALTH PER WEALTH HOLDER, ALL AGE GROUPS, BY SIZE OF GROSS ESTATE: 1944[1]

$ thous.

	Gross estate classes ($ thous.)											
	Total	Under 60	60 under 80	80 under 100	100 under 150	150 under 200	200 under 300	300 under 500	500 under 1,000	1,000 under 2,000	2,000 under 5,000	5,000 and over
	1	2	3	4	5	6	7	8	9	10	11	12
Gross estate plus tax exempt insurance	172	49	60	76	103	150	220	347	653	1 326	2 852	9 614
Real estate	28	13	17	20	24	28	38	51	73	128	124	480
Tangible personal property	2	1	1	1	1	2	4	4	7	18	37	82
Intangible property	142	35	42	55	78	120	178	292	573	1 181	2 691	9 052
Federal government bonds, total	13	2	4	6	8	10	17	22	56	102	178	1 052
Wholly tax exempt	1	—	—	—	—	—	—	1	3	7	16	576
Partially tax exempt	3	—	1	1	2	3	4	5	21	17	50	245
Taxable	9	2	3	5	6	7	13	16	32	78	112	231
State and municipal bonds	8	—	—	—	1	2	5	6	24	128	345	2 363
Corporate bonds	6	2	1	2	3	5	8	14	23	43	59	543
Corporate stock	67	13	13	18	30	53	81	159	320	650	1 688	4 279
Cash	16	6	9	10	12	17	20	29	49	85	188	386
Mortgages and notes	6	3	3	3	4	6	6	10	16	60	54	101
Insurance (gross)	8	—	4	5	7	9	12	14	18	24	44	42
Unincorporated business	11	8	6	8	9	12	17	23	42	17	47	28
Other intangible property	7	1	2	3	4	6	12	15	25	70	88	258
Debts and mortgages	16	8	5	7	11	15	22	38	63	95	152	517
Economic estate	156	41	55	69	92	135	198	309	590	1 231	2 700	9 197

[1] Totals agree with detail. Discrepancies between figures on gross estate or economic estate per wealth holder shown here and corresponding figures shown in Table E-53 result from consistency adjustment in the present table.

million. Further correction of this figure for an approximate 15 percent net understatement of assets—allowing for the effects of audit, gifts *inter vivos*, division of property, and separate estimation of wealth for the sexes—would lead to an amount of about $8 billion. But since state and municipal bonds are among the more easily ascertainable assets and offer little opportunity for undervaluation, the allowance for understatement should perhaps be omitted in this case. Applying a 7½ percent allowance for net downward bias results in an estimate of about $7.5 billion. This would appear to be a fairly reasonable estimate of estate tax wealth held in the form of such bonds.

An independent estimate of the amount of state and municipal bonds held by individuals and trust funds in the middle of 1944 can be derived as follows:

Net debt outstanding, June 30, 1944 [5]	$14,074 million
Held by banks, insurance companies, fraternal orders, building and loan associations, and other corporations [6]	5,900 million
Held by nonprofit institutions (universities, foundations, churches, etc.) [7]	300 million
Held by individuals (including trust funds)	$ 7,874 million

This estimate is slightly higher than that based on estate tax returns. This is reasonable since some of the state and municipal bonds are held by individuals possessing gross estates of less than $50,000 to $60,000, which would not come under the estate tax. The two estimates thus seem to agree fairly well; and this is true even if no allowance whatever is made for understatement in the estate tax data. Obviously, it is not possible to calculate precisely the amount of state and municipal bonds held by the owners of small estates from the difference between the two estimates. But it would appear that the amount thus held was small, probably less than $1 billion out of a total of close to $18 billion in 1944.

A similar check has been attempted for the year 1922. C. O. Hardy estimated the amount of state and local tax exempt securities held by individuals on June 30, 1923 at $5,789 million. [8] This estimate included bonds held by foreigners. Since for 1922 we do not have the data necessary to estimate the holdings of state and municipal bonds for the living directly from the estate tax data, we have proceeded as follows: The amount of such bonds shown as held by decedents has been multiplied by the economic estate devolution rate for that year (31.8 for white-population death rates, 44.1 for selected-risk death rates), with a ratio of 0.828 showing the relation of the devolution rate for state and municipal bonds

[5] From "Public and Private Debt in 1947," *Survey of Current Business*, 1948, Table 4. Holdings by state and local sinking and trust funds are excluded.

[6] From preliminary data prepared for other parts of the Saving Study.

[7] Preliminary estimate.

[8] Hardy, *Tax-Exempt Securities and the Surtax*, p. 81.

in 1944 to that for total economic estate in that year (see Table E-62). In this manner, we obtained two indirect estimates of these bond holdings from our data, i.e. $2.2 billion (white-population rates) and $3.0 billion (selected-risk rates).

In contrast to 1944, our estimates of state and municipal bond holdings for 1922 fall short of the check figure by more than 50 percent. It is true that the number of wealth holders covered for 1922 barely comprises the wealthiest 1 percent of the population, while our estimate for 1944 comprises about 1½ percent. This circumstance, however, hardly explains the discrepancy between our estimate and Hardy's figure, or even a large part of it. In 1944 the wealthiest 1 percent of the population, represented by about 571,000 wealth holders, owned, according to our estimate, 98 percent of the state and municipal bonds held by estate tax wealth holders. The change from a large shortfall in our estimate in 1922 to a small shortfall in 1944 may therefore be due to an increasing concentration of private holdings of state and municipal bonds at the very tip of the wealth pyramid between 1922 and 1944.

d. *Distribution of different types of assets over the size classes of gross estate* [9]

We turn now to an examination of the shares of the various size groups of estates, as measured by the size of gross estate in the holdings of different types of assets. The percentage distributions derived from Table E-53 are shown in Table E-55. They cover all age groups.

Naturally, the lower gross estate classes show relatively larger percentages of wealth holders than of wealth. Their share in the aggregate wealth of the group is smallest for state and municipal bonds and wholly tax exempt federal bonds. Thirty-nine percent of the former and 66 percent of the latter are held by the top wealth class alone ($5 million and over).

In the case of corporate stocks and bonds and of partially tax exempt federal bonds, concentration in the wealth brackets over $150,000 is more pronounced than in total wealth measured either by gross estate or by economic estate. The classes below $150,000 of gross estate correspondingly hold lesser shares in these types of assets than in total wealth. On the other hand, the lower wealth classes account for relatively large shares of real estate, tangible personal property, cash, mortgages and notes, insurance, and assets in unincorporated business.

The share in total indebtedness is relatively highest, in relation to the share in gross estate, in the middle brackets, or from $100,000 to $1,000,000 of gross estate.

[9] The discussion in this and the following four sections – in addition to being based on the tables which form part of this report – depends on a set of thirty-three more detailed tables cross-tabulating, for each of the eleven age groups, the main types of assets, as shown (e.g. in Table E-53) by eleven gross estate classes. Such tables have been prepared in terms of (1) dollar amount; (2) percentage share of different types of assets (e.g. share of corporate stock in estates of $100,000 to $150,000 total value held by estate tax wealth holders thirty to forty years old); and (3) percentage share of different gross estate classes (e.g. share of estates of $100,000 to $150,000 in total corporate stock held by all estate tax wealth holders thirty to forty years old). These thirty-three tables have not been reproduced here but are available for inspection.

PERCENTAGE DISTRIBUTION OF ESTATE TAX ASSETS, BY SIZE OF GROSS ESTATE: 1944

	Gross estate classes ($ thous.)											
	Total	Under 60	60 under 80	80 under 100	100 under 150	150 under 200	200 under 300	300 under 500	500 under 1,000	1,000 under 2,000	2,000 under 5,000	5,000 and over
	1	2	3	4	5	6	7	8	9	10	11	12
Wealth holders	100.0	0.6	24.9	18.3	25.4	11.1	8.6	6.1	3.3	1.2	0.4	0.1
Gross estate plus tax exempt insurance	100.0	0.2	8.7	8.1	15.2	9.6	11.0	12.2	12.6	9.1	6.0	7.3
Real estate	100.0	0.3	14.7	12.7	21.7	10.7	11.6	10.7	8.5	5.3	1.6	2.2
Tangible personal property	100.0	0.1	13.0	9.3	16.2	10.1	12.8	10.4	9.1	8.9	5.7	4.4
Intangible property	100.0	0.1	7.4	7.1	13.9	9.4	10.9	12.5	13.5	9.9	6.9	8.4
Federal government bonds, total	100.0	0.1	7.9	8.0	14.8	8.6	11.7	10.2	14.1	9.2	4.9	10.5
Wholly tax exempt	100.0	—	1.3	1.0	2.4	1.3	3.2	5.3	7.2	7.6	5.0	65.7
Partially tax exempt	100.0	—	6.5	7.0	15.0	9.8	10.7	9.6	20.6	5.9	5.4	9.5
Taxable	100.0	0.1	9.2	9.4	16.4	9.1	13.3	11.2	12.4	10.7	4.7	3.5
State and municipal bonds	100.0	—	1.1	.8	1.8	2.4	5.0	4.6	10.0	19.3	15.9	39.1
Corporate bonds	100.0	0.2	5.6	6.0	12.5	10.2	12.2	14.9	13.3	9.0	3.7	12.4
Corporate stock	100.0	0.1	5.0	5.1	11.3	8.7	10.4	14.4	15.9	11.5	9.2	8.4
Cash	100.0	0.2	13.4	11.2	18.9	11.7	10.7	10.2	10.0	6.3	4.3	3.1
Mortgages and notes	100.0	0.3	10.5	9.1	19.0	12.4	9.6	11.3	9.4	12.5	3.6	2.3
Insurance (gross)	100.0	—	12.4	12.2	23.5	13.0	13.1	11.5	7.8	3.7	2.1	0.7
Unincorporated business	100.0	0.4	13.4	12.3	20.6	11.6	13.0	12.3	12.7	1.8	1.6	0.3
Other intangible property	100.0	0.1	7.9	8.2	15.0	9.5	14.1	12.8	11.6	11.6	4.5	4.7
Debts and mortgages	100.0	0.3	8.0	8.3	17.8	10.6	12.1	14.7	13.2	7.2	3.5	4.3
Economic estate	100.0	0.2	8.8	8.0	15.0	9.5	10.9	11.9	12.5	9.3	6.3	7.6

e. *Composition of gross estate by type of asset at different levels of gross estate, and in different age groups*

In Table E-56 the various asset holdings of each gross estate class are shown as percentages of its gross estate. This table mirrors the one just analyzed: The shares in gross estate of state and municipal bonds, wholly tax exempt federal bonds, and corporate stock and bonds rise with the size of gross estate; those of real estate, taxable federal bonds, cash, mortgages, and unincorporated business generally fall as we go from lower to higher gross estate classes; the share of insurance rises somewhat in the lower size classes and declines regularly in the *classes* from $150,000 upwards.

Examining the relationship of asset types to size of total estate in separate age groups, we generally find the same patterns as in the total for all age groups. But the age groups at both extremes frequently show irregular variations that may well be due to the small number of returns on which the estimates for these groups rest.

In the youngest and in the oldest age group, the share of unincorporated business in gross estate shows a less evident tendency to decline with increasing size of gross estate than is the case for the middle age groups. The highest shares of cash in gross estate are found in the lowest gross-estate class at both extremes of the age scale. For the ages thirty to sixty-five, however, the highest shares appear in the second or third lowest class.

A study was made of the covariation between three variables: (1) the amount held of a particular asset type; (2) the size of gross estate; and (3) the age of the owner of four kinds of assets—unincorporated business, insurance, state and municipal bonds, and federal government bonds. The age groups 30–40, 55–60, and 75–80 were selected for this comparison. [10] The shares of various types of assets in gross estate for successive gross-estate classes were plotted. A certain pattern emerged for the different asset types.

Unincorporated business is what might be called a "lower wealth–younger age group" asset. In each of the three age groups we find declining shares of unincorporated business assets with increasing size of gross estate, although the decline is far from regular. The amount of the share, at each level of gross estate, tends to be lowest in the oldest group. It is highest in either the young or the middle age groups.

Insurance emerges as a "lower wealth–middle age group" asset. In each of the age groups we find declining shares of insurance with increasing size of gross estate. The level of the share is usually highest in the 55- to 60-year-old group, lowest among the 30- to 40-year-olds, and intermediate among the 75- to 80-year-olds.

State and municipal bonds appear as a "higher wealth asset"; the influence of the age factor is not clear. Considering the middle- and old-age groups only these bonds might be called "high wealth–old age" assets, but the erratic fluctua-

[10] The selection was arbitrary. The extreme age groups were not chosen for the reason that the fluctuations in those groups are especially erratic.

ASSET COMPOSITION OF ESTATES OF DIFFERENT SIZE: 1944

Percent

	Gross estate classes ($ thous.)											
	Total	Under 60	60 under 80	80 under 100	100 under 150	150 under 200	200 under 300	300 under 500	500 under 1,000	1,000 under 2,000	2,000 under 5,000	5,000 and over
	1	2	3	4	5	6	7	8	9	10	11	12
Gross estate plus tax exempt insurance	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Real estate	16.5	26.6	27.9	26.0	23.5	18.4	17.5	14.6	11.2	9.6	4.3	5.0
Tangible personal property	1.4	0.8	2.1	1.6	1.5	1.5	1.6	1.2	1.0	1.4	1.3	0.8
Intangible property	82.1	72.6	70.0	72.4	75.0	80.1	80.9	84.2	87.8	89.0	94.4	94.2
Federal government bonds, total	7.7	3.3	6.9	7.6	7.4	6.8	8.1	6.4	8.6	7.7	6.3	10.9
Wholly tax exempt	0.7	—	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.6	6.0
Partially tax exempt	2.0	0.4	1.5	1.7	1.9	2.0	1.9	1.5	3.2	1.3	1.8	2.5
Taxable	5.0	2.9	5.3	5.8	5.4	4.7	6.0	4.6	5.0	5.9	3.9	2.4
State and municipal bonds	4.6	0.4	0.6	0.5	0.5	1.2	2.1	1.7	3.7	9.7	12.1	24.6
Corporate bonds	3.3	4.2	2.1	2.5	2.8	3.5	3.7	4.0	3.5	3.3	2.0	5.7
Corporate stock	38.8	26.6	22.1	24.3	28.9	35.0	36.8	45.9	49.0	49.0	59.2	44.5
Cash	9.4	12.0	14.4	13.1	11.6	11.4	9.1	7.9	7.5	6.4	6.6	4.0
Mortgages and notes	3.3	6.6	4.0	3.7	4.2	4.3	2.9	3.1	2.5	4.5	1.9	1.1
Insurance (gross)	4.4	0.8	6.3	6.7	6.8	6.0	5.3	4.2	2.7	1.8	1.5	0.4
Unincorporated business	6.5	16.2	9.9	9.8	8.7	7.8	7.6	6.6	6.5	1.3	1.7	0.3
Other intangible property	4.1	2.5	3.7	4.2	4.1	4.1	5.3	4.4	3.8	5.3	3.1	2.7
Debts and mortgages	9.1	15.8	8.4	9.4	10.7	10.1	10.0	11.0	9.6	7.2	5.3	5.4
Economic estate	90.9	84.2	91.6	90.6	89.3	89.9	90.0	89.0	90.4	92.8	94.7	94.6

tions of their percentages in the youngest age group do not warrant such a conclusion.

Federal government bonds (total) show no systematic variation with either size of gross estate or age.

f. *Multiple correlation: Age, gross estate, and amounts of particular assets held*

To obtain a more comprehensive measurement of the relationship between these variables, multiple correlations have been computed for each of the four kinds of assets. The coefficients shown in Table E-57 refer to weighted linear correlations between the amount of the particular type of asset held (X_1), the amount of gross estate (X_2), and age (X_3) over all the cells of the three-way tabulations of these variables. The weights used are the number of decedents on which the estimates in the cells are based.

The simple coefficients of correlation between X_1 and X_2 are substantial for the two types of bonds, less substantial for insurance and unincorporated business. A positive correlation must, of course, be expected between the dollar amounts held of one asset and of all assets: X_1 is a component of X_2. But in the cases studied here it is not a dominant component. On the average, federal bonds constitute only 7.7 percent of gross estate; unincorporated business, 6.5 percent; state and municipal bonds, 4.6 percent; and insurance, 4.4 percent. The automatic correlation of the two variables, therefore, need not be pronounced with these asset types. (It would necessarily be higher for such an asset as corporate stock, which on the average forms 38.8 percent of gross estate.) The case of unincorporated business shows that the positive correlation of X_1 and X_2 can be fairly weak despite the fact that one is a component of the other.

The simple correlation of asset holdings with age tends to be negative in the case of unincorporated business and insurance. In both instances the correlation is weak. For the two types of bonds, the simple correlation of X_1 and X_3 shows a positive sign, but is quite insignificant. It appears that over the whole range of the material and for the four asset types examined, the only significant correlation of asset holdings with age exists in the case of unincorporated business, where it is negative.

The coefficients of multiple correlation are pronounced, ranging from 0.69 to 0.89. Together, the variations of age and of the amount of gross estate explain about 50 to 80 percent of the variance in the holdings of the four kinds of assets. The correlation is highest for federal government bonds, lowest for unincorporated business. But is will be noted that, except for unincorporated business, the addition of the age variable (X_3) produces no improvement over the simple correlation between X_1 and X_2. The contribution of the age variable is practically nil in those cases. Only for unincorporated business is $R_{1.23}$ notably in excess of r_{12}, and the contribution of X_3 a noticeable one. The variance of gross estate explains 28 percent, that of age 19 percent, and both together 47 percent, of the variance of that asset. Thus, where the multiple correlation is highest, i.e. for the two types of bonds, it merely brings out a high correlation of particular asset holdings with

CORRELATION OF ASSET HOLDINGS, GROSS ESTATE, AND AGE

X_1 = Holdings of particular assets ($ thous.)
X_2 = Value of gross estate ($ thous.)
X_3 = Age (years)

Asset types	Simple coefficients of correlation			Multiple coefficients of correlation:	Three variable regression equations:
	r_{12}	r_{13}	r_{23}	$R_{1\cdot23}$	$X_1 =$
	1	2	3	4	5
Federal government bonds	0.89	0.13	0.05	0.89	$-22.10 + 0.095X_2 + 0.280X_3$
State and municipal bonds	0.86	0.05	0.05	0.86	$-21.15 + 0.150X_2 + 0.012X_3$
Insurance	0.74	—0.25	0.05	0.79	$-6.62 + 0.013X_2 - 0.157X_3$
Unincorporated business	0.51	—0.44	0.05	0.69	$24.80 + 0.011X_2 - 0.287X_3$

the holdings of all kinds of assets; where the multiple correlation is relatively low, i.e. for unincorporated business, both independent variables contribute.

An experiment with an additional quadratic expression for age in the insurance correlation produced no significant improvement in the coefficient of multiple correlation.

The regression equations in Table E-57 show the parameters that might be used to estimate holdings of the several asset types on the basis of information on aggregate gross estate and age in an individual case. For the two types of bonds, at least, such estimates might hold out promise.

g. *Shares of the age groups in wealth, by type of asset*

The distribution of wealth holders and of various types of assets over the age groups is shown in absolute figures in Table E-58, and in percentages in Table E-59. The shares of the various age groups in total asset holdings depend, in the first instance, on the age distribution of the wealth holders. Considering ten-year age brackets, the age classes with the largest numbers of wealth holders are those from forty to sixty. In those brackets are usually also found the largest shares in total asset holdings.

Comparing the age group shares in particular assets with those in total gross estate—or in economic estate—we find that the younger groups usually have relatively large shares, and the older age groups relatively small shares in "other intangible property" and in unincorporated business. The age groups from fifty to sixty-five years show relatively large proportions of insurance. In the case of government bonds and corporate stock, the relative shares of the groups show little systematic variation; but in the case of corporate bonds, the shares of the youngest and oldest groups are relatively high, those of the middle group low. These proportions are, of course, affected by the relationship between age and size of estate.

ESTATE TAX WEALTH, BY TYPE OF ASSET AND AGE OF OWNER: 1944

$ mill.

	All age groups	20 under 30	30 under 40	40 under 50	50 under 55	55 under 60	60 under 65	65 under 70	70 under 75	75 under 80	80 under 85	85 and over
	1	2	3	4	5	6	7	8	9	10	11	12
Number of wealth holders	876 442	28 058	140 717	211 191	119 687	99 624	85 058	73 530	53 391	33 291	15 148	7 747
Gross estate plus tax exempt insurance	149 591	3 921	20 184	31 107	19 406	17 069	16 465	16 783	11 425	7 957	3 402	1 872
Real estate	24 717	648	3 797	5 263	3 116	2 672	3 032	2 367	1 772	1 276	526	248
Tangible personal property	2 101	28	394	475	240	232	202	229	150	98	34	19
Intangible property	122 773	3 245	15 993	25 369	16 050	14 165	13 231	14 187	9 503	6 583	2 842	1 605
Federal government bonds, total	11 439	339	1 531	2 540	1 169	1 405	1 119	1 202	824	706	348	256
Wholly tax exempt	998	—	49	592	38	38	43	40	47	66	57	28
Partially tax exempt	2 936	65	383	583	233	493	248	346	222	184	86	93
Taxable	7 505	274	1 099	1 365	898	874	828	816	555	456	205	135
State and municipal bonds	6 873	104	949	331	573	1 500	543	1 559	558	421	180	155
Corporate bonds	4 977	187	704	1 017	436	480	471	574	481	339	182	106
Corporate stock	58 034	1 500	7 256	11 652	7 549	5 925	6 567	6 925	5 064	3 404	1 424	768
Cash	14 009	306	1 513	3 124	1 771	1 545	1 560	1 607	1 210	855	343	175
Mortgages and notes	4 955	91	1 036	713	567	485	518	571	417	335	146	76
Insurance (gross)	6 626	46	385	1 375	1 337	1 142	950	722	384	190	76	19
Unincorporated business	9 656	395	1 383	3 241	1 729	1 075	753	530	292	172	69	17
Other intangible property	6 204	277	1 236	1 376	919	608	750	497	273	161	74	33
Debts and mortgages	13 664	249	1 991	3 690	2 254	1 661	1 327	1 032	881	404	126	49
Economic estate	135 927	3 672	18 193	27 417	17 152	15 408	15 138	15 751	10 544	7 553	3 276	1 823
Gross estate per wealth holder ($ thous.)	172	140	143	147	162	171	194	228	214	239	225	242
Economic estate per wealth holder ($ thous.)	157	131	129	130	143	155	178	214	197	227	216	235
Supplementary information												
Insurance (unadjusted)	21 890	653	3 499	6 551	4 054	2 789	1 980	1 314	641	283	102	24
Economic estate (unadjusted)	151,191	4 279	21 307	32 593	19 869	17 055	16 168	16 343	10 801	7 646	3 302	1 828
Adjusted as percent of unadjusted economic estate	89.9	85.8	85.4	84.1	86.3	90.3	93.6	96.4	97.6	98.8	99.2	99.7
Amount of insurance adjustment	15 264	607	3 114	5 176	2 717	1 647	1 030	592	257	93	26	5
Percentage distribution of insurance adjustment	100.0	4.0	20.4	33.9	17.8	10.8	6.7	3.9	1.7	0.6	0.2	0

DISTRIBUTION OF ESTATE TAX WEALTH, BY AGE OF OWNER IN TYPE-OF-ASSET CATEGORIES: 1944

Percent

	All age groups	20 under 30	30 under 40	40 under 50	50 under 55	55 under 60	60 under 65	65 under 70	70 under 75	75 under 80	80 under 85	85 and over
	1	2	3	4	5	6	7	8	9	10	11	12
Wealth holders	100.0	3.2	16.2	24.4	13.8	11.5	9.8	8.5	6.2	3.8	1.7	0.9
Gross estate plus tax exempt insurance	100.0	2.6	13.5	20.8	13.0	11.4	11.0	11.2	7.6	5.3	2.3	1.3
Real estate	100.0	2.6	15.4	21.3	12.6	10.8	12.2	9.6	7.2	5.2	2.1	1.0
Tangible personal property	100.0	1.3	18.8	22.6	11.4	11.1	9.6	10.9	7.1	4.7	1.6	0.9
Intangible property	100.0	2.6	13.0	20.7	13.1	11.5	10.8	11.6	7.7	5.4	2.3	1.3
Federal government bonds, total	100.0	3.0	13.4	22.2	10.2	12.3	9.8	10.5	7.2	6.2	3.0	2.2
Wholly tax exempt	100.0	—	4.9	59.3	3.8	3.8	4.3	4.0	4.7	6.7	5.7	2.8
Partially tax exempt	100.0	2.2	13.0	19.9	7.9	16.8	8.4	11.8	7.6	6.3	2.9	3.2
Taxable	100.0	3.7	14.6	18.2	12.0	11.6	11.0	10.9	7.4	6.1	2.7	1.8
State and municipal bonds	100.0	1.5	13.8	4.8	8.3	21.8	7.9	22.7	8.1	6.2	2.6	2.3
Corporate bonds	100.0	3.8	14.1	20.4	8.8	9.6	9.5	11.5	9.7	6.8	3.7	2.1
Corporate stock	100.0	2.6	12.5	20.1	13.0	10.2	11.3	11.9	8.7	5.9	2.5	1.3
Cash	100.0	2.2	10.8	22.3	12.7	11.0	11.1	11.5	8.6	6.1	2.5	1.2
Mortgages and notes	100.0	1.8	20.9	14.4	11.5	9.8	10.5	11.5	8.4	6.8	2.9	1.5
Insurance (gross)	100.0	0.7	5.8	20.8	20.2	17.2	14.3	10.9	5.8	2.9	1.1	0.3
Unincorporated business	100.0	4.1	14.3	33.6	17.9	11.1	7.8	5.5	3.0	1.8	0.7	0.2
Other intangible property	100.0	4.5	19.9	22.2	14.8	9.8	12.1	8.0	4.4	2.6	1.2	0.5
Debts and mortgages	100.0	1.8	14.6	27.0	16.5	12.2	9.7	7.6	6.4	3.0	0.9	0.3
Economic estate	100.0	2.7	13.4	20.2	12.6	11.3	11.1	11.6	7.8	5.6	2.4	1.3

The amounts of gross and economic estate per wealth holder (Table E-58) show the fairly regular rise in the average size of estate with age which we found on the basis of the same data but before multiplication of the estates by inverse death rates. (See Chapter III, Section 4-a.) However the simple coefficient of correlation between age and gross estate, calculated on the basis of the "inflated" distribution, is very low: $r = 0.05$. It is even lower than that found above between age and net estate ($r = 0.13$), confirming the finding that the covariation of the two variables accounts for only an insignificant part of their respective total variations from case to case.

h. *Composition of gross estate for owners of different age*

Table E-60 brings out certain features commented on in connection with Table E-59. Unincorporated business assets and "other intangible property" make up relatively large parts of the estates of younger persons in this group, and relatively small parts of those of older persons. The inverse situation generally, though not regularly, prevails for other types of assets. The percentages of insurance and of debts and mortgages in gross estate rise from the lowest to the third or fourth age groups and decline fairly regularly with advancing age after fifty to fifty-five; the percentage of corporate bonds follows the inverse pattern.

i. *Asset holdings per wealth holder in different age groups*

Table E-61 shows the average amounts of various assets held by wealth holders in the different age groups. For most of the assets there is a general tendency towards progression with age in the average amount of holdings. This tendency is pronounced for all federal government bonds and corporate bonds from fifty to fifty-five years upwards.

Insurance, unincorporated business assets, "other intangible property," and the liability items of debts and mortgages show divergent tendencies. Average assets in unincorporated business and holdings of "other intangible property" show a general tendency towards a downward trend from lower to higher age brackets. Average insurance holdings rise to a plateau between fifty and sixty-five years and then fall off. Debts and mortgages reach a peak in the age group from fifty to fifty-five after and decline thereafter.

j. *Devolution rates for various types of assets*

Devolution rates have been computed for various types of assets and are shown in Table E-62. These rates vary greatly from asset to asset. Since they are weighted averages of inverse death rates, with the shares of the age groups in particular assets forming the weights, the devolution rates are highest for unincorporated business holdings and "other intangible property" and lowest for state and municipal bonds and for insurance. The differences in devolution rates reflect differences in the sharing of the age groups in the various assets. The greater the share of the younger age groups in a type of asset the higher generally is the devolution rate, and vice versa. Since the inverse death rates are much higher in the younger age

COMPOSITION OF ESTATE TAX WEALTH, BY TYPE OF ASSET IN AGE GROUPS: 1944

Percent

	All age groups	20 under 30	30 under 40	40 under 50	50 under 55	55 under 60	60 under 65	65 under 70	70 under 75	75 under 80	80 under 85	85 and over
	1	2	3	4	5	6	7	8	9	10	11	12
Gross estate plus tax exempt insurance	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Real estate	16.5	16.5	18.8	16.9	16.1	15.7	18.4	14.1	15.5	16.1	15.5	13.3
Tangible personal property	1.4	0.7	2.0	1.5	1.2	1.3	1.2	1.4	1.3	1.2	1.0	1.0
Intangible property	82.1	82.8	79.2	81.6	82.7	83.0	80.4	84.5	83.2	82.7	83.5	85.7
Federal government bonds, total	7.7	8.7	7.6	8.2	6.0	8.2	6.8	7.2	7.2	8.8	10.2	13.7
Wholly tax exempt	0.7	—	0.2	1.9	0.2	0.2	0.3	0.2	0.4	0.8	1.7	1.5
Partially tax exempt	2.0	1.7	1.9	1.9	1.2	2.9	1.5	2.1	1.9	2.3	2.5	5.0
Taxable	5.0	7.0	5.5	4.4	4.6	5.1	5.0	4.9	4.9	5.7	6.0	7.2
State and municipal bonds	4.6	2.6	4.7	1.1	3.0	8.8	3.3	9.3	4.9	5.3	5.3	8.3
Corporate bonds	3.3	4.8	3.5	3.3	2.3	2.8	2.9	3.4	4.2	4.3	5.3	5.7
Corporate stock	38.8	38.2	35.9	37.5	38.9	34.7	39.9	41.2	44.3	42.8	41.9	41.0
Cash	9.4	7.8	7.5	10.0	9.1	9.1	9.5	9.6	10.6	10.7	10.1	9.3
Mortgages and notes	3.3	2.3	5.1	2.3	2.9	2.8	3.1	3.4	3.6	4.2	4.3	4.0
Insurance (gross)	4.4	1.2	1.9	4.4	6.9	6.7	5.8	4.3	3.4	2.4	2.2	1.0
Unincorporated business	6.5	10.1	6.9	10.4	8.9	6.3	4.6	3.1	2.6	2.2	2.0	0.9
Other intangible property	4.1	7.1	6.1	4.4	4.7	3.6	4.5	3.0	2.4	2.0	2.2	1.8
Debts and mortgages	9.1	6.4	9.9	11.9	11.6	9.7	8.1	6.1	7.7	5.1	3.7	2.6
Economic estate	90.9	93.6	90.1	88.1	88.4	90.3	91.9	93.9	92.3	94.9	96.3	97.4

AVERAGE ESTATE TAX WEALTH PER WEALTH HOLDER, BY AGE GROUPS: 1944

$ thous.

	All age groups	20 under 30	30 under 40	40 under 50	50 under 55	55 under 60	60 under 65	65 under 70	70 under 75	75 under 80	80 under 85	85 and over
	1	2	3	4	5	6	7	8	9	10	11	12
Gross estate plus tax exempt insurance	172	140	143	147	162	171	194	228	214	239	225	241
Real estate	28	23	27	25	26	27	36	32	33	38	35	32
Tangible personal property	2	1	3	2	2	2	2	3	3	3	2	2
Intangible property	142	116	113	120	134	142	156	193	178	198	188	207
Federal government bonds, total	13	12	11	12	10	14	13	16	15	21	23	33
Wholly tax exempt	1	—	—	3	—	—	—	—	1	2	4	4
Partially tax exempt	3	2	3	3	2	5	3	5	4	5	6	12
Taxable	9	10	8	6	8	9	10	11	10	14	13	17
State and municipal bonds	8	4	7	2	5	15	6	21	10	13	12	20
Corporate bonds	6	7	5	5	3	5	7	8	9	10	12	14
Corporate stock	67	53	51	55	63	59	77	94	95	102	94	99
Cash	16	11	10	15	15	16	18	22	23	26	23	23
Mortgages and notes	6	3	7	3	5	5	6	8	8	10	10	10
Insurance (gross)	8	2	3	6	11	11	11	10	7	6	5	2
Unincorporated business	11	14	10	15	14	11	9	7	6	5	4	2
Other intangible property	7	10	9	7	8	6	9	7	5	5	5	4
Debts and mortgages	16	9	14	17	19	17	16	14	17	12	8	6
Economic estate	156	131	129	130	143	154	178	214	197	227	217	235

DEVOLUTION RATES AND ESTIMATED TOTAL ESTATE TAX WEALTH: 1944 [1]

Wealth holders and wealth items	Estate tax returns			Estimated wealth, cases of known age ($ mill.)	Devolution rate [1]	Devolution rate index	Estimated wealth, all cases ($ mill.)
	All returns	Age not stated	Returns with age stated				
	1	2	3	4	5	6	7
Number of wealth holders	15 878	711	15 167	867 442	57.2	131.5	908 822
Gross estate plus tax exempt insurance	3 434	105	3 329	149 591	44.9	103.2	154 187
Real estate	520	23	497	24 717	49.7	114.3	25 844
Tangible personal property	41	1	40	2 101	52.5	120.7	2 153
Intangible property	2 873	81	2 792	122 773	44.0	101.1	126 412
Federal government bonds, total	289	9	280	11 439	40.9	94.0	11 820
Wholly tax exempt	26	1	25	998	39.9	91.7	1 037
Partially tax exempt	82	3	79	2 936	37.2	85.5	3 050
Taxable	181	5	176	7 505	42.6	97.9	7 710
State and municipal	195	4	191	6 873	36.0	82.8	7 020
Corporate bonds	137	5	132	4 977	37.7	86.7	11 878
Corporate stock	1 357	33	1 324	58 034	43.8	100.7	59 437
Cash	330	12	318	14 009	44.1	101.4	14 553
Mortgages and notes	123	5	118	4 955	42.0	96.6	5 166
Insurance (gross)	238	6	232	6 626	28.6	65.7	6 807
Unincorporated business	110	4	106	9 656	91.1	209.4	10 021
Other intangible property	94	3	91	6 204	68.2	156.8	6 411
Debts and mortgages	208	7	201	13 664	68.0	156.3	14 144
Economic estate	3 226	98	3 128	135 927	43.5	100.0	140 331
Before insurance correction							
Gross estate plus tax exempt insurance	3 434	105	3 329	164 855	49.5	102.5	169 983
Insurance	238	6	232	21 890	94.4	195.4	22 467
Economic estate	3 226	98	3 128	151 191	48.3	100.0	155 816

[1] Col. 4 divided by col. 3.

groups, a relatively larger weight given to those groups makes for a higher value in the average rate.

The devolution rates for the various types of assets, and the index numbers expressing these rates as percentages of the devolution rate of total economic estate, thus are indirect measures of the relation between type of asset and average age of wealth holder. Between types of assets, they vary inversely with the average age of the holders of such assets. The relation, however, is not clear-cut and certainly not proportional, since it is affected by the age-mortality relation.

The devolution rate of total economic estate is about 44; that for total gross estate, 45. Both rates are somewhat lower than that for the number of estate tax wealth holders (57), which reflects the slight positive correlation between age and average wealth.

The devolution rate for insurance is greatly affected by the correction for insurance bias. Before that correction (when the calculation was in fact based on the face value of all policies on the lives of estate tax wealth holders rather than on their equity value) it was 94, the highest of all types of assets; after the correction, it is 29, the lowest of all. As a result of the correction, the share of the three lowest age groups in total insurance was greatly reduced, and holdings of this asset were concentrated in the middle age bracket. Aside from insurance, we find at one extreme the state and municipal bonds, which appear as a rather typical item of "old-age wealth"; at the other extreme, assets in unincorporated business, a relatively typical wealth item among younger wealth holders.

Column 7 of Table E-62 shows aggregate holdings of various types of assets estimated on the basis of all of the estate tax returns, including returns without information on age. These estimates were obtained by multiplying the figures in column 1 by those in column 5, on the assumption that the returns without information on age and the corresponding assets are distributed over the age groups in the same manner as the returns with age reported. This correction leads to a total number of wealth holders of a little over 900,000 in 1944, with total economic estate of about $140 billion. This estimate is further discussed in Section 4 of this chapter.

k. *Assets held by certain top wealth groups*

We shall now consider the amounts of wealth held by certain top wealth groups and some features of their distribution. The estimates here presented have not been corrected either for lack of information on age or for biases due to undervaluation, gifts *inter vivos*, etc. because of the tenuous assumptions that would have to be made about the incidence of these factors in various size groups. The absolute amounts shown in the following tables are therefore necessarily lower than any satisfactory correction would make them. The proportions of various assets held by the top group in total estate tax wealth, however, may or may not be biased.

1. *Estates of more than $100,000 gross value.* Estates exceeding $100,000 in gross value were owned by about 490,000 wealth holders. They amounted to an aggregate of about $124 billion, or an average of $255,000 per wealth holder. The holdings of individual assets by this group are shown in Table E-63, and their percentage distribution by size of gross estate in Table E-64.

This group comprised the top 56 percent of all estate tax wealth holders, and held 82 percent of the aggregate economic estate. It owned 98 percent of all holdings of both wholly tax exempt federal government bonds and state and municipal bonds (Table E-63).

ASSETS HELD BY ESTATES VALUED AT $100,000 OR MORE: 1944

	Aggregate assets held ($ mill.)	Assets per wealth holder ($ thous.)	Percentage of estates of all sizes[1]
	1	2	3
Number of wealth holders	487 224	—	56.2
Gross estate plus tax exempt insurance	124 245	255	83.1
Real estate	17 880	37	72.3
Tangible personal property	1 629	3	77.5
Intangible property	104 736	215	85.3
Federal government bonds, total	9 612	20	86.0
Wholly tax exempt	977	2	97.9
Partially tax exempt	2 537	5	86.4
Taxable	6 098	13	81.3
State and municipal bonds	6 743	14	98.1
Corporate bonds	4 387	9	88.1
Corporate stock	52 158	107	89.9
Cash	10 524	21	75.1
Mortgages and notes	3 969	8	80.1
Insurance (gross)	4 997	10	75.4
Unincorporated business	7 143	15	74.0
Other intangible property	5 204	11	83.9
Debts and mortgages	11 398	23	83.4
Economic estate	112 847	232	83.0
Insurance, unadjusted	16 033	33	73.2
Economic estate, unadjusted	123 883	255	81.9
Adjusted as percentage of unadjusted economic estate	91.1	—	—

[1] Based on col. 1 of this table and col. 1 of Table E-53.

2. *Top 100,000 wealth holders.* The assets of the 100,000 largest wealth holders have been obtained from Table E-53 by interpolating in the gross estate class $200,000–$300,000. [11] The results are shown in Table E-65.

The top 100,000 wealth units held about $71 billion of gross estate, $65 billion of economic estate. They comprised the top 11.5 percent of all wealth units and held 48 percent of the aggregate gross and economic estate, but about 90 percent of all wholly tax exempt federal bonds and state and municipal bonds. Their share was lowest in insurance, real estate, and unincorporated business.

[11] The interpolation was carried out on Lorenz charts for individual assets. The readings from the charts for subtotals and totals were adjusted to agree with the readings for the detail of the various types of assets.

E-64 DISTRIBUTION OF ESTATES VALUED AT $100,000 OR MORE, BY SIZE: 1944

Percent

	Gross estate classes ($ thous.)								
	Total	100 under 150	150 under 200	200 under 300	300 under 500	500 under 1,000	1,000 under 2,000	2,000 under 5,000	5,000 and over
	1	2	3	4	5	6	7	8	9
Wealth holders (number)	100.0	45.3	19.7	15.4	10.8	5.9	2.1	0.6	0.2
Gross estate plus tax exempt insurance	100.0	18.3	11.6	13.2	14.7	15.1	11.0	7.3	8.8
Real estate	100.0	29.9	14.8	16.1	14.8	11.8	7.4	2.2	3.0
Tangible personal property	100.0	20.9	13.0	16.5	13.4	11.8	11.4	7.3	5.7
Intangible property	100.0	16.3	11.0	12.7	14.7	15.8	11.6	8.1	9.8
Federal government bonds, total	100.0	17.6	10.2	13.9	12.2	16.7	11.0	5.9	12.5
Wholly tax exempt	100.0	2.5	1.3	3.3	5.5	7.4	7.8	5.1	67.1
Partially tax exempt	100.0	17.3	11.4	12.4	11.0	23.8	6.8	6.3	11.0
Taxable	100.0	20.1	11.2	16.3	13.8	15.3	13.2	5.8	4.3
State and municipal bonds	100.0	1.8	2.4	5.1	4.7	10.2	19.7	16.2	39.9
Corporate bonds	100.0	14.2	11.6	13.8	16.8	15.1	10.2	4.2	14.1
Corporate stock	100.0	12.6	9.6	11.6	16.1	17.7	12.8	10.3	9.3
Cash	100.0	25.1	15.5	14.2	13.6	13.3	8.4	5.7	4.2
Mortgages and notes	100.0	23.8	15.5	12.0	14.1	11.8	15.6	4.3	2.9
Insurance (gross)	100.0	31.2	17.3	17.3	15.2	10.3	4.9	2.8	1.0
Unincorporated business	100.0	27.9	15.7	17.6	16.7	17.1	2.4	2.1	0.5
Other intangible property	100.0	17.9	11.3	16.9	15.2	13.9	13.8	5.4	5.6
Debts and mortgages	100.0	21.4	12.7	14.5	17.6	15.8	8.6	4.2	5.2
Economic estate	100.0	18.0	11.4	13.1	14.4	15.1	11.2	7.6	9.2

E-65 ASSETS HELD BY TOP 100,000 WEALTH HOLDERS: 1944 [1]

	Aggregate assets held ($ mill.)	Assets per wealth holder ($ thous.)	Percentage of estates of all sizes
	1	2	3
Gross estate plus tax exempt insurance	71 435	714	47.7
Real estate	7 094	71	28.7
Tangible personal property	821	8	39.1
Intangible property	63 520	635	51.7
Federal government bonds, total	5 646	56	49.5
Wholly tax exempt	906	9	91.0
Partially tax exempt	1 510	15	51.6
Taxable	3 230	32	43.2
State and municipal bonds	6 124	61	89.1
Corporate bonds	2 673	27	53.7
Corporate stock	34 878	349	60.1
Cash	4 847	48	34.6
Mortgages and notes	1 967	20	39.7
Insurance (gross)	1 763	18	26.6
Unincorporated business	2 781	28	28.8
Other intangible property	2 841	28	45.8
Debts and mortgages	5 944	59	43.5
Economic estate	65 491	655	48.1

[1] These 100,000 wealth holders accounted for 11.5 percent of the number of estates of all sizes.

DISTRIBUTION OF ESTATES OF TOP 100,000 WEALTH HOLDERS, BY SIZE: 1944 E-66

Percent

	Gross estate classes ($ thous.)						
	Total	200 under 300	300 under 500	500 under 1,000	1,000 under 2,000	2,000 under 5,000	5,000 and over
	1	2	3	4	5	6	7
Wealth holders (number)	100.0	3.8	52.7	28.9	10.3	3.2	1.1
Gross estate plus tax exempt insurance	100.0	1.0	25.5	26.4	19.1	12.7	15.3
Real estate	100.0	1.1	37.4	29.7	18.6	5.5	7.7
Tangible personal property	100.0	1.5	26.7	23.4	22.6	14.5	11.3
Intangible property	100.0	1.0	24.2	26.0	19.2	13.4	16.2
Federal government bonds, total	100.0	1.1	20.7	28.4	18.6	10.0	21.2
Wholly tax exempt	100.0	—	6.0	7.9	8.4	5.5	72.2
Partially tax exempt	100.0	1.3	18.5	39.9	11.4	10.5	18.4
Taxable	100.0	1.4	25.9	28.7	24.9	11.0	8.1
State and municipal bonds	100.0	0.2	5.2	11.3	21.6	17.8	43.9
Corporate bonds	100.0	0.8	27.7	24.8	16.7	6.9	23.1
Corporate stock	100.0	1.1	24.0	26.4	19.2	15.3	14.0
Cash	100.0	1.9	29.6	28.9	18.2	12.3	9.1
Mortgages and notes	100.0	1.7	28.5	23.7	31.5	8.7	5.9
Insurance (gross)	100.0	3.0	43.2	29.3	13.9	7 9	2.7
Unincorporated business	100.0	0.3	43.0	43.9	6.3	5.4	1.1
Other intangible property	100.0	1.3	27.9	25.4	25.3	9.8	10.3
Debts and mortgages	100.0	1.4	33.8	30.3	16.5	8.1	9.9
Economic estate	100.0	0.9	24.8	26.0	19.4	13.1	15.8

ASSETS HELD BY WEALTHIEST 1 PERCENT OF THE POPULATION: 1944 [1] E-67

	Aggregate assets held ($ mill.)	Assets per wealth holder ($ thous.)	Percentage of estates of all sizes
	1	2	3
Gross estate plus tax exempt insurance	130 593	229	87.3
Real estate	19 551	34	79.1
Tangible personal property	1 733	3	82.5
Intangible property	109 418	192	89.1
Federal government bonds, total	10 114	18	90.3
Wholly tax exempt	982	2	98.4
Partially tax exempt	2 648	5	90.2
Taxable	6 484	11	86.4
State and municipal bonds	6 770	12	98.5
Corporate bonds	4 544	8	91.3
Corporate stock	53 739	94	92.6
Cash	11 361	20	81.1
Mortgages and notes	4 206	7	84.9
Insurance (gross)	5 433	10	82.0
Unincorporated business	7 773	14	80.5
Other intangible property	5 478	10	88.3
Debts and mortgages	11 956	21	87.5
Economic estate	118 664	208	87.3

[1] The wealthiest 1 percent comprised 571,065 wealth holders, who accounted for 65.9 percent of the number of estates of all sizes.

The percentage distribution of assets within the group is shown in Table E-66.

3. *Wealthiest 1 percent of the population.* The 571,065 wealth holders with the largest estates corresponded to the wealthiest 1 percent of the population in 1944. This number exceeds by 84,000 the total of wealth holders estimated as falling in the gross estate classes above $100,000, comprising about one-half of the class ranging from $80,000 to $100,000. The holdings of the group have been estimated with the help of Lorenz charts for the various assets and are shown in Table E-67.

The top 1 percent of the population held a total economic estate of about $119 billion, or $208,000 per wealth holder. This is 87.3 percent of the aggregate estate tax wealth. As pointed out in Section k above, these estimates are not corrected for several biases.

l. *Sampling stability of certain estimates of asset holdings*

The sampling stability of certain estimates of asset components of gross estate is relatively less than that of the total. The standard error of the estimated average amounts of wealth has been calculated for economic estate, corporate stock, and state and municipal bonds. The estimated average amount of economic estate per wealth holder is $157,000 (see Table E-53). The corresponding standard error is about $3,300, or 2 percent. The estimated amount of corporate stock per wealth holder is $67,000, the corresponding standard error about $1,700, or 2.5 percent. State and municipal bond holdings per wealth holder are estimated at $8,000 and the corresponding standard error at about $1,100, or 14 percent.

All these estimates of standard errors are based on the number of estate tax returns in the total sample. They in no way reflect the sampling fluctuations that affect the mortality rates used in the computations.

3. Estimates of Economic Estate on the Basis of Different Mortality Rates, by Age Groups, 1944

In view of the considerable influence of the mortality data used on the results obtained by the estate-multiplier method, it is desirable to calculate estimates alternative to those presented above. Such estimates have been made on the basis of four different sets of mortality rates. These are shown in Table E-68, together with the standard set used in this chapter (column 3).

The set of rates shown in columns 1 and 2 was derived from the mortality experience of the $5,000 whole-life classification of the Metropolitan Insurance Company in 1947 [12] and is designated selected-risk.

The two sets differ only in the two lowest age groups, column 1 showing the original data, and column 2 adjusted data intended to reflect higher wartime mortality. [13]

[12] These rates were readily available, since they had been used in an earlier version of this study to approximate 1944 mortality conditions.

[13] This adjustment was prompted by the original intent to use the 1947 mortality rates as approximations to the then unknown actual rates prevailing in the war year 1944.

MORTALITY RATES USED IN TABLE E-69

E-68

Age groups	Selected-risk			U.S. white-population	
	1947, unadjusted	1947, adjusted	1944	1944, adjusted	1944, unadjusted
	1	2	3	4	5
20 under 30	0.8	1.4	3.6	1.5	2.1
30 under 40	1.0	2.1	1.4	2.0	3.1
40 under 50	2.7	2.7	3.3	3.4	5.0
50 under 55	6.0	6.0	6.9	8.3	10.0
55 under 65	13.3 [1]	13.3 [1]	14.8	16.2	19.7
65 under 75	35.5 [1]	35.5 [1]	35.4	38.6	44.9
75 under 85	94.5 [1]	94.5 [1]	95.0	101.7	107.0
85 and over	185.7	185.7	207.4	221.4	221.4

[1] Wealth estimates for these age classes were obtained from the underlying rates for five-year intervals.

NUMBER OF LIVING WEALTH HOLDERS AND ECONOMIC ESTATE ESTIMATED ON BASIS OF DIFFERENT MORTALITY RATES, BY AGE GROUPS: 1944

E-69

(Corrected for Insurance Bias)

	All age groups	20 under 30	30 under 40	40 under 50	50 under 55	55 under 65	65 under 75	75 under 85	85 and over
	1	2	3	4	5	6	7	8	9
A. Wealth holders (thous.)									
1. Selected-risk rates, 1947, unadjusted	1 149.8	128.9	196.4	267.3	145.1	217.7	132.6	52.6	9.1
2. Selected-risk rates, 1947, with adjustment in two lowest age groups	998.2	75.5	98.2	267.3	145.1	217.7	132.6	52.6	9.1
3. Selected-risk rates, 1944	908.0	29.4	143.2	223.8	126.1	195.2	133.0	49.2	8.1
4. U.S. white-population rates, 1944 adjusted	846.4	70.5	103.1	214.6	104.2	178.7	121.7	45.9	7.6
5. U.S. white-population rates, 1944, unadjusted	652.4	50.4	66.5	145.9	86.5	147.2	104.8	43.6	7.6
B. Economic estate ($ bill.)									
1. Selected-risk rates, 1947, unadjusted	172.4	16.6	25.0	34.2	20.5	35.4	27.1	11.6	2.1
2. Selected-risk rates, 1947, with adjustment in two lowest age groups	153.0	9.7	12.5	34.2	20.5	35.4	27.1	11.6	2.1
3. Selected-risk rates, 1944	140.2	3.8	18.2	28.6	17.8	32.2	26.9	10.8	1.9
4. U.S. white-population rates, 1944, adjusted	130.3	9.1	13.1	27.4	14.7	29.5	24.6	10.0	1.8
5. U.S. white-population rates, 1944, unadjusted	102.6	6.5	8.5	18.7	12.2	24.3	21.2	9.5	1.8

The rates shown in columns 4 and 5 indicate United States white-population mortality; one set is adjusted according to the experience of the top 1 percent of the white population of Chicago, the other is without that adjustment. [14]

The results obtained with each of these five sets of mortality rates are shown in Table E-69. They are all based on the 15,167 estate tax returns for 1944 showing information on age, and include an allowance for 711 returns lacking such information, in accordance with the procedure followed in Table E-62. A correction for insurance bias was made in each case. Estimates of the numbers of wealth holders are shown in Part A of Table E-69, the corresponding amounts of economic estate wealth in Part B. [15]

The estimates of the total number of living wealth holders based on the estate tax cases of 1944 vary from 652,000 to 1,150,000, and the corresponding amounts of economic estate wealth from $103 billion to $172 billion. The considerable differences between the results obtained with the various sets of mortality rates show the great sensitivity of our method to the selection of rates. There is of course a pronounced difference between the five sets of mortality rates shown in Table E-68. Yet it may seem astonishing that by exchanging set 1 for set 5 one obtains 76 percent more wealth holders and 68 percent more economic estate. The considerable differences result primarily from the sizable variations between the rates in the younger age groups. Table E-69 shows that generally the several estimates for the younger age groups vary much more than those for the older groups. The range of results obtained with the different rates does not indicate, however, the range of unreliability of our findings because the several alternative mortality rates are far less appropriate for estimating purposes than the standard set, for reasons discussed above.

4. Wealth Estimated on Basis of Standard Mortality Rates, 1944

It was found in Section 2 of this chapter that the estates of 15,878 decedents in 1944 probably reflect an aggregate amount of economic estate of about $140 billion in the hands of a few more than 900,000 living persons at the top of the country's private wealth pyramid. (See Table E-62.) This estimate was obtained with the help of the selected-risk mortality rates for 1944. It is in need of some correction for downward biases due to undervaluation prior to audit, gifts *inter vivos*, and division of property, and perhaps for a slight upward bias due to the lack of distinction between the two sexes. But these corrections can be made only in a very rough manner, in accordance with the discussion in Chapter II, Section 2-e. The downward biases have been estimated to amount to at least 20 percent of the total amounts, the upward bias to less than 5 percent. A net downward bias of 15 percent in the amount of wealth would seem a conservative estimate. If this is adopted, the computed economic estate wealth should be considered as equivalent

[14] See discussion in Chapter II, Section 2-c. Estimates for the top 1 percent were obtained by extrapolation from data grouped by fifths of the population.

[15] The figures are not adjusted for understatement prior to audit, etc.

to 85 percent of the actual wealth held by the group, which in turn would represent 118 percent of our estimate. This would bring the total estimated wealth to about $165 billion.

The biases may also affect the estimate of the number of wealth holders, but it is probable that their impact is smaller in that direction. The true number of estate tax wealth holders is probably in the neighborhood of 1 million. This leads to the conclusion that in 1944 the top 1 million private wealth holders in the country owned about $165 billion of economic estate.

PART IV

EXPERIMENTS WITH THE SAVING FUNCTION

BY RAYMOND W. GOLDSMITH

Introduction

This part of the Study is but a progress report on the application of elementary econometric methods, an application admittedly restricted in scope and crude in execution, to the new time series estimates of saving derived by this study, and in particular to the estimates of national and personal saving shown in the T Tables in Volume I. [1]

Limitations of time, resources, and author's competence have prevented full exploitation of the new estimates. For the same reason the pages that follow contain no comparison of the results of the limited experimentation with the new estimates with those obtained in previous investigations, most of which made use of the old, and more rarely the revised (1947), estimates of personal saving (excluding consumer durables) of the Department of Commerce. Nor do they try to reconcile the saving functions derived from time series with functions obtained from cross-section (household) data, whether those of other investigators, particularly those based on the materials of the Survey of Consumer Finances, or those developed by Dr. Brady in Part II of this volume.

Publication of this limited progress report has nevertheless seemed justified on three accounts. First, experimentation with saving functions derived from the new data disclosed, notwithstanding all the inherent limitations and crudities, some interesting results and raises a few still more interesting questions. Secondly, publication of these preliminary results may save later investigators the trouble of retracing some of the early steps in the analysis, and may thus enable them to make more rapid progress in the later and more difficult stages. Thirdly, it is hoped that these preliminary, tentative, and on many points inconclusive results may stimulate other investigators, and partly just because of their imperfect state, to make more intensive use of the new data and to bring more powerful methods to bear on them.

[1] Tables Y-1 and Y-2 were derived from preliminary T tables which were slightly revised in the printed version; the effect of the changes on the saving function and coefficients of determination was not great enough to warrant recalculation.

I. The Search for "The" Saving Function

The volume of saving of an individual economic unit during a given period —usually a year—can be related to the saver's income or to other measurable characteristics of the saver or of his environment. It may be connected, e.g., with the saver's assets, occupation, or age, on the one hand; and with movements of employment, prices, or interest rates, on the other. Such a relation between saving as the dependent variable and other factors conceived as independent (explanatory) variables acquires significance for economic theory or policy only to the extent that it is found to be valid for groups of economic units and possibly for the entire nation, and to apply to more than one period of time. Attention can then be directed either to the relation between saving of a number of units and the explanatory variables during one period of time, or to the relation of saving of a group of units and the explanatory variables for a number of successive or separate periods. In the first case we are looking for a cross-section saving function, which is typically derived from data on a small number of sample units; in the second we are interested in a historical saving function, obtained from statistical time series of saving and the explanatory variables.

Cross-section saving functions are an expression of differences in the volume of saving between different units during one and the same period of time. Historical saving functions describe differences in the volume of saving of groups of economic units over a period of time, usually large groups such as all households within a country. Both cross-section and historical functions may either be regarded as nothing but a simplified description of the observed relation between saving and the selected variables during the reference period (i.e. the period from which the function has been derived), or be used as a means of forecasting, or "backcasting," saving for any period for which the values of the explanatory variables are known or posited. The latter view is permissible only to the extent that it may be assumed that the relationship prevailing either during one reference period (cross-section saving function) or during a number of them (historical saving function) is valid also for other periods.

Much of the extensive discussion which economic theorists have devoted to saving during the last generation, particularly since the publication in 1936 of Keynes' *General Theory of Employment, Interest and Money*, has centered on the saving function (though the discussion often has used the alternative approach by means of the consumption function), and most econometric work in the field of saving has been devoted to this one topic. The goal of theorists and statisticians

has been to decide which independent variables must be included in the saving function, to determine the form of the function, and to ascertain the actual values of the parameters. Virtually all the work has been directed towards finding a function describing the behavior of aggregate saving of all individuals. However, there is no reason, except the difficulty of obtaining the necessary data, why similar functions could not or should not also be determined for other economic groupings, particularly for farm and nonfarm households and for business enterprises. In this country almost all estimates of historical saving functions have been based on the Department of Commerce's estimates of personal saving, which constitutes the undivided residual between personal disposable income and personal consumption expenditures. This largely accounts for the absence of work on the saving function for different forms of saving, but again there is no reason, except lack of data, why separate functions should not be derived for them. The same circumstance explains the lack of work on historical functions based on different concepts of saving. Obviously, however, there are as many saving functions for a given group of savers or a period as there are meaningful definitions and measures of saving, and it is at least possible that these functions differ significantly among themselves. Indeed, development of separate saving functions for periods of different length, for saver groups of broader or narrower scope, for different forms of saving, and for variant concepts and measurements of saving is probably the best way in which the concept of a saving function can be made realistic and flexible enough to be of full value in an explanation of the past history of saving, in the diagnosis of the current saving situation, and in the policy recommendations that flow from all these types of analysis.

The distinction between these separate saving functions is fairly obvious except possibly in the case of functions for periods of different length. Here a sharp distinction must be drawn between short-run and long-run functions. It is based not on the length of the reference period, but on the fact that adaptation of the underlying saving schedules to changes in income takes time, sometimes a considerable length of it. Saving functions which are derived from year-to-year changes in saving and the explanatory variables, as is essentially the case with all functions determined by correlation of continuous data, reflect largely the short-term reaction, even if they are based on a long reference period. The longer the reference period the better the chance that the relation expressed in the function is a typical, and not an ephemeral short-term, reaction, in particular that its form is not dominated by the peculiarities of one or two business cycles. A longer reference period, on the other hand, involves the danger that the short-term relationship between the variables has undergone a long-term systematic shift within the period.

At least five approaches are available to approximate the true long-term relationship, provided one exists. The first is the introduction of time as an independent variable into the function. The second is the use of trend-adjusted values for both dependent and independent variables. The addition of specific variables which change over time, intended to measure shifts in the functional relation, constitutes a third possibility. The fourth approach is to treat as the dependent

variable not the absolute values of saving, but a transformation which is relatively free of time trend, e.g. the ratio of saving to income. The fifth is to derive a function from time series for relatively short periods—say, up to a decade—during which the effect of time trends on the explanatory variables is not too pronounced; and to look for common features in the saving functions for successive short periods, always making allowance for unusual influences which may affect any of them. This approach, of course, will not yield an algebraically fitted function, but only an approximation partly reflecting the investigator's judgment.

This part deals only with historical saving functions, primarily because the derivation of new annual estimates of saving for the entire nation or for large groups of savers constituted the main objective of the Study. Use is, however, made of such cross-section saving functions as have been derived, either by other investigators or in Part II of this Volume, in choosing the independent variables, in selecting the form of the function, and on other points where the findings of cross-section studies are applicable to historical saving functions.

Availability of the new estimates of saving makes it possible to go beyond previous studies of the saving function in four directions: (1) coverage of a much longer period—the fifty-three years from 1897 to 1949 against only approximately twenty years for most other studies; (2) derivation of separate saving functions for farm and nonfarm households and for a few other saver groups; (3) experimentation with the saving functions of estimates of different scope and method; and (4) derivation of separate functions for individual forms of saving. Advantage could be taken of only two of these possibilities, the coverage of a much longer period of time and experimentation with different saving concepts. Systematic exploration in the other two directions—saving functions for saver groups and individual forms of saving—was precluded by lack of time and resources.

The entire problem must be approached with an open mind and without prejudging even the question whether an aggregate saving function exists in the sense of a reasonably stable relation over time between saving, on the one hand, and income and other quantifiable variables, on the other. There is no decisive answer to this question, certainly not before much more exhaustive tests are made of all reasonable combinations of different concepts of saving, independent variables, and forms of the function itself—particularly those combinations which economic theory suggests as being particularly relevant—than have ever been published or can be undertaken in this study. In other words, the search for "the" saving function for the first half of the twentieth century or a large part of it may well be the quest for a mirage.

II. The Historical Saving Function: Relationships between National and Personal Saving and Income

Saving is by definition that part of current income which is not used for consumption, and current income has customarily been regarded by economic theorists as the primary determinant of saving. All empirical investigations,

whether based on cross-section or on historical data, have confirmed this view. Indeed, for the statistician the practical problem is not whether or not to include income as one of the independent variables of the saving function, but to decide four questions, namely:

(1) In what form to introduce current income into the function—whether as the absolute amount of current income or as the ratio of saving to income; whether in current or in real (deflated) values; whether as an aggregate or per head of the population or per spending unit; whether as it stands or in a transformation such as the logarithm of income. [2]

(2) Whether to use past income as an additional variable, e.g. in the form of the income of the preceding year, or the ratio of last year's to the current year's income, or the preceding maximum income.

(3) Whether to introduce time as an indication of the historical shift in the relation between income and saving.

(4) Whether to use any other independent variable.

1. *Approach*

In this study the experimentation with historical saving functions has been guided by the following assumptions, which are partly based upon the experience of previous investigators with historical or cross-sectional saving functions, [3] and partly derived from a statistical analysis of the new estimates developed by this study; but partly also are arbitrary or dictated by intuition, and to that extent may easily be in error.

(a) The essential relationships between saving, income, and other variables are disclosed by the three principal moulds into which the saving function may

[2] It is well to recall that a saving function of the form of $S/Y = a$ is equivalent to $S = aY$, i.e. a particularly simple function in which saving is a constant proportion of income. The elementary saving function $S = a(Y-b)$, according to which saving is a constant proportion of supernumerary income $(Y-b)$ can also be written with the saving ratio as the dependent variable, viz. as $S/Y = a - (b/Y)$, showing that it implies a hyperbolic saving ratio. On the other hand the function $S/Y = a(Y-b)$, the parallel in terms of saving ratios of the elementary saving function, is equivalent to $S = aY^2 - bY$, i.e. presupposes a quadratic rather than a linear relationship between saving and income. The function $S/Y = aX + b$, where $X \neq$ income, is equivalent to $S = aY(X + b)$, i.e. saving is proportional to the product of income and a linear function of X so that saving is proportional to income for a given value of X.

[3] A summary of virtually all attempts at fitting saving functions to American time series data published before 1948 will be found in Orcutt and Roy, *A Bibliography of the Consumption Function*, unpublished, undated mimeographed memorandum of the Department of Applied Economics, Cambridge University, particularly Tables v and vi. Among later contributions mention may be made of Friend and Natrella, *Individuals' Saving: Volume and Composition*, Part i: Davis, "The Consumption Function as a Tool for Prediction," *Review of Economics and Statistics*, August 1952; and Cohen, "Postwar Consumption Functions," *Review of Economics and Statistics*, February 1952. Comparisons between different forms of the function and between the effects of using different variables have repeatedly been made. The most comprehensive and one of the most illuminating of these is provided by Ferber, *A Study of Aggregate Consumption Functions*, National Bureau of Economic Research, Technical Paper No. 8, 1953.

Detailed studies of the cross-section saving function for successive years are limited to the period after World War ii when they can be based on data collected by the Federal Reserve Board's

be cast. The first, which be called the naive approach, is the expression of saving, income, and most of the other independent variables in aggregate current values. The second is the use of deflated per head values for dependent and independent variables, an approach preferred by many economists who think in "real" rather than in monetary terms. The third is the saving ratio, i.e. the ratio between an economic group's saving and its disposable income. Use of the saving ratio as the dependent variable has two advantages. First, the ratio is not affected during the period of this study by a time trend, at least not for national or personal saving; and secondly, use of the saving ratio introduces an additional independent variable without the additional calculations which this otherwise would entail, i.e. $S/Y = f(X)$ may be used instead of $S = f(Y, X)$. It is thus implicitly assumed that current per head or deflated aggregate saving series would not show any significant additional relations which are not disclosed by the three basic series.

(b) It is not necessary to treat prices and population as separate independent variables. If we want to take account of the influence of these two factors it is easier in calculation and nearly as informative to use real saving per head, i.e. saving divided by both an index of the price level and the population, as the dependent variable. [4]

(c) The essential relationships are disclosed by the estimates of saving according to the social accounting concept. This assumption is purely a concession to the impossibility of experimenting on a broad scale with alternative definitions of saving. We should have wished to test the assumption systematically by fitting similar functions to estimates of saving following the business accounting and

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Survey of Consumer Finances. Most of the analyses based on these data are utilized and summarized in Klein, *Consumer Expenditure and Saving Patterns*, National Bureau of Economic Research (unpublished manuscript) and in Katona, *Psychological Analysis of Economic Behavior*, 1951, Part II. The older household surveys have been studied, insofar as their data are relevant to a statistical analysis of saving, by Dr. Brady in Part II of this volume. In addition the following studies may be consulted:

Gilboy, "The Propensity to Consume" in *Quarterly Journal of Economics*, Volume LIII, 1938–1939, pp. 120–140, 633–638.

Gilboy, "Income-Expenditure Relations" in *Review of Economics and Statistics*, Volume XXIII, 1940, pp. 115–121.

Haavelmo, "Family Expenditures and the Marginal Propensity to Consume" in *Econometrica*, Volume XV, 1947, pp. 335–341.

Lewis and Douglas, *Studies in Consumer Expenditures, 1901, 1918–19, 1922–24*, 1947.

Mack, "The Direction of Change in Income and the Consumption Function" in *Review of Economic Statistics*, Volume XXX, 1948, pp. 239–258.

Mack, "Economics of Consumption" in *A Survey of Contemporary Economics*, Volume II, 1952, pp. 64–70.

Tobin, *A Theoretical and Statistical Analysis of Consumer Saving*, Harvard University thesis, 1947.

Tobin, "Relative Income, Absolute Income and Saving" in *Money, Trade and Economic Growth*, 1951, pp. 135–156.

[4] This assumption is corroborated by the findings of Ferber for historical functions, and of Klein for cross-section functions. It is opposed, though primarily on theoretical grounds, by Tobin, in *A Theoretical and Statistical Analysis of Consumer Saving*.

cash flow concepts and possibly other variants of the saving concept. This would have been particularly important as we do not know which of the concepts of saving has most motivational significance for the savers themselves. As it is, it has been possible only to calculate some of the simple saving functions for aggregate personal saving on the business accounting and cash flow concepts, and to establish that the relationships differ somewhat from those found for social accounting saving, but it has not been feasible to determine the reasons for the differences exactly or to decide which of the concepts seems to be better in accord with savers' own point of view, as disclosed by goodness of fit and predictive accuracy.

(d) All relations between variables may be regarded as linear. It is obvious that statistically a less simple relationship would produce a better fit, i.e. a higher coefficient of determination. It is also likely that the loss of one or a few degrees of freedom, which the use of more complicated relations involves, often would not entirely offset the additional variance explained. The calculations which such more complicated functions involve were, however, beyond the resources of this study. Moreover, most previous studies have found that the improvement of fit by using nonlinear relationships was relatively small. We cannot be certain that this would be the case for Saving Study data or for all possible nonlinear relationships. In view of the rather high coefficients of determination which can be reached with linear combinations of only a few variables it seemed obvious that the introduction of nonlinear relationships would constitute refinements well beyond what this introduction attempts. It is not likely that any relation of basic significance is missed as a result of experimenting only with linear relationships.

(e) The years 1897 to 1949 constitute a period long enough and varied enough to disclose any basic relationships between saving, income, and other variables that existed from the time the United States became a modern economy, fully developed industrially and financially.

2. *The elementary relationship* $S = a\ (Y—b)$

We may begin experimentation, on a necessarily very modest scale, with the saving function for the American economy during the period 1897 to 1949 with what is approximately the simplest form of the function, i.e. $S = a\ (Y—b)$. Here S is saving; Y income; a the marginal propensity to save, i.e. the proportion of any increase or decrease in income which is saved or dissaved; b the zero saving point, i.e. the level of income at which aggregate saving is zero; and $(Y—b)$, the difference between actual income and the zero saving point, which may be called supernumerary income. [5]

[5] This formulation is regarded as preferable to the equivalent and more usual form $S=aY+b$ (b in this form is the same as $-\frac{b}{a}$ in the text), because it shows supernumerary income directly. If should be realized that aggregate (national) supernumerary income $(Y-b)$ is not equal to the sum of the supernumerary incomes of all economic units taken separately such as can be determined from cross-section studies. National supernumerary income is rather a statistical concept which does not necessarily have motivational significance.

Use of this formula is based on the three assumptions that the current year's income is the decisive determinant of the volume of saving; that the relationship between saving and income is linear, i.e. that the marginal propensity to save is the same irrespective of the level of aggregate national or personal income; and that the marginal propensity does not change over time. This formula can be applied to estimates of saving differing in concept, scope, and period of reference; to national, personal, and nonagricultural saving, or indeed to the saving of any saver group; to saving expressed in current or deflated values; and to aggregate or per head saving. It is the purpose of this section to investigate the effect of choosing one saving series rather than another as the dependent variable on the marginal propensity to save, on the zero saving point, and on the coefficient of determination in the elementary saving function $S = a\,(Y—b)$.

a. *Differences between current and deflated saving.* Tables Y-1 and Y-2 show that the coefficient of determination of the elementary saving function is almost always higher if the function is based on data expressed in current, than if it is based on data expressed in deflated values. In the case of aggregate personal saving during the period 1897 to 1949, excluding war years, which may be taken as an example, the coefficient is 0.80 for current against 0.52 for deflated saving. This means that variance in personal disposable income explains approximately four-fifths of the variations in current personal saving, but not much more than one-half of those in deflated aggregate saving. The difference is even more pronounced in the case of national saving, the coefficient of determination (usually designated by r^2) being 0.72 for aggregate current but only 0.38 for aggregate deflated national saving. The same relationship is observed, for personal as well as for national saving, for virtually all the other twelve subperiods, for which the relevant values are shown in Tables Y-1 and Y-2. [6]

It is not possible to decide, at least not on the basis of statistics alone, whether the relationship expressed in current values or that cast in deflated values is the "true" relation between income and saving. Nor are there decisive economic reasons which justify accepting one of these two relationships as the true one, and rejecting the other one as spurious. The lower values of the coefficient of determination obtained from different values, in particular, are no indication that the saving so obtained is less significant for economic theory or policy. Indeed many theoreticians will be inclined to argue that, on general grounds, the relationship

[6] It can be shown that the coefficient of determination of saving expressed in current values must be greater than that of saving in deflated values provided the series correlated are affected in the same direction by price changes, but otherwise are free of errors and not subject to intercorrelation with other variables which influence both of them. The few exceptions in Tables Y-1 and Y-2, i.e. the cases where the coefficient of determination is higher for deflated than for current saving (e.g. national saving for the period 1915–1929, excluding 1917–1918), indicate that, as would be expected, estimating errors and intercorrelation in the series are sometimes large enough to produce a relationship contrary to the one theoretically to be expected. This, however, is not the place to explore the algebraic relations between deflation and similar operations and the coefficient of determination, the marginal propensity to consume and the zero saving point, nor is the author competent to do so.

THE ELEMENTARY PERSONAL SAVING FUNCTION [1]

$$S_p = a\,(Y_p - b)$$

	Marginal propensity to save (a)				Zero saving point (b)				Coefficient of determination (r^2) [2]			
	Current		Deflated		Current		Deflated		Current		Deflated	
	Aggregate	Per head	Aggregate	Per head	Aggregate	Per head	Aggregate	Per head	Aggregate	Per head	Aggregate	Per head
					$ bill.	$	$ bill.	$				
	1	2	3	4	5	6	7	8	9	10	11	12
I. Decadal non-war periods												
1. 1897–1906	0.20	0.22	0.23	0.28	6.9	101	16.4	251	0.50	0.41 [3]	0.40 [3]	0.29 [4]
2. 1907–1916	0.23	0.28	0.35	0.35	15.3	185	32.1	341	0.71	0.64	0.60	0.30 [4]
3. 1919–1929	0.28	0.33	0.26	0.40	40.0	395	37.2	416	0.46	0.41 [3]	0.56	0.62
4. 1929–1941	0.40	0.40	0.48	0.55	54.3	428	66.8	535	0.98	0.95	0.92	0.96
II. Economic periods												
1. 1897–1914	0.10	0.11	0.11	0.13	−1.3	−2	0.3	78	0.45	0.29 [3]	0.27 [3]	0.14 [4]
2. 1915–1929	0.11	0.11	0.16	0.31	12.0	87	12.7	332	0.25 [3]	0.19 [4]	0.25 [3]	0.34 [3]
3. 1915–1929, excluding 1917–1918	0.13	0.12	0.18	0.27	4.8	17	21.4	312	0.41	0.31 [3]	0.41	0.39 [3]
4. 1930–1949	0.25	0.28	0.42	0.54	42.5	361	64.4	530	0.70	0.70	0.69	0.74
5. 1930–1949, excluding 1942–1945	0.19	0.20	0.31	0.39	44.4	362	64.0	523	0.93	0.91	0.91	0.93
6. 1897–1929	0.14	0.14	0.16	0.22	3.6	53	12.2	229	0.75	0.68	0.61	0.47
7. 1897–1941	0.12	0.14	0.11	0.18	6.8	104	4.0	241	0.47	0.46	0.24	0.25
8. 1923–1940	0.43	0.40	0.40	0.64	53.4	426	59.2	523	0.85	0.90	0.42	0.75
III. Full period												
1. 1897–1949	0.19	0.20	0.21	0.30	18.3	185	26.9	338	0.71	0.68	0.55	0.52
2. 1897–1949, excl. 1917–1918 and 1942–1945	0.14	0.14	0.14	0.18	13.4	130	16.1	246	0.80	0.75	0.52	0.41

[1] In all Y tables, unless otherwise stated, calculations are based on the standard social accounting concept, which includes consumer durables.

[2] All values of r^2 significant at 1 percent level, except where it is otherwise indicated.

[3] Not significant at 1 percent level.

[4] Not significant at 5 percent level.

THE ELEMENTARY NATIONAL SAVING FUNCTION [1]

$$S_n = a\,(Y_n - b)$$

	Marginal propensity to save (a)				Zero saving point (b)				Coefficient of determination (r^2) [1]			
	Current		Deflated		Current		Deflated		Current		Deflated	
	Aggregate	Per head	Aggregate	Per head	Aggregate	Per head	Aggregate	Per head	Aggregate	Per head	Aggregate	Per head
					$ bill.	$	$ bill.	$				
	1	2	3	4	5	6	7	8	9	10	11	12
I. Decadal non-war periods												
1. 1897–1906	0.24	0.27	0.27	0.35	7.1	109	17.3	277	0.63	0.55	0.52	0.42 [2]
2. 1907–1916	0.36	0.44	0.53	0.64	19.5	230	38.1	427	0.88	0.87	0.84	0.64
3. 1919–1929	0.38	0.36	0.36	0.44	49.3	421	46.1	455	0.78	0.37 [2]	0.68	0.56
4. 1929–1941	0.42	0.45	0.38	0.46	69.0	545	82.3	655	0.89	0.91	0.69	0.76
II. Economic periods												
1. 1897–1914	0.12	0.13	0.13	0.16	–2.0	–9	2.5	83	0.54	0.37	0.32	0.29 [2]
2. 1915–1929	0.16	0.11	0.23	0.20	7.8	–140	27.1	196	0.31 [2]	0.13 [3]	0.29 [2]	0.19 [3]
3. 1915–1929, excluding 1917–1918	0.16	0.13	0.23	0.28	4.6	–99	25.9	301	0.40 [2]	0.23 [3]	0.42	0.31
4. 1930–1949	0.14	0.14	0.22	0.21	74.9	569	91.0	677	0.38	0.34	0.38	0.70
5. 1930–1949, excluding 1942–1945	0.23	0.25	0.21	0.41	68.7	544	72.2	669	0.94	0.93	0.28 [2]	0.91
6. 1897–1929	0.15	0.14	0.16	0.17	2.1	3	8.3	110	0.70	0.59	0.53	0.28
7. 1897–1941	0.11	0.12	0.07	0.13	84.7	94	17.9	119	0.27	0.26	0.08 [3]	0.03 [2]
III. Full period												
1. 1897–1949	0.09	0.08	0.06	0.05	1.0	–69	34.1	645	0.27	0.20	0.08 [2]	0.03 [3]
2. 1897–1949, excl. 1917–1918 and 1942–1945	0.16	0.16	0.15	0.17	19.0	171	20.5	245	0.72	0.65	0.38	0.28

[1] All values of r^2 significant at 1 percent level, except where it is otherwise indicated.
[2] Not significant at 1 percent level.
[3] Not significant at 5 percent level.

expressed in deflated values is the primary one, since it is difficult to maintain that a mere change in the unit of measurement, such as the multiplication of all prices in the economic system by a common factor, would affect the proportion of income saved. Others would contend that what has been called the "money illusion," i.e. the fact that people are guided, or at least influenced, in their economic decisions by nominal prices and incomes rather than their equivalent in some stable unit of measurement—whatever it may be—is a fact too well proven empirically to permit ignoring it in theory. This argument need not be resolved here. It suffices to emphasize that the value of current income as the explanation of variations in the volume of saving is quite different when applied to deflated rather than to current saving. It other words, there is much more need for introducing additional variables into the saving function or for using a more complicated or an entirely different form of the function in order to get a reasonably good fit even for the reference period if the analysis is carried through in deflated values.

Use of current or deflated values makes a considerable difference not only for the proportion of variation in saving explained by income, but also for the individual values of the two constants in the function, the marginal propensity to save and the zero saving point.

The marginal propensity to save is generally higher for deflated than for current saving. This means that the part of a change in income which reappears as an increase or decrease in saving is higher when deflated values are used than when the calculations are based on current values. The difference is often substantial.

The zero saving point is also generally higher for deflated than for current saving, and the difference is often very considerable. Exceptions occur in the case of national saving for the periods 1919–1929, 1929–1941, and 1897–1941, and in that of personal saving for the period 1897–1941. [7]

The differences in marginal propensity to save and zero saving point together mean that the saving function based on deflated values, in the usual graphic presentation, is steeper than, and lies to the right of, the saving function in current values.

b. *Differences between aggregate and per head values.* The differences between the elementary saving function based on aggregate values and the same function based on per head values are similar to those just noted in the comparison of saving in current and deflated values. The reason for the differences is also similar, i.e. the fact that the per head and deflated functions are derived from the aggregate and current functions, respectively, by division of both the independent and the dependent variables by the same divisor, an index of the general price level in the one case and the number of individuals in the other.

Thus the coefficient of determination is generally higher for aggregate than

[7] The absolute and relative locations of the zero saving point depend, of course, on the selection of the 1929 price level as the basis of deflation. If, e.g., all values had been reduced to the general price level at the beginning of the period (1897) all zero saving points would lie, assuming no change in scale of chart, to the left of their present locations, and they would generally be lower (instead of higher) than the zero saving points of the corresponding functions expressed in current prices.

for per head saving. The difference, however, is not very large for the full period. For current national saving the coefficient is 0.27 for aggregate and 0.20 for per head saving, while the values for personal saving are 0.71 for aggregate and 0.68 for per head saving. Wider differences appear for some subperiods.

The marginal propensity to save is generally higher for per head than for aggregate saving. This is a parallel to the excess of the marginal propensity to save in deflated over that in current values. The difference is generally of small amount, particularly in the case of current saving.

c. *Differences between personal and national saving.* Differences between the constants in the elementary function and its coefficient of determination depend on the period for which the function is calculated, particularly on the inclusion or exclusion of the war years. If the war years are included the coefficient of determination is, for the period as a whole much lower for national than for personal saving. It remains lower even if the war years are excluded, but the difference then is generally small, amounting to approximately 10 to 15 percentage points for both the full period and decadal subperiods.

Income alone thus explains a higher proportion of variations in personal than in national saving over the entire period 1897–1949. A look at the values of the coefficient for subperiods, however, shows that it is generally higher for personal than for national saving from World War I on, while the opposite relationship prevails for the two preceding decades. It would therefore seem that up to World War I the dependence of saving on national income was more pronounced, contrary to later experience, for business and government than for individuals. This was due, at least in part, to the much looser connection between personal saving and personal disposable income in the earlier periods. In other words, the change in the relationship in the coefficient of determination between personal and national saving does not necessarily reflect any change in the coefficient for nonpersonal saver groups. Whether, and possibly to what extent, it actually does would require calculation of saving functions for these groups, a task not undertaken in this preliminary survey.

d. *Effects of inclusion or exclusion of war periods.* Many relationships between saving and income are known to be deeply affected by war. The reason is that a large part of military expenditures has been financed in both World Wars by borrowing, i.e. dissaving of the federal government, which has reduced the volume of national saving during war years. At the same time disposable income of other saver groups has increased during war since part of the federal government's borrowing was financed by the banking system, which led to increases in the money supply far in excess of its long-term rate, and to a rise in the money income of the population several times as large as that in the money supply. Since opportunities for spending have been curtailed during war by unavailability of some goods and services which were preempted for military purposes or even formally rationed, the absolute volume of personal saving and the personal saving ratio have tended to increase during war in contrast to the downward movement in national saving. Both movements are clearly not relevant for

an explanation of variations of saving and the saving ratio in the past or for forecasting them in peacetime.

Tables Y-1 and Y-2 show that the elimination of war years tends to reduce the calculated marginal propensity to save and the zero saving point in the case of personal saving, but to increase them, and very substantially so, for national saving, with the exception only of the zero saving point for deflated national saving, which declines. Using current aggregate values the comparison for national saving for the entire period 1897 to 1949 is as follows (in $ bill.):

$$\text{Including war years: } S'_n = 0.09\ (Y_n - 1.0)$$
$$\text{Excluding war years: } S''_n = 0.16\ (Y_n - 19.0)$$

Thus, for national saving the elementary function excluding war years, which may be regarded as more appropriate for most analytical purposes, is much steeper and well to the right of the function including the war years. How great the difference is becomes evident if it is realized that inclusion of the war years in the function leads one to expect an increase in net national product by $10 billion to result to an increase of saving by $0.9 billion, while exclusion of the war years leads to an expectation of an increase in saving by almost twice as much under the same circumstances.

The differences are in the opposite direction, but considerably less pronounced, in the case of personal saving. Here:

$$\text{Including war years: } S'_p = 0.19\ (Y_p - 18.3)$$
$$\text{Excluding war years: } S''_p = 0.14\ (Y_p - 13.4)$$

Similar differences are visible in the elementary saving function for subperiods, as can be seen by comparing line 2 with line 3 or line 4 with line 5 in Section II of Tables Y-1 and Y-2. As expected, the effect of elimination of war years is considerably more pronounced in the case of World War II than in that of World War I, at least for the marginal propensity to save.

The difference resulting from exclusion of war years is still more clearly visible in the coefficient of determination. Exclusion of the war years raises the coefficient in the case of national saving from 0.27 to 0.72, although it increases it only from 0.71 to 0.80 in the case of personal saving. The differences in the effects of elimination of the war years are due primarily to one characteristic of saving during war years: the fact that personal saving is extraordinarily high, compared with the relationship obtaining in the much more numerous nonwar years, while national saving is extraordinarily low. This holds both for absolute values of saving and for saving-income ratios, and for annual changes as well as for annual totals. This characteristic explains why the marginal propensity to save is reduced by the elimination of war years from the personal saving function, but is increased by their omission from the national saving function. As a result the marginal propensities are about equal if war years are excluded, as one would expect them to be since personal saving usually accounts for about three-fourths of national saving; while the marginal propensity is more than twice as large for

personal as for national saving if war years are included. Similarly, inclusion of the war years increases the zero saving point in the personal saving function; while it reduces it for the national saving function. The sharp increase in the coefficient of determination of the national saving function brought about by elimination of war years—in contrast to the relatively small change in the personal saving function following the same adjustment—is an even clearer consequence of this characteristic. The relation of national saving to income is so abnormal in war years—very high levels of income being associated with very low levels of saving—that the elimination of these few years (six out of fifty-three) leads to a doubling or tripling of the coefficient of determination for current national saving.[8] In the case of personal saving, on the other hand, the relation during war years is in the same direction as in nonwar years, though of different intensity.

The inclusion or exclusion of war years in the saving function, at least in its elementary form, thus has such pronounced effects that the two functions cannot be used interchangeably. It is therefore necessary to decide, on the basis of theoretical reasoning or common sense, which of the two functions is to be applied to a specific problem.

e. *Differences between variant concepts of saving.* Table Y-3, which compares marginal propensity to save and zero saving point of the elementary personal and national saving function for the three main concepts of saving, shows that as a rule the marginal propensity is higher for cash than for business and accounting saving, the only exceptions being personal saving for the period 1930 to 1949.[9] Generally the marginal propensity to save is also higher for business than for social accounting saving and the exceptions are limited to the period 1915 to 1929. These relationships are partly explained by the fact that the annual change in cash saving is usually larger than that in the other two concepts, and the change in business accounting saving larger than that in social accounting saving, while the denominators of the fractions determining the marginal propensity to save, national or personal income corresponding to the three concepts of saving, differ only relatively little.

From the geometry of the relationship between the three saving curves one would expect the zero saving point to be lower (i.e. graphically farther left) for cash saving than for either of the two other variants. This turns out to be the case in a comparison of cash and social accounting saving. Contrary to expectations the zero saving point of cash saving is larger than that of business accounting saving in more than one-third of the cases. Indeed, for so-called normal periods this relationship is as common as its expected opposite.

The coefficient of determination, for which no similar regular relations are to be expected, nevertheless shows some such regularities, being generally higher for cash saving than for either social or business accounting saving. No system-

[8] The ratio is even higher for deflated saving, but in this case the coefficient is not, or not highly, significant for the period including war years.

[9] For definition of the three concepts of saving and their statistical relations see Volume I, Introduction, Section II.

THE ELEMENTARY SAVING FUNCTION APPLIED TO THREE VARIANT CONCEPTS OF SAVING

Period	Marginal propensity to save (a)			Zero saving point (b) ($ bill.)			Coefficient of determination (r^2)		
	Social accounting	Business accounting	Cash accounting	Social accounting	Business accounting	Cash accounting	Social accounting[1]	Business accounting[1]	Cash accounting[1]
I. Personal saving, current aggregate									
A. All years									
1. 1897–1914	0.10	0.13	0.18	−1.3	−0.9	−2.7	0.45	0.47	0.73
2. 1915–1929	0.11	0.07	0.15	12.0	−74.4	−34.8	0.25[2]	0.06[3]	0.29[2]
3. 1930–1949	0.25	0.32	0.28	42.5	48.0	25.3	0.70	0.79	0.81
4. 1897–1929	0.14	0.16	0.22	3.6	1.4	0.4	0.75	0.63	0.83
5. 1897–1949	0.19	0.23	0.24	18.3	19.8	7.1	0.71	0.74	0.85
B. Normal years[4]									
1. 1915–1929	0.13	0.11	0.19	4.8	−17.5	−10.4	0.41	0.20[3]	0.46
2. 1930–1949	0.17	0.24	0.22	34.9	41.3	12.9	0.94	0.92	0.94
3. 1897–1929	0.13	0.14	0.21	3.2	0.9	0.3	0.80	0.71	0.87
4. 1897–1949	0.14	0.18	0.21	9.0	12.9	0.8	0.89	0.86	0.94
II. National saving, current aggregate									
A. All years									
1. 1897–1914	0.12	0.15	0.24	−2.0	−2.5	−2.3	0.54	0.49	0.78
2. 1915–1929	0.16	0.10	0.25	7.8	−50.5	−8.5	0.31[2]	0.11[3]	0.42
3. 1930–1949	0.14	0.23	0.23	74.9	79.6	30.9	0.38	0.56	0.57
4. 1897–1929	0.15	0.16	0.28	2.1	−2.0	1.5	0.70	0.61	0.85
5. 1897–1949	0.09	0.14	0.19	1.0	14.3	−10.8	0.27	0.41	0.60
B. Normal years[4]									
1. 1915–1929	0.16	0.12	0.26	4.6	−25.6	−6.2	0.40[2]	0.16[3]	0.48
2. 1930–1949	0.21	0.30	0.30	60.4	62.9	30.5	0.95	0.94	0.98
3. 1897–1929	0.15	0.16	0.28	2.9	−1.2	2.0	0.79	0.66	0.87
4. 1897–1949	0.15	0.21	0.26	11.2	17.2	2.5	0.99	0.82	0.94

[1] All values of r^2 significant at 1 percent level, except where it is otherwise indicated.
[2] Not significant at 1 percent level.
[3] Not significant at 5 percent level.
[4] Excluding 1917–1918, 1930–1933, 1942–1945.

atic difference appears to exist between the latter two variants, though the cases in which the coefficient is slightly higher for social accounting than for business accounting saving are somewhat more numerous than those in which the opposite relation exists.

f. *Effect of exclusion of saving through consumer durables.* Up to this point all calculations have been based on the standard saving concept, which includes consumer durables. Almost all previously fitted saving functions, however, used estimates excluding saving through consumer durables; and many economists

Y-4 EFFECT OF EXCLUSION OF CONSUMER DURABLES ON THE ELEMENTARY PERSONAL SAVING FUNCTION

(A = including consumer durables; B = excluding consumer durables)

		S =	r^2	Standard error of regression coefficient
I. Current aggregate (*$ bill.*)				
1. 1897–1929	A	0.135 (Y— 3.57)	0.75	0.014
	B	0.112 (Y— 2.08)	0.67	0.014
2. 1897–1949	A	0.190 (Y—18.28)	0.71	0.017
	B	0.164 (Y—17.83)	0.58	0.019
3. Normal period [1]	A	0.135 (Y— 8.99)	0.89	0.007
	B	0.087 (Y+ 0.46)	0.82	0.006
		s =	r^2	Standard error of regression coefficient
II. Deflated per head (*$ of 1929*)				
1. 1897-1929	A	0.217 (y—229)	0.46	0.042
	B	0.179 (y—215)	0.36	0.042
2. 1897–1949	A	0.317 (y—357)	0.59	0.037
	B	0.256 (y—334)	0.40	0.044
3. Normal period [1]	A	0.167 (y—191)	0.53	0.025
	B	0.093 (y— 28)	0.31	0.022

[1] The years 1897 to 1949 excluding 1917–1918, 1930–1933, 1942–1945.

prefer the narrower concept. Also it is known that saving through consumer durables has differed in some of its movements from the other components of personal saving, particularly in having a more pronounced upward secular trend. It is, therefore, necessary to investigate the effect of excluding saving through consumer durables on at least the elementary saving function.

The results shown in Table Y-4, though limited to aggregate current and deflated per head saving and to three long periods, are unambiguous. The coefficient of determination is in all cases higher for the broader concept, which includes saving through consumer durables, than for the narrower concept, and the difference is quite substantial for deflated saving per head. In other words, current income alone "explains" a higher proportion of the variations in saving if the latter includes consumer durables. This may be regarded as a reason, though not necessarily a decisive one, for preferring saving including consumer durables—i.e. the standard concept used throughout this study—to the narrower customary concept, at least when utilizing the figures in fitting saving functions.

That the marginal propensity to save is shown in Table Y-4 to be higher for saving including than for saving excluding consumer durables is to be expected as year-to-year changes in the broader concept are usually larger than under the narrower concept, while the denominator (personal disposable income) is identical. The differences are generally small. For the same reason the zero saving point may

be expected to be lower for saving excluding consumer durables. This is borne out in Table Y-4. The actual differences, however, are small enough to be without economic significance.

Conceptually, use of different denominators (specifically: inclusion in personal disposable income of imputed use value of consumer durables when saving including consumer durables is the dependent variable) is preferable. It is, however, very unlikely that use of national income figures adjusted for use value of consumer durables would produce results substantially different from those obtained with unadjusted figures, inasmuch as the imputed use value—necessarily nothing but a rough guess—is small in proportion to income (according to Kuznets' estimates, between $\frac{3}{4}$ and $1\frac{3}{4}$ percent), [10] and is not likely to vary sharply from year to year. A test made for one variant (current aggregate saving) confirmed that the relationships are similar, i.e. that saving including consumer durables would still show a higher coefficient of determination, a higher marginal propensity to save, and a higher zero saving point, if figures for income roughly adjusted for use value of consumer durables were used.

g. *Shifts over time in marginal propensity to save, zero saving point, and coefficient of determination.* Possibly the most interesting conclusion that can be drawn from Tables Y-1 and Y-2 concerns the shifts over the last half century in the marginal propensity to save, the zero saving point, and the coefficient of determination of the elementary saving function. [11] The main impression they convey is that of an increase in all three characteristics of the elementary saving function

[10] See *Income and Wealth*, Series II, pp. 164–167.

[11] Before discussing the quantitative evidence on changes in the constants of the elementary saving function since the turn of the century, it is advisable to recall the meaning of shifts in the saving function over time. When a saving function is fitted to data for a given reference period, the assumption is implied that the period is sufficiently homogeneous and the data are sufficiently reliable statistically for the relation based on observations at different points of time to reflect a relation between the variables, in this case saving and income, that holds over the entire reference period, and possibly even beyond it. In other words, it is assumed that the empirically determined saving function can be taken as a representation of the underlying saving schedule. If the saving schedule did not change systematically over time – random fluctuations would not matter – saving functions determined from time series would be the same irrespective of the reference period. Specifically, form and value of constants of the saving function for subsequent periods would be identical. When the saving schedule is subject to change over time, as we must assume it is, empirically determined saving functions will vary depending on the reference period used.

Variations of the saving schedule of a group of units, the concept with which economic analysis usually deals, will result, it should be recalled, not only from changes in the schedules of individual units or subgroups of them, but also from variations in the unit-mix, i.e. the relative representation of units with different characteristics in the group. A group schedule thus may vary even though the schedules of all individual units remain unchanged. Alternatively, a group schedule may remain unaltered although the schedules of many units undergo changes. The interpretation of changes which appear in empirically determined saving functions in terms of alterations in the underlying saving schedules is therefore possible only to the extent that information is at hand on changes in the unit-mix and on differences in the schedules between units or groups of them. This information is rarely available in sufficient detail and with sufficient reliability. We must thus be very careful in inferring changes in saving schedules from only a study of time series of saving.

over the first four decadal periods of this century (1897–1906, 1907–1916, 1919–1929, 1929–1941). Not enough data are available for the period after World War II to permit the study of shifts in the saving function to be extended beyond 1941.

The marginal propensity to save shows a fairly pronounced tendency to increase over the period. Its value for the 1929–1941 period is considerably above that for 1897–1906 for all four variants (current aggregate, current per head, deflated aggregate, and deflated per head) for both personal and national saving. All variants also show an increase in the propensity from the decade of 1897–1906 to that of 1907–1916. Differences in movement, however, are not rare between 1907–1916 and 1929–1941, with the result that only four of the eight variants (personal current and deflated saving per head and personal and national current aggregate saving) show a rise in the propensity from decade to decade. The increase is more pronounced for personal than for national saving. No substantial difference appears to exist in the movements of the marginal propensity to save between aggregate and per head series; or between personal saving on a current and on a deflated basis. In the case of national saving the increase in the marginal propensity to save is considerably less pronounced and less regular for deflated than for current values.

The significance in the changes in the marginal propensity to save rests primarily in an indication of the growing sensitivity of saving to changes in income. In the decade 1897–1906 a change of income by $1 billion typically was accompanied by a change in saving of about $250 million. In the period from 1929 to 1941 the same change in income produced a change in saving of as much as $500 million. The very interesting and important question whether this increase in the sensitivity of saving to income changes has continued after 1941 cannot yet be answered with confidence. On the basis of this study's estimates for 1946–1949 and still rougher figures for 1950 to 1952 it would appear unlikely that the marginal propensity to save has increased since the thirties in line with the trend observed during the preceding thirty years.

Inspection of the values of the marginal propensity to save for different periods shows a second relation which for some purposes of analysis is more important than the apparent increase in the propensity during the first four decades of this century. This is the fact that the marginal propensity to save derived from approximately decadal reference periods is considerably higher than that obtained if the entire period from 1897 to 1949, or even subperiods like 1897–1929 or 1930–1949, are taken as the basis of the calculation. For personal deflated saving per head, for example, the marginal propensities for the four decades range from 0.28 to 0.55, but for the entire period 1897–1949 excluding the war years (a span which differs from the four decadal periods only by inclusion of the years 1946–1949) the marginal propensity is only 0.18. Limiting data to the more homogeneous period from 1897 to 1929 a marginal propensity to save for the entire span of 0.22 compares with the range for three decadal subperiods of 0.28 to 0.40. The marginal propensity to save for long periods is thus below the propensity for every single subperiod. The solution of this apparent contradiction is relatively

simple: The values of the marginal propensities to save obtained from the correlations of long-term series do not reflect a saving schedule valid for any part of the period, but are simply the result of combining periods which differ with respect not only to the marginal propensity, but also to the zero saving point. The relation between decadal and long-term values of the marginal propensity to save will therefore be seen more clearly after a look at the movements of the zero saving point and at the shift in the elementary saving function.

The movements of the zero saving point are in one respect more regular than any other characteristics of the elementary saving function: they increase from decade to decade for all four variants of personal and national saving. This upward movement of the zero saving point is more regular for deflated than for current, for per head than for aggregate, and for personal than for national, saving. In the case of deflated personal saving per head the zero saving point rises on the average by $9 (1929 prices) per year for the entire period, with a range between decades of $6 to $11. This is equivalent to an average increase of $2\frac{3}{4}$ percent and a range of $1\frac{3}{4}$ to $3\frac{1}{2}$ percent. While it is not yet possible to determine the zero saving point for a sufficiently long period after World War II, the point would, on the basis of the data for 1946–1951, seem to be located in the vicinity of $700 for the immediate postwar period. If this value should be borne out for the entire decade of 1946–1955 it would mean that the increasing trend observed in the first four decades of the century has continued, although the rate of increase has possibly slowed down slightly.

The rise of the zero saving point means that the level of real consumption per head [12] which must be reached before individuals begin to save has been increasing—in real rather than in nominal terms—throughout the past fifty years. This level increase has been at a rate of approximately $2\frac{1}{2}$ percent per year. This, it will be noted, is approximately the same rate at which aggregate real income per head has grown. A shift to the right in the zero saving point of the observed magnitude is thus compatible with, and indeed is required for, the long-term stability of the personal saving ratio.

We may now turn to the graphic representation of the elementary saving function, shown in Chart I of the Introduction to Volume I by straight lines intersecting the horizontal (income) axis at the zero saving point and having a slope which depends on the value of the marginal propensity to save. Obviously, saving functions which have the same marginal propensity appear on the chart as parallel lines and differ in that the point of intersection with the horizontal axis varies; and in that the curves move from left to right, without change of slope, as the zero saving point increases. If the saving function is characterized by increases in both the marginal propensity to save and the zero saving point, as is the case with most decadal elementary saving functions for the period 1897–1941, they will appear as a family of curves of increasing steepness moving from the left to the right of the chart. The long-term curve, indicated on the chart by the heavy solid

[12] This is a statistical average derived from figures of aggregate national consumption and number of inhabitants of the United States, not from samples of individual households.

line, is much flatter than the decadal curves because its marginal propensity is lower and intersects all decadal curves.

This chart also provides an answer to the question of the relation of the marginal propensity to save in the decadal and long-term elementary saving functions. The function based on the entire period, or large parts of it, is a combination of decadal functions. Because these functions move from left to right and increase in steepness and as mean saving increases moderately, in absolute terms, in comparison with the increase in income, the slope of the long-term function must be less than that of any decadal curve. [13] A long-term saving function of the type shown in Chart I, i.e. using current income as the only independent variable, thus cannot be regarded as reflecting the underlying saving schedule for any period. This schedule is more nearly approximated by the decadal saving functions. In other words, the true marginal propensity to save in any year is higher than that indicated by the slope derived from a correlation of saving and income over the entire fifty-year period.

The coefficient of determination of the decadal elementary saving functions, finally, also increases, but rather irregularly even though it is higher for all four variants of both personal and national saving in 1929–1941 than in 1897–1907 and 1919–1929. Not too much importance should be attached to this increase in the coefficient, particularly its very high values for 1929–1941, because it is strongly influenced by the range of the absolute values of the variables within the reference period. Thus, the very high coefficients for the period 1929–1941 reflect in part the extraordinarily wide, broadly concomitant swings in both income and saving during that period. It nevertheless seems, although I am not able to explore the mathematical problems involved, that the figures point to some genuine increase in the proportion of the variance in saving accounted for by variations in current income. In this case the test to be provided by the decade following World War II may well be decisive. We obviously should not expect values of the coefficient of determination as high as those for 1929–1941. The question rather will be whether the coefficient will be approximately on the level of the twenties, i.e. of the order of 0.60 for deflated national or personal saving, or whether it will fall back to the considerably lower level shown for the first two decades of the century. This, it must be repeated, will depend not only on the proportion of the variations in saving explained by variations in income in a "true" relationship between these two variables, but also on the width of swings in the variables, and last, but not least, on the statistical errors in the series used in establishing the relationship.

3. *The introduction of factors other than current income into the elementary saving function*

The rather laborious discussion of the elementary saving function in the preceding section has, notwithstanding all its limitations, yielded two results:

(a) A simple linear function of current income is able, provided a catch-all allowance for change over time is introduced, to account for most of the annual

[13] This is true even if the slopes of all the decadal functions are the same.

variations in personal saving over the entire period 1897–1949 and large parts of it, not only if aggregate current values are used, but also if both saving and personal disposable income are adjusted for price level changes and population growth.

(b) The results are considerably less satisfactory for shorter periods of time and for national saving.

The elementary saving function thus constitutes a first step in the statistical analysis of saving, and one that is not without interest and promise. It is obviously not the answer to the quest for a saving function that at the same time is invariant over a long period of the past; explains most of the observed variations in annual saving—say nine-tenths or more—not for selected but for any period for which we have data; is compatible with what is known about the saving behavior of individual units; and promises to be able to forecast the future course of saving with reasonable accuracy. The search for a satisfactory national or personal historical saving function is therefore still in its rather early stages at this point when we all but have to abandon it. It could be continued principally in three directions—and has been so extended by other investigators who have essentially limited the analysis to one set of data (Department of Commerce personal saving) and to the period 1923 to 1940—viz. by (a) introducing additional independent variables (particularly past income, liquid assets, and wealth), (b) treating the saving-income ratio rather than the absolute value of saving as the dependent variable, and (c) experimenting with approaches in which the primary independent variable is something other than income. We shall have to limit ourselves to only one example of the first approach, another combining the first and second approaches, and a third which uses the second and third approaches. Among additional independent variables we experiment with liquid assets in the narrow sense (currency and deposits with financial institutions). Of the formulas which use past income as the primary explanatory variable we choose the one which has given the most promising results in the hands of previous investigators, a linear relation between the personal saving ratio and the ratio of current to peak past income or consumption.[14] In the less explored field of saving functions not using income in one form or another we select the relation between saving ratio and unemployment ratio, the latter taken as an indicator of the degree of utilization of the economic system.

a. *Time as an additional variable.* We have already seen that the saving function has moved "to the right" during the last fifty years. This means that the amount of saving out of the same income—real income per head as well as aggre-

[14] The relation may be written as

$$\frac{C_t}{Y_t} = a + b\,\frac{Y_t}{Y_m} \quad \text{or as} \quad \frac{S_t}{Y_t} = 1 - \left(a' + c'\,\frac{Y_t}{C_m}\right)$$

where t is the year of observation and m is the year in which income (Y) or consumption (C) reached their previous peak. Functions of this type were first fitted in the late forties by Modigliani (*Studies in Income and Wealth*, Volume XI, pp. 371ff.) and Duesenberry (*Income, Saving and the Theory of Consumer Behavior*, pp. 89ff), and modified by Davis (*Review of Economics and Statistics*, 1952, pp. 270–277) by substitution of C_m for Y_m.

gate current income—has become smaller as time has gone on; or that the zero saving point has moved upwards. This shift suggests that the fit of the elementary saving function can be improved (i.e. the proportion of fluctuations in observed saving which is "explained" by the curve can be increased) by introducing calendar time as a second independent variable. The function would then read, in the form used here, in which the zero saving point is shown directly:

$$S_t = a[Y - (b + ct)]$$

where t is the number of years between the origin (here set at 1897) and the year of observation. [15]

The introduction of time as an independent variable is, as is almost always the case in correlation analysis of economic data, an admission that forces are at work which change the form or position of the function over time, but which either cannot be identified or cannot be conveniently measured, or are very numerous and individually of a random nature so that their effect becomes apparent only in combination. It is justified only if the shift in the function over time is reasonably regular, if the forces responsible for the shift are likely to operate more or less persistently, and if allowance for the shift substantially improves goodness of fit.

Due to limitation of resources, experiments with introducing time into the elementary saving function had to be restricted essentially to the social accounting concept and to the two periods 1897–1949 and 1897–1929. It is not likely, however, that the results would be much different for other concepts of saving; and introduction of time as a separate variable would be of doubtful validity for periods considerably shorter than, say, twenty years.

Study of Tables Y-5 and Y-6 leads to three tentative conclusions, which require a substantial amount of additional analysis before final acceptance:

(1) The introduction of time increases the coefficient of determination, i.e. the explanatory value, of the elementary saving function, if it is expressed in real (deflated per head) values. This applies to both the national and the personal saving function, and to the full and the pre-1930 period.

The coefficients remain so low for national saving, notwithstanding their increase, that they are without economic significance. (This is probably due to the inclusion of the war years.) In the case of personal saving, on the other hand,

[15] Once time (or another variable) is introduced into the elementary saving function the constant a can no longer be interpreted as the marginal propensity to save, understood as the proportion of a change in income that reappears as a change in saving. This proportion then depends also on the relationship of other items in the equation, e.g. in the case discussed in the text on the relation of the change in income to the movement of the zero saving point, specifically on the ratio

$$\frac{Y_1 - Y_0 - c}{Y_1 - Y_0}$$

Thus the marginal propensity to save is always smaller than a so long as $Y_1 > Y_0$ and $(Y_1 - Y_0) < c < 0$; and the difference between marginal propensity to save and a is the more pronounced the larger the average change in the zero saving point (c) in proportion to the change in income ($Y_1 - Y_0$). Using equation II-2 a(1) of Table Y-5 as an example, a is 0.74, but the marginal propensity to save is 0.66 if the increase in real income per head between years is as large as $50; yet is as low as 0.33 if the increase is as small as $10, which would be a more common value, given $t = 1$.

EFFECT OF INTRODUCTION OF TIME ON THE ELEMENTARY SAVING FUNCTION

(Origin of t is 1897; each unit of t is one year)

	$S_n =$	r^2
I. National saving [1]		
1. Current aggregate ($ mill.)		
a. 1897–1949	0.150 [Y—(19,052—1,951.9 t)]	0.30
b. 1897–1929	0.094 [Y—(4,088—1,600.6 t)]	0.70
	$s_n =$	r^2
2. Deflated per head ($ of 1929)		
a. 1897–1949	0.241 [y—(−91—12.61 t)]	0.15
b. 1897–1929	0.165 [y—(−101— 0.35 t)]	0.28
	$S_p =$	r^2
II. Personal saving		
1. Current aggregate ($ mill.)		
a. 1897–1949		
(1) Including consumer durables	0.269 [Y—(5,896+ 986.4 t)]	0.74
(2) Excluding consumer durables	0.237 [Y—(5,029+1,026.8 t)]	0.61
b. 1897–1929		
(1) Including consumer durables	0.175 [Y—(2,624+587.7 t)]	0.74
(2) Excluding consumer durables	0.166 [Y—(1,236+834.0 t)]	0.14
	$s_p =$	r^2
2. Deflated per head ($ of 1929)		
a. 1897–1949		
(1) Including consumer durables	0.737 [y—(339+5.54 t)]	0.85
(2) Excluding consumer durables	0.574 [y—(329+5.43 t)]	0.55
b. 1897–1929		
(1) Including consumer durables	0.480 [y—(302+5.04 t)]	0.55
(2) Excluding consumer durables	0.447 [y—(312+5.03 t)]	0.50

[1] Including consumer durables.

introduction of time raises the coefficient of determination for the full period of fifty-three years to 0.85 against 0.52 without allowance for time trend. In other words, the elementary saving function is able, once allowance is made for its shift to the right over time, to explain statistically almost seven-eights of the observed variance in deflated personal saving per head. This may be regarded as a satisfactory performance for a period of this length and a formula of this simplicity. This satisfaction should, however, be tempered by the fact that the coefficient is considerably lower for the period 1897–1929 (i.e. the coefficient for the longer period again owes part of its high value to the extraordinarily wide swings of saving and income between 1929 and 1945), and may easily be similarly low during a normal period of the future. [16]

[16] Indeed the function provides only a very poor fit even for the forties.

Y-6

COMPARISON OF CHARACTERISTICS OF THE SAVING FUNCTION WITH AND WITHOUT ALLOWANCE FOR TIME TREND

(A = with allowance for time trend; B = without allowance for time trend)

	Coefficient *a*		Zero saving point		Coefficient of determination	
	A	B	A[1]	B	A	B
I. National saving						
1. Current aggregate ($ bill.)						
a. 1897–1949	0.15	0.09	-31.7	1.0	0.30	0.27
b. 1897–1929	0.09	0.15	21.5	2.1	0.70	0.70
2. Deflated per head ($ of 1929)						
a. 1897–1949	0.24	0.05	419	645	0.15	0.03
b. 1897–1929	0.17	0.17	-107	110	0.28	0.28
II. Personal saving						
1. Current aggregate ($ bill.)						
a. 1897–1949	0.27	0.19	31.5	18.3	0.74	0.71
b. 1897–1929	0.18	0.14	12.0	3.6	0.74	0.75
2. Deflated per head ($ of 1929)						
a. 1897–1949	0.74	0.32	483	357	0.85	0.59
b. 1897–1929	0.48	0.22	383	229	0.55	0.46

[1] The year 1923 for the period 1897–1949; the year 1913 for the period 1897–1929.

(2) Allowance for time trend in the case of personal saving substantially increases the value of the coefficient *a* (particularly for deflated saving per head) and that of the zero saving point for identical years. This is the algebraic equivalent of the shift of the elementary personal saving function to the right and of its steepening which could be observed in Chart 1 of the Introduction to Volume 1.

(3) The increase in the coefficient of determination is negligible for the national saving function for 1897–1949 as well as for 1897–1929. Changes in the coefficient *a* are erratic, and no satisfactory explanation has yet been found for them. They are due, at least in part, to the inclusion of the eccentric values of the war years. These results again emphasize the much greater difficulty in finding a reasonably simple and persistent functional expression for national saving.

An alternative way of determining the long-range saving function is to base the calculation exclusively on years of full or practically full employment, thus automatically eliminating the effect of cyclical and other short-term influences on the function. The difficulty with this approach is that the number of nonwar full employment years is small—between approximately half a dozen and a dozen depending on the definitions and indicator series used—with the result that the functions are in some cases rather sensitive to the selection of the individual years included.

Using the employment ratio (i.e. the ratio between actual employment and normal labor force) in its present not too satisfactory state as the measure of dis-

tance from full employment, and expressing both personal disposable income and personal saving in deflated per head values, the following results are obtained:

(1) Based on four years with employment ratios between 0.99 and 1.01 (1906, 1916, 1926, 1929):

$$s = \underset{(0.021)}{0.136}\ (y + 10.8);\ ^{17}\ r^2 = 0.95$$

(2) Based on thirteen years with employment ratios between 0.98 and 1.02: [18]

$$s = \underset{(0.028)}{0.122}\ (y + 72.6);\ r^2 = 0.64$$

(3) Based on averages of four pairs of adjacent years with employment ratios between 0.98 and 1.02 (1905–1906, 1909–1910, 1925–1926, 1947–1948):

$$s = \underset{(0.037)}{0.127}\ (y + 46.4);\ r^2 = 0.85\ ^{19}$$

While the three equations show some differences, which may be regarded as accidental, they agree in three characteristics: a marginal propensity to save of between 12 and 14 percent; a positive intercept, i.e. a negative zero saving point; and the absence of a time trend in the residuals between values calculated from the functions and observed values.

The first characteristic, a marginal propensity to save in the order of one-eighth, was to be expected from the finding in Chapter III of Volume I that the saving-income ratio, which is the same thing as the average propensity to save, for nonwar high employment periods had failed to show a pronounced time trend, and had kept close to a level of one-seventh to one-eighth throughout the period.

That the zero saving point is negative—while it was positive in most saving functions hitherto fitted—may at first seem astonishing. It should be considered, however, that the concept of a zero saving point, i.e. the level of income at which saving vanishes, has only algebraic and no economic meaning when the function is limited to years of high employment, because no case exists in our experience in which personal saving was at or even close to zero while the economy was at or near full employment. The meaning of a negative zero saving point in a full employment saving function rather is to indicate the tendency of the function to decline over time, the tendency being the more pronounced the higher the abso-

[17] This might be written as $s = 0.136\ [y - (-10.8)]$ to bring out the fact that the zero saving point is negative here as well as in equations 2 and 3.

[18] The thirteen years included are 1902, 1903, 1906, 1909, 1910, 1916, 1920, 1923, 1925, 1926, 1929, 1947, and 1948. The year 1942 is excluded though its employment ratio falls within the prescribed range.

[19] Because of the small number of years on which the equations are based their coefficients of determination can be compared only if adjusted for number of years. If this is done the coefficient is 0.93 for equation 1; 0.61 for equation 2; 0.78 for equation 3. The first two coefficients are highly significant statistically; the third is not, notwithstanding its very high absolute value.

lute (negative) value of the zero saving point. [20] Such a tendency, of course, is in accordance with the analysis of the movement in the saving ratio during full employment periods represented in Chapter III of Volume I, which pointed to a slightly declining trend.

The third characteristic, the absence of a time trend in the residuals between calculated and observed values, indicates that the function holds equally well for the entire period, e.g. for full employment years in the first decade of the century and in the late forties.

b. *Liquid assets as an additional variable.* That relatively ample holdings of liquid assets should reduce the incentive to continued saving, given the level of income, has been regarded as a plausible hypothesis by many theorists and econometricians. They consequently expect a negative correlation between liquid asset holdings and saving. There has been discussion about the exact type of assets that should be included in the "liquid" category. Holdings of currency and demand deposits probably constitute the narrowest definition, and deposits in all financial institutions plus life insurance reserves and marketable securities the widest. The question would be of limited importance if, as some theorists have argued, the negative correlation is not restricted to liquid assets, however defined, but applied also to total assets. Systematic experimentation obviously would be necessary to discriminate among these hypotheses. Not only was there no possibility within this study of performing the necessary extensive calculations, but we lack many of the statistical data required for testing the various hypotheses, in particular an annual series of total personal wealth or of liquid assets including marketable securities covering the entire period 1897–1949 or a substantial part of it.

In this situation experimentation has been limited to a concept of liquid assets of intermediate scope—currency plus deposits in financial institutions, i.e. commercial banks, savings banks, Postal Savings System, savings and loan associations, and credit unions. The calculations have been limited to deflated per head values (applying the gross national product deflator, i.e. the general price level, to both saving and liquid asset holdings) as they promised to yield economically more relevant relationships. The results of this calculation for the entire period 1897–1949 and the main subperiods are shown in Table Y-7.

Comparison of Table Y-7 with Table Y-1 shows that the introduction of liquid asset holdings as an additional independent variable—as expected, negatively correlated to saving—does increase the coefficient of determination, though

[20] Taking as an example the second of the three full employment saving functions of the text we have

$$\frac{s}{y} = 0.122 + \frac{8.84}{y}$$

This formula indicates that the saving ratio for full employment nonwar years varies between 14.4 percent for deflated personal disposable income per head of $400 (1929 prices), as in the 1890's, and 13.2 percent for income of $900, the level of the mid-twentieth century. (Such a formula is obviously inapplicable to very small values of y; the saving ratio would, for instance, be as high as 25 percent for y = $68.)

CORRELATION BETWEEN PERSONAL SAVING, PERSONAL DISPOSABLE INCOME, AND LIQUID ASSET HOLDINGS

Y-7

Period	$s =$	r^2
1. 1897–1949	$-178.4 + 0.645\ y - 0.348\ m$	0.66
2. 1897–1949 excluding 1917–1918, 1930–1933, 1942–1945	$-80.5 + 0.366\ y - 0.187\ m$	0.61
3. 1897–1929	$-61.8 + 0.318\ y - 0.151\ m$	0.47
4. 1919–1929	$-176.4 + 0.475\ y - 0.106\ m$	0.62
5. 1929–1949	$-287.7 + 0.793\ y - 0.340\ m$	0.79
6. 1929–1949 excluding 1942–1945	$-208.3 + 0.572\ y - 0.232\ m$	0.97
7. 1929–1941	$-235.0 + 0.582\ y - 0.183\ m$	0.97

s = saving, y = income, m = currency and deposits in financial institutions; all deflated per head values, $ of 1929.

COMPARISON OF COEFFICIENTS OF DETERMINATION FOR DIFFERENT FORMS OF THE SAVING FUNCTION

Y-8

Period	Elementary saving function $S = a(Y-b)$		Elementary saving function $S = a[Y-(b+ct)]$		Modigliani-Duesenberry-Davis formula $\frac{S_t}{Y_t} = 1 - \left(a + b\frac{Y_b}{C_o}\right)$	Unemployment ratio $\frac{S}{Y} = a + bU$
	Current aggregate	Deflated per head	Current aggregate	Deflated per head		
	1	2	3	4	5	6
I. National saving						
1897–1949 [1]	0.27	0.03	0.30	0.15	.	0.17
1897–1949 [2]	0.99	0.35	.	.	.	0.62
1897–1929	0.70	0.28	0.70	0.28	.	0.03
1930–1949	0.38	0.70	.	.	.	0.12
II. Personal saving						
1897–1949 [1]	0.71	0.59	0.74	0.85	0.79	0.73
1897–1949 [2]	0.89	0.53	.	.	0.57	0.44
1897–1929	0.75	0.46	0.74	0.55	0.47	0.52
1930–1949	0.70	0.74	.	.	0.96	0.84
1923–1940	0.85	0.75	.	.	0.96	0.72

[1] Includes the years 1917–1918, 1930–1933, and 1942–1945.
[2] Excludes the years listed in footnote 1.

not spectacularly. For the entire period introduction of liquid assets into the formula raises the proportion of variance of saving explained by the independent variables (liquid assets and income) from slightly over one-half to two-thirds. Improvement, however, is virtually absent for the first half of the period, i.e. the years 1897 to 1929. It is also less pronounced, though not negligible, for the second half taken separately, partly because the coefficients of determination are already very high before introducing liquid assets as an additional independent variable. Similarly, the weight liquid assets have in the function in determining saving in comparison with the weight of current income is considerably higher—indeed about twice as high—after 1929 than before. Even after 1929, however, liquid assets on the average contribute only approximately one-third as much to the value of saving determined from the function as current income does.

Allowance for liquid assets does not affect the main characteristics of the personal elementary saving function: the shift to the right over time, the increase in the marginal propensity to save, and the much higher level of coefficients of determination for the period after 1929.

c. *Correlation between saving ratio and unemployment ratio.* If the secular trend of the saving ratio is horizontal, as has been argued in Chapter III of the Introduction of Volume I, and if the deviations of the observed saving ratios from this basic level show a close correspondence in timing to the cycles in general business activity, it is but natural to attempt to explain the annual variation in the saving ratio by correlating them to a quantitative measure of business cycles. Of the different measures available practical as well as theoretical considerations point to the unemployment ratio (i.e. the difference between the normal labor force and those actually employed expressed as a percentage of the normal labor force) as the most promising subject for such an experiment. [21] On a theoretical plane variations in the distance from full employment of resources, for which the unemployment ratio is probably the only indicator easily available, constitute one of the most important characteristics of business cycles as well as of structural maladjustments in the economy. On the practical side the ratio is one of the few general business indicators available annually back to the turn of the century, [22] though

[21] All the twenty-four turning points in the unemployment ratio are also visible in the personal saving ratio, and there is only one case (1913–1915) in which a cycle in the saving ratio is without corresponding turns in the unemployment ratio. Turning points in annual data are simultaneous in sixteen cases, while there is a distance of one year in seven cases (turning points in personal saving of 1899, 1904, 1905, 1907, 1916, 1925, and 1947) and a difference of two years in only one case (1942). The turning points in the saving ratio lead in all but three of the eight cases in which they differ from those in the unemployment ratio (1904, 1916, and 1947). The two series agree in the direction of annual change in forty-one of the fifty-two years. The sizes of the annual increase or decrease in the two series, however, often differ considerably.

[22] Experiments made with a few other possible indicators of the degree of utilization of the economic system (such as the indices of business activity of the American Telephone and Telegraph Company and the Cleveland Trust Company, or the ratio of actual to estimated full employment real net national product) yielded less satisfactory results, i.e. correlated less well with the saving ratio.

in the present shape its reliability leaves much to be desired, [23] and it does not require adjustment for price changes or population growth.

A look at Table Y-9 immediately shows that the unemployment ratio may be useful in explaining fluctuations in the personal saving ratio, but is not of much help in an analysis of the national saving ratio, unless the "abnormal" years of the two World Wars and the Great Depression are eliminated. In the case of personal saving the explanatory value of the unemployment ratio is, quite on the contrary, greater for the period including violent fluctuations in economic activity than for more normal periods. This apparent contradiction, often encountered in this report, is explained by the fact that in wartime the correlation with economic activity or income is pronouncedly positive for personal saving, but negative for national saving.

The highest correlations between the saving ratio and the unemployment ratio are found in the case of national saving for the full normal period (1897–1949 excluding 1917–1918, 1930–1933, and 1942–1945), and in that of personal saving for the full period 1897–1949 and its second half. In all these cases (and also for personal saving for the first half of the period) fluctuations in the unemployment ratio explain statistically at least one-half of the annual variations in the observed saving ratios; and in the most favorable instance (the personal saving ratio for 1930 to 1949) more than seven-eighths. None of these values is higher than the coefficients of determination which can be obtained from some variant of the elementary saving function (without allowance for time trend). They are, however, well above the comparable coefficients for the elementary saving function expressed in real terms (deflated per head), and this may be regarded as the more appropriate comparison since both saving and unemployment ratios are not much influenced, at least directly, by changes in the price level and population growth.

It may also be worth notice that in the cases in which the coefficient of determination is high, the coefficient of U is close to unity, i.e. a change by 1 percentage point in the unemployment ratio leads to an approximately equal change in the saving ratio; or to put it in other words, the calculated value of the saving ratio remains below its full employment value for the full normal period for personal saving by approximately the unemployment ratio.

The formula $S/Y = a + bU$ thus obviously is not yet the answer even to the quest for the personal saving function. It does not fit closely enough for normal periods; it is badly off for at least one period in the past, the late thirties; and it does not indicate the factors directly determining the ratio of saving to income, U standing for a complex of forces which impinge in different ways on the ratio. Some of these shortcomings may, however, be removed by use of a better series of unemployment estimates; or by the introduction of additional independent variables. Its value, if any, resides in providing good estimates of saving—if the past is a guide—for periods of substantial under- or overemployment.

[23] For most of the period (1900 to 1945) the calculations use *faute de mieux* the unemployment estimates of the National Industrial Conference Board (*Historical Statistics*, p. 65).

Y-9 CORRELATION BETWEEN SAVING RATIO AND UNEMPLOYMENT RATIO

	$\frac{S}{Y}$ =	r^2
I. National		
1. 1897–1949	0.119—0.50 U (0.151)	0.18
2. 1897–1949 excluding 1917–1918, 1930–1933, 1942–1945	0.170–0.86 U (0.104)	0.62
3. 1897–1929	0.143—0.20 U (0.213)	0.03 [1]
4. 1930–1949	0.053—0.33 U (0.212)	0.12 [1]
II. Personal		
1. 1897–1949	0.154—0.80 U (0.068)	0.73
2. 1897–1949 excluding 1917–1918, 1930–1933, 1942–1945	0.136—0.51 U (0.088)	0.44
3. 1897–1929	0.142—0.79 U (0.043)	0.52
4. 1930–1949	0.179–0.88 U (0.088)	0.84

$\frac{S}{Y}$ = saving : income ratio; U = unemployment : normal labor force ratio. Figures in parentheses are standard errors of regression coefficients.

[1] Coefficient statistically not significant; all other coefficients highly significant statistically.

Another attempt to handle one of the main difficulties encountered in fitting national or personal saving functions—the sharp cyclical variations in the saving ratio, particularly those accompanying deep depressions—is represented by the use of a "cyclical income index," i.e. the ratio of current to peak previous income or a similar relationship, as the independent variable. The rationale of this approach, due to Modigliani and Duesenberry, is the fact that consumption habits are strongly influenced by the highest income previously reached, so that declines in consumption lag behind those in income, which results in a particularly sharp drop in personal saving when income falls. [24]

The results of applying this formula (in Davis's modification, where peak previous consumption is used instead of peak income) are shown in Table Y-10 for personal saving both including and excluding consumer durables.

The formula originally developed for the years 1923–1940 produces fairly good, but not outstanding, results when applied to earlier or longer periods. For the entire period 1897–1949, or for 1897–1929, it explains approximately as high a proportion of the variance in saving (or the saving ratio) as the elementary real saving function with allowance for time trend, or as the unemployment ratio. It

[24] The approach obviously has but little justification for saving of business or government and hence for total national saving.

CORRELATION BETWEEN PERSONAL SAVING RATIO AND CYCLICAL INCOME RATIO

(Modigliani-Duesenberry-Davis Formula)

Period	$s_t/y_t =$	r^2
I. Saving including consumer durables		
1. 1897–1929	0.389 y_t/c_0—0.312 (0.074)	0.47
2. 1897–1949	0.560 y_t/c_0—0.502 (0.040)	0.79
3. 1897–1949 excluding 1917–1918, 1930–1933, 1942–1945	0.443 y_t/c_0—0.375 (0.060)	0.57
4. 1929–1940	0.579 y_t/c_0—0.540 (0.041)	0.95
5. 1923–1940	0.621 y_t/c_0—0.578 (0.033)	0.96
II. Saving excluding consumer durables		
1. 1897–1929	0.351 y_t/c_0—0.273 (0.065)	0.49
2. 1897–1949	0.534 y_t/c_0—0.470 (0.036)	0.82
3. 1897–1949 excluding 1917–1918, 1930–1933, 1942–1945	0.316y_t/c_0—0.243 (0.065)	0.36
4. 1929–1940	0.437 y_t/c_0—0.387 (0.046)	0.90
5. 1923–1940	0.415 y_t/c_0—0.357 (0.057)	0.77

s_t=saving, y_t=income, c_0=previous peak consumption; all deflated per head values in $ of 1929. Figures in parentheses are standard errors of regression coefficients.

does better than these two other formulas for the full normal period and for 1923–1940. As measured by the coefficient of determination it betters the unadjusted elementary saving function (current aggregate values) for some but not all of the periods examined.

The formula thus can claim to explain past movements in saving at least as well as any other function of comparable simplicity; and it has the advantages of tying in well with the modern theory of saving of individual households, and of being compatible (like the relation between the saving and unemployment ratios) with long-run stability in the personal saving ratio. A considered judgment of its merits—as well as of those of the other forms of the saving function surveyed in this section—would require much closer analysis. It would, in particular, call for application of the different formulas to years outside the base period—assuming that the latter could be appropriately selected—e.g. to saving during the early fifties. Such tests are beyond the scope of this introductory exploration.

4. *In lieu of a conclusion*

Statistical analysis of the annual estimates of saving developed by this study obviously has not been pressed far enough—even if we limit our attention to

aggregate national and personal saving and ignore the breakdown by saver groups and forms of saving—to answer the two main questions raised at the beginning of this discussion, viz. (1) whether a saving function exists in the sense of a reasonably stable and close quantitative relation between saving and a small number of other variables; and (2) what the form of the function is if it exists. But even the very limited econometric analysis of the raw data—limited with respect to both the scope of experimentation and the refinement of the methods used—seems to support a few tentative conclusions which may be of some help in future research in this field, if only because they are derived from time series more than twice as long as those hitherto available.

(1) No formula has been found which fits the observed time series so closely and at the same time conforms so well to what we know about individuals' saving behavior and to our theoretical expectations as to settle the question whether a national or personal saving function exists. This failure, of course, may reflect lack of intuition or perseverance of the investigator or weaknesses in the data used rather than the nonexistence of a genuine saving function.

(2) The actual form of the saving function, in particular the value of the coefficients in it, depends largely on the basic data used, and is more influenced by the selection of the underlying saving estimates than by almost any refinement in the methods of analysis or difference in the choice of independent variables. [25] If this conjecture is borne out by more comprehensive analysis it clearly points to the need for much more work on basic data before a successful attempt can be made to determine the historical saving function for the United States.

(3) Next to the selection of the set of estimates of saving to be used as the dependent variable the greatest differences in the form of the saving function fitted to the data and in its goodness of fit arise from the choice of the base period (i.e. the years included in the determination of the function), and from the decision whether to use aggregate current, deflated, or deflated per head values. Both decisions involve economic judgment much more than primarily mathematico-statistical considerations.

(4) In general the best statistical fits are obtained for current values and for periods of violent fluctuations in income and saving. It may therefore be said, with only little exaggeration, that the econometric analysis of historical saving functions so far has contributed least to the explanation of variations in real (deflated) saving of the size commonly encountered in "normal" periods, which is possibly the question of greatest interest to the economic theorist and to the fore-

[25] This is illustrated by the considerable differences in the elementary saving functions, particularly their marginal propensities to save, fitted to Saving Study and Department of Commerce data which are shown in Table Y-11. A similar conclusion was reached by Ferber from a comparison of fitting saving functions to the old and the revised (1947) estimates of the Department of Commerce. (*Op. cit.*, passim, e.g. pp. 31–35).

It will be noted that the coefficients of determination are higher for the functions based on Saving Study than for those based on Department of Commerce data, but I should be loth to regard the former as preferable on that account alone without a much more thorough analysis of the differences and their causes.

COMPARISON OF SELECTED PERSONAL SAVING FUNCTIONS BASED ON SAVING STUDY AND DEPARTMENT OF COMMERCE ESTIMATES

Function	Period	Saving Study estimates		Department of Commerce estimates	
		Equation	r^2	Equation	r^2
I. Elementary saving function					
1. Current aggregate values	1923–1940	$S=0.307(Y-51.4)$	0.85	$S=0.136(Y-49.8)$	0.63
	1929–1940	$S=0.299(Y-52.4)$	0.99	$S=0.152(Y-52.0)$	0.83
2. Deflated per head values [1]	1923–1940	$s=0.444(y-508)$	0.72	$s=0.208(y-411)$	0.64
	1929–1940	$s=0.430(y-523)$	0.94	$s=0.223(y-427)$	0.87
II. Elementary saving function allowing for time trend [2]					
1. Current aggregate values	1923–1940	$S=0.322[Y-(52.1-0.194t)]$	$r^2=0.79$	$S=0.133[Y-(49.4+0.107t)]$	$r^2=0.64$
	1929–1940	$S=0.301[Y-(52.4-0.083t)]$	$r^2=0.99$	$S=0.150[Y-(51.8-0.247t)]$	$r^2=0.85$
2. Deflated per head values [1]	1923–1940	$s=0.461[y-(527-1.948t)]$	$r^2=0.91$	$s=0.227[y-(418+1.852t)]$	$r^2=0.75$
	1929–1940	$s=0.462[y-(511-2.677t)]$	$r^2=0.98$	$s=0.233[y-(430+0.944t)]$	$r^2=0.88$
III. Cyclical income index and saving ratio	1923–1940	$s/y=0.415y/c_0-0.357$	$r^2=0.77$	$s/y=0.198y/y_0-0.154$	$r^2=0.76$
	1929–1940	$s/y=0.437y/c_0-0.387$	$r^2=0.90$	$s/y=0.20y/c_0-0.162$	$r^2=0.76$

S = Saving, current, $ billion.
Y = Disposable income, current, $ billion.
s = Saving, deflated per head, $.
y = Disposable income, deflated per head, $.
c_0 = Previous peak consumption, deflated per head, $.
y_0 = Previous peak income, deflated per head, $.

[1] Deflated values are expressed in 1929 prices in Saving Study data, but in 1935–1939 prices (about 20 percent lower) in Department of Commerce data.

[2] Origin of t is January 1, 1932 for the period 1923–1940; January 1, 1935 for the period 1929–1940. Each unit t is six months.

Sources: Saving Study equations based on values in the T tables of Volume I; Department of Commerce equations from Ferber, *A Study of Aggregate Consumption Functions*, National Bureau of Economic Research, Technical Paper No. 8. In both cases saving through consumer durables is excluded.

caster of business conditions. This criticism applies to the first results of this study as much as to earlier work in the field.

(5) It is my surmise that the reward of applying econometric analysis to historical saving data (in the sense of discovering significant relationships which could hardly be suggested or verified by elementary methods) will come when it is directed towards time series for groups of savers and towards forms of saving and com-

binations of them rather than applied, as has been done up to now, only to national or total personal saving. This limitation to very broad aggregates and relatively short periods has hitherto been due to the absence of reasonably detailed series covering a sufficiently long period of time. It has been enforced in this section by budgetary and personal limitations. But this limitation is no longer inherent in the data. Its removal should enable us to probe considerably further into the econometrics of the saving process, but this enlargement of our horizon will have to be bought at the expense of more complicated, more time-consuming, and more costly procedures, and possibly will be realized only when modern high-speed computing machines come to our aid.

PART V

ESTIMATES OF NATIONAL PRODUCT, NATIONAL INCOME, AND PERSONAL INCOME, 1897 to 1949

BY RAYMOND W. GOLDSMITH

I. Estimates Required

In the analysis of the estimates of saving there is need for figures on gross or net national product for comparison with total national saving, and on total and disposable personal income for comparison with personal saving. These estimates are required in both current and 1929 prices. It is also desirable to have separate figures for the farm and nonfarm sectors of the economy; and to possess estimates of national product and of national and personal income which correspond to the social accounting concept used in the Study, i.e. figures which exclude inventory and other capital gains and losses and are based on replacement cost depreciation.

From 1929 on the national income statistics of the Department of Commerce [1] contain all the necessary data except estimates for depreciation allowances on a replacement cost basis. For the thirty-two years from 1897 to 1928 the situation is, however, much less satisfactory. Up to a few years ago there were on an annual basis only the very rough estimates by the Department of Commerce for the period from 1909 to 1928, which differed slightly in concept from the Department's later figures, [2] and Martin's annual estimates of national income going back to 1899. [3] (The Department's estimates are available only in original values.) Recently two additional estimates have become available although they have not yet been published, both of them tying in with the new Department of Commerce figures. Kuznets' figures [4] run back to 1869 although they are on a slightly different conceptual basis before 1909; Kendrick's [5] cover only the period from 1910 to 1928.

Both Kuznets' and Kendrick's estimates are superior to the old Department of Commerce series, and are available not only in current but in constant prices (1929 for Kuznets' and 1939 for Kendrick's estimates). But they cover only gross—and in Kuznets' case before 1909, only net—national product, and do not include

[1] *Survey of Current Business*, National Income Supplement, July 1947, July 1950. (Revisions made in the 1951 and 1952 editions of the National Income Supplement are limited to the years 1948 and 1949 and are generally small. It was therefore regarded as unnecessary to revise the tables and calculations based on them.)

[2] Release of Division of Research and Statistics, Bureau of Foreign and Domestic Commerce, Feb. 5, 1946.

[3] Martin, *National Income in the United States, 1799–1938.*

[4] To be published as part of the Capital Requirements Study of the National Bureau of Economic Research. The preliminary figures utilized here differ slightly from the final figures as they will be published.

[5] See "National Productivity and Its Long-Term Projection," *Long-Range Economic Projection, Studies in Income and Wealth*, Volume xvi. Published in 1954.

estimates for national income. [6] Moreover, for purposes of the Saving Study estimates total and disposable personal income are needed, preferably segregating farm and nonfarm individuals. An attempt has therefore been made to develop a set of annual estimates for all five magnitudes (gross national product, net national product, national income, personal income, disposable personal income) as consistent as possible over the entire period back to 1897, expressed in current and 1929 prices, and calculated on the basis of replacement as well as original cost depreciation.

II. Method of Estimation

These estimates were prepared by starting from two alternative gross national product series. The first of these was obtained by linking Kuznets' figures for 1897–1908 to his later estimates, which tie in with the Department of Commerce series, i.e. by increasing Kuznets' annual figures for 1897 to 1908 by 6.3 percent corresponding to the ratio between the two estimates in 1909. For the alternative series Kendrick's estimates were used without adjustment since they had been constructed to fit in with the Department of Commerce figures.

As a second step the items which have to be deducted from gross national product to reach the other four magnitudes (capital consumption allowances, corporate saving and taxes, government net interest and transfer payments, and individuals' tax payments) were each carried back from 1928 to 1897 in a manner and from sources as closely comparable as possible with the Department of Commerce's current figures. Methods and sources employed are explained in the footnotes to Tables N-5 to N-11. The estimates of total and disposable personal income so obtained were then split into a farm and a nonfarm component by subtracting from the national aggregates estimates for farm income and direct taxes paid by farmers which were available from other sectors of this study.

The third step, intended to make the figures more nearly comparable to the social accounting concept underlying the estimates of saving, consisted of shifting the allowances for capital consumption from the original cost to the replacement cost basis. This was done for the period from 1929 on by multiplying the allowances (except for farm machinery and buildings, which were already on a replacement cost basis) entering into the Department of Commerce's estimates by a "transformation index" representing the ratio of depreciation allowances on replacement cost and on original cost bases as calculated by the Saving Study from annual data on capital expenditures, prices of construction and capital goods, and assumed length of life for the different types of assets. For the period before 1929 the absolute values of replacement cost depreciation allowances as developed by this study were used, reducing them by 4.6 percent in order to tie them to the 1929 figures derived from the Department of Commerce's estimates of depreciation allowances.

[6] The old Department of Commerce estimates included estimates of these magnitudes. The figures, however, were extremely rough and the elements by which the concepts differ were not published separately and in detail.

The completion of these three sets (original values, original cost depreciation; original values, replacement cost depreciation; 1929 values) of five series proved more laborious than expected. If the time spent on them and the space required for their publication may not seem justified by the needs of this study, it is hoped that it will be by their usability in other economic research work.

III. Problems

The aim of the estimates thus is a consistent set of figures for national product and income and for personal income from 1897 to 1949 which is in line with the social accounting concepts underlying this study. To what extent has this goal been reached?

1. *Choice among alternative estimates*

This problem is limited to the period from 1910 to 1928, for which both Kuznets' and Kendrick's estimates are available. For these years Kendrick's estimates are generally slightly above Kuznets', the difference averaging about 3.8 percent. Discrepancies in level or movement are particularly pronounced in 1914, 1918 to 1922, 1925, and 1926, Kendrick's series generally rising or falling more sharply than Kuznets'. While a detailed analysis of the reasons for these discrepancies—some of which may be eliminated or reduced in later revisions of either series—is beyond the scope of this study, examination has been carried far enough to indicate that until more is known about both series Kuznets' estimates are preferable as they go back for a longer period. They have, therefore, been made the basis of the estimates before 1929, but Kendrick's figures for gross national product and the estimates derived from them are shown in Table N-4 by way of comparison and for the use of those who may prefer them.

2. *Linking*

In order to obtain an unbroken series over the entire period Kuznets' estimates for the earlier part of the period (which, as has been said, are on a conceptual basis slightly different from the Department of Commerce series) were linked in 1909 to his own series tying in with Department of Commerce figures. This would appear a permissible procedure since the level difference at the link year is rather small—around 6 percent—and the difference appears to be due primarily to statistical rather than conceptual discrepancies. In any case, since estimates along current Department of Commerce concepts are available only to 1909, there was no alternative to such a link if the entire period had to be covered, except by leaving a gap of about $1 billion in 1909. This would have made all statistical analyses very awkward, virtually preventing the derivation of any relationships for periods overlapping the gap, such as the entire period from 1897 to 1949. Some slight inconsistencies which may have been involved in the linking process have, therefore, been regarded as by far the lesser evil.

3. *Reliability of deductions from gross national product*

Because of the less satisfactory character of the basic statistical data the estimates for the various adjustments which have to be made to progress from gross national product to disposable personal income are probably affected by a larger margin of error for the period before 1929 than the Department of Commerce figures for the same items during the last twenty years. In addition two adjustments were ignored altogether for the period before 1929 because no reasonable estimates could be made for them, viz. subsidies less current surplus of government enterprises and business transfer payments. These two items, however, are of small size and in 1929 together amounted to not much over 0.4 percent of gross national product. It is probable that they were relatively less important in the preceding thirty years. One of them—business transfer payments—enters only into the difference between net national product and national income and between national income and personal income, but disappears from the difference between net national product and personal income.

4. *Deflation*

Since estimates of gross national product in constant prices were available for both alternatives new problems of deflation arose only for the various adjustments. The procedure adopted, viz. the application to all deductions, including capital consumption allowances, of the gross national product deflator implied in Kuznets' or Kendrick's estimates of gross national product, may not be ideal. It was, however, the only procedure that could be applied without a disproportionate amount of work and one which at least did not affect the relation between gross national product, net national product, national income, and personal income. [7]

5. *Compliance with requirements of social accounting concept*

Ideally the figures for national product and income and for personal income to be used in the analysis should comply strictly with the principles underlying the derivation of the estimates of saving. Since the gross national product estimates of the Department of Commerce, as well as those of Kuznets or Kendrick, deviate in some important points from these principles, adjustment should be made for all discrepancies, or at least for all those which may be presumed to be of substantial quantitative importance. An adjustment has in fact been made for probably the most important single discrepancy, the use of replacement cost instead of original cost capital consumption allowances. [8] It was, however, out of the question

[7] Allowances for capital consumption could be deflated in another way, using the relationship between depreciation and capital outlays charged to current expense in 1929 prices and in replacement cost, as calculated by this study, to transform the replacement cost series into a constant cost series in 1929 prices. Net national product, national income, personal income, and disposable personal income, in 1929 prices, calculated using the alternative series for capital consumption allowances would differ from the figures in Table N-2 by the amounts shown in Table N-2, col. 6, which are equal to 1 or 2 percent of gross national product at most in any year.

[8] It may be well to recall that no adjustment is necessary on account of inventory valuation adjustment and other capital gains and losses since these are excluded from all three estimates of gross national product used here as well as from the estimates of saving.

on account of the labor involved, or inadvisable because of the general acceptance of the Department of Commerce's estimates, to attempt further adjustments of the national product, national income, or personal income figures. As a result the estimates for these magnitudes do not take account of several adjustments recognized in the estimates of saving. Brief mention of the most important of the discrepancies so created may be in order:

(a) The Department of Commerce estimates disregard depletion entirely. In the estimates of saving depletion is, on the other hand, allowed to an extent regarded as corresponding to the exhaustion of the natural resources to which it applies, a procedure which leads to allowances considerably below those used by business. As a result the capital consumption allowances implied in the estimates of net saving are somewhat in excess of those in the product and income series.

(b) The Department of Commerce's estimates, as well as those of Kuznets and Kendrick, treat durable consumer goods as nondepreciable assets, regarding expenditures on them as part of current outlay. They therefore do not include any allowances for depreciation on the stock of consumer durable goods. However, if consumer durable goods were treated as capital assets in the product and income series, an allowance would also have to be entered for their imputed use value, similar to that now made on account of owner-occupied dwellings. While these two allowances have the tendency to offset each other to a large extent, at least for longer periods of time, the difference in treatment between the estimates of saving and those of national product and income introduces a discrepancy which may occasionally be of importance.[9]

There are thus some conceptual discrepancies—and several minor ones which have been passed over—between the estimates of national product and national and personal income brought together here and the estimates of saving developed by the Saving Study. They are, however, sufficiently small not to impair the comparability between the two series. In particular the differences appear to be not important enough to prevent, or even to limit, the use of these estimates of product and income as the independent variable in a statistical analysis and explanation of the behavior of saving, saving being regarded as the dependent variable.

[9] According to Kuznets' rough calculations (see *Income and Wealth*, Series II, p. 165) the use value of consumer durables was equal to between ¾ and 1¾ percent of gross national product. Failure to adjust the available estimates of national income for this item when comparing them with estimates of saving including consumer durables introduces an error of, in general, only secondary importance.

TABLE N-1

Column 1 – 1897–1908: Unpublished estimates by Kuznets, based on decadal figures in *National Product since 1869*, linked to 1909 figure by ratio of 1.0626.
1909–1928: Unpublished preliminary estimates by Kuznets, conforming to Department of Commerce concept. These estimates differ slightly from version to be published as part of the Capital Requirements Study of the National Bureau of Economic Research.
1929–1949: *Survey of Current Business*, July 1950, Table 4. (Cols. 2, 3, 4, and 5 may also be taken from this source and are identically equal to figures derived as explained in notes below.)

Column 2 – 1897–1949: Col. 1 minus Table N-5, col. 1.

Column 3 – 1897–1949: Col. 2 plus Table N-5, col. 4 minus Table N-5, sum of cols. 5, 6, and 7.

Column 4 – 1897–1949: Col 3 minus Table N-5, sum of cols. 8, 9, 10, 11, and 12 plus Table N-5, sum of cols. 6, 13, and 14.

Column 5 – 1897–1928: Col. 4 minus personal tax payments (from figures in Table N-8, col. 11, linked to 1929 Department of Commerce figure of $2,643 million).
1929–1949: Col. 4 minus personal tax payments from *Survey of Current Business*, July 1950, Table 3.

Column 6 – 1897–1949: Col. 1 minus Table N-6, col. 1.

Column 7 – 1897–1949: Col. 6 plus Table N-5, col. 4 minus Table N-5, sum of cols. 5, 6, and 7.

Column 8 – 1897–1949: Col. 7 minus Table N-5, sum of cols. 9, 10, 11, and 12 minus Table N-6, col. 4, plus Table N-5, sum of cols. 6, 13, and 14.

Column 9 – 1897–1949: Derived from col. 8 by same adjustment as was used to derive col. 5 from col. 4.

NATIONAL PRODUCT, NATIONAL INCOME, AND PERSONAL INCOME

Current Values: 1897 to 1949

$ mill.

Year	Original cost depreciation					Replacement cost depreciation			
	Gross national product	Net national product	National income	Personal income	Disposable personal income	Net national product	National income	Personal income	Disposable personal income
	1	2	3	4	5	6	7	8	9
1897	14 452	13 028	12 043	11 993	11 822	13 127	12 142	12 069	11 898
1898	14 947	13 462	12 400	12 250	12 077	13 501	12 439	12 285	12 112
1899	17 294	15 706	14 541	14 195	14 018	15 659	14 494	14 162	13 985
1900	18 571	16 885	15 647	15 160	14 971	16 776	15 538	15 077	14 888
1901	20 328	18 572	17 271	16 814	16 607	18 494	17 193	16 758	16 551
1902	20 996	19 139	17 830	17 297	17 085	19 038	17 729	17 221	17 009
1903	22 824	20 859	19 526	18 646	18 426	20 749	19 416	18 558	18 338
1904	22 026	19 949	18 626	18 437	18 221	19 838	18 515	18 355	18 139
1905	23 944	21 793	20 401	19 912	19 686	21 638	20 246	19 800	19 574
1906	28 326	25 799	24 316	23 773	23 537	25 564	24 081	23 598	23 362
1907	30 940	28 438	26 891	26 298	26 045	28 137	26 590	26 083	25 830
1908	26 931	24 448	22 816	22 568	22 287	24 225	22 593	22 407	22 126
1909	31 460	28 844	27 159	26 892	26 606	28 603	26 918	26 732	26 446
1910	33 414	30 618	28 782	27 779	27 461	30 331	28 495	27 583	27 265
1911	33 207	30 319	28 427	27 954	27 621	29 995	28 103	27 750	27 417
1912	35 888	32 809	30 859	30 468	30 125	32 478	30 528	30 259	29 916
1913	37 464	34 168	32 200	31 605	31 256	33 825	31 857	31 257	30 908
1914	35 818	32 463	30 444	30 002	29 604	32 171	30 152	29 684	29 286
1915	39 655	36 209	34 118	33 105	32 675	35 818	33 727	32 737	32 307
1916	48 927	45 084	42 839	39 598	39 114	44 302	42 057	39 057	38 573
1917	64 543	60 147	57 591	52 692	52 051	58 599	56 043	51 777	51 136
1918	77 219	72 259	69 236	64 873	63 575	69 675	66 652	63 630	62 332
1919	85 315	80 171	76 619	71 402	69 702	77 017	73 465	69 630	67 930
1920	91 256	85 383	81 457	75 832	73 884	81 171	77 245	73 451	71 503
1921	72 479	66 647	62 562	60 596	58 739	63 997	59 912	59 119	57 262
1922	72 775	66 664	61 847	60 797	59 093	64 898	60 081	59 790	58 086
1923	85 492	78 854	73 720	70 924	69 037	76 606	71 472	69 590	67 703
1924	85 940	79 073	73 612	71 563	69 778	76 902	71 441	70 260	68 475
1925	90 345	83 065	77 247	74 004	72 073	80 929	75 111	72 718	70 787
1926	96 930	89 174	82 955	78 739	76 674	87 076	80 857	77 547	75 482
1927	95 377	87 333	80 790	78 652	76 513	85 349	78 806	77 499	75 360
1928	97 193	88 719	81 803	78 878	76 570	86 780	79 864	77 755	75 447
1929	103 828	95 012	87 355	85 127	82 484	93 332	85 675	84 308	81 665
1930	90 857	82 110	75 003	76 195	73 688	80 911	73 804	75 540	73 033
1931	75 930	67 618	58 873	64 835	62 977	66 977	58 232	64 450	62 592
1932	58 340	50 677	41 690	49 274	47 819	50 813	41 826	49 295	47 840
1933	55 760	48 515	39 584	46 629	45 165	48 574	39 643	46 586	45 122
1934	64 868	57 650	48 613	53 230	51 635	57 194	48 157	52 973	51 378
1935	72 193	64 824	56 789	59 861	57 973	64 394	56 359	59 656	57 768
1936	82 483	74 799	64 719	68 353	66 095	74 281	64 201	68 060	65 802
1937	90 213	82 241	73 627	73 976	71 055	81 280	72 666	73 492	70 571
1938	84 683	76 691	67 375	68 327	65 465	75 761	66 445	67 845	64 983
1939	91 339	83 238	72 532	72 607	70 167	82 325	71 619	72 146	69 706
1940	101 443	93 003	81 347	78 347	75 743	91 958	80 302	77 819	75 215
1941	126 417	117 123	103 834	95 308	92 015	115 571	102 282	94 478	91 185
1942	161 551	151 570	137 119	122 721	116 740	149 232	134 781	121 337	115 356
1943	194 338	183 658	169 686	150 286	132 441	180 864	166 892	148 489	130 644
1944	213 688	201 801	183 838	165 892	146 957	198 607	180 644	163 686	144 751
1945	215 210	202 800	182 691	171 927	151 060	199 366	179 257	169 519	148 652
1946	211 110	198 947	180 286	177 724	158 916	195 004	176 343	175 311	156 503
1947	233 264	218 419	198 688	191 000	169 494	211 732	192 001	186 990	165 484
1948	259 071	241 676	223 466	209 531	188 380	233 399	215 189	204 522	183 371
1949	255 578	236 806	216 831	206 118	187 444	228 790	208 815	201 120	182 446

TABLE N-2

Column 1 – 1897–1928: Same sources and procedure as in Table N-1, col. 1.
1929–1941, 1947–1949: From *Survey of Current Business*, Jan. 1951, p. 9, shifted to 1929 base by ratio (1.2084) between current value (see Table N-1, col. 1) and 1939 value of gross national product for 1929.
1942–1946: Table N-1, col. 1 divided by gross national product deflator derived by linking deflator from Kuznets, "Long-Term Changes in National Product of the United States since 1870," *Income and Wealth*, Series II, p. 40 to the ratio of Table N-1, col. 1 to Table N-2, col. 1 in 1941.

Columns 2 to 5 – 1897–1949: Derived by multiplying Table N-1, cols. 6, 7, 8, and 9, respectively, by annual ratio of values of col. 1 to those of Table N-1, col. 1. In effect, this method deflates each adjusting series (the difference between cols. 1 and 6, 6 and 7, 7 and 8, and 8 and 9 of Table N-1) by the ratio of gross national product in 1929 prices to gross national product in current prices.

Column 6 – 1897–1949: This adjustment item is the difference between capital consumption allowances in 1929 prices (derived as in Table N-6, col. 1, times ratio of depreciation in 1929 prices to depreciation in replacement cost values derived as explained in Table W-7, cols. 6 and 7) and capital consumption allowances implied in difference between cols. 1 and 2. The latter are equivalent to Table N-6, col. 1, times annual ratio of col. 1 to Table N-1, col. 1 (gross national product deflator).

By adding the adjustment item to cols. 2, 3, 4, or 5, the figures can be shifted from the basis of deflating capital consumption allowances by the over-all gross national product deflator to that of a more specific deflation. The difference between the two estimates of capital consumption allowances is essentially due to the difference between the national product deflator and a weighted index of cost of construction and producer durable goods.

NATIONAL PRODUCT, NATIONAL INCOME, AND PERSONAL INCOME

1929 Prices: 1897 to 1949

$ mill.

Year	Gross national product	Net national product	National income	Personal income	Disposable personal income	Adjustment for depreciation allowances
	1	2	3	4	5	6
1897	32 403	29 210	27 002	26 890	26 506	–207
1898	33 588	30 251	27 865	27 527	27 139	–44
1899	35 805	32 518	30 106	29 389	29 023	–101
1900	37 442	34 043	31 547	30 565	30 184	–45
1901	40 901	37 368	34 750	33 831	33 414	–133
1902	41 495	37 825	35 238	34 185	33 766	–140
1903	43 641	39 884	37 335	35 652	35 232	–253
1904	43 190	39 117	36 523	36 152	35 729	–148
1905	45 869	41 748	39 082	38 145	37 712	–138
1906	50 940	46 403	43 735	42 759	42 334	–291
1907	52 353	48 119	45 502	44 498	44 070	–394
1908	48 700	44 210	41 259	40 810	40 302	–230
1909	56 279	51 599	48 585	48 107	47 495	–221
1910	56 158	51 459	48 373	46 687	46 153	–461
1911	55 161	50 364	47 221	46 435	45 882	–456
1912	55 468	50 710	47 696	47 091	46 561	–807
1913	57 815	52 728	49 691	48 773	48 235	–813
1914	55 532	50 331	47 200	46 515	45 898	–841
1915	60 635	55 366	52 168	50 620	49 962	–719
1916	67 300	62 014	58 926	54 468	53 802	–713
1917	74 187	69 134	66 196	60 565	59 828	–700
1918	78 875	73 809	70 721	66 255	64 929	–119
1919	77 418	72 750	69 527	64 793	63 250	–243
1920	73 298	65 197	62 043	58 996	57 431	–43
1921	68 700	60 663	56 791	56 039	54 279	–148
1922	72 775	64 898	60 081	59 790	58 096	–614
1923	83 980	75 250	70 207	68 358	66 505	–186
1924	85 427	76 441	71 012	69 838	68 064	–183
1925	87 970	78 801	73 136	70 806	68 925	–411
1926	93 833	84 290	78 270	75 065	73 067	–520
1927	95 092	85 093	78 449	77 146	74 982	–336
1928	96 136	85 834	78 993	76 907	74 625	–435
1929	103 800	93 304	85 649	84 283	81 641	–227
1930	94 400	84 067	76 682	78 486	75 881	–315
1931	87 400	77 097	67 031	74 188	72 050	33
1932	74 800	65 147	53 625	63 201	61 336	–17
1933	74 300	64 725	52 824	62 076	60 125	498
1934	82 000	72 299	60 875	66 963	64 947	837
1935	89 300	79 655	69 716	73 794	71 459	594
1936	101 400	91 314	78 922	83 666	80 890	699
1937	106 200	95 683	85 542	86 515	83 076	998
1938	101 500	90 807	79 641	81 319	77 889	1 179
1939	110 300	99 416	86 487	87 124	84 177	1 296
1940	120 800	109 504	95 624	92 667	89 566	1 401
1941	139 600	139 602	127 625	112 950	104 332	1 348
1942	146 866	135 667	122 529	110 307	104 870	783
1943	160 601	149 466	137 920	122 711	107 964	605
1944	168 258	156 383	142 239	128 886	113 977	775
1945	168 144	155 765	140 053	132 445	116 142	829
1946	167 558	154 775	139 963	139 144	124 216	771
1947	167 500	151 769	137 626	134 034	118 619	1 852
1948	172 900	155 770	143 617	136 498	122 382	2 300
1949	172 000	153 976	140 532	135 354	122 786	2 505

TABLE N-3

Column 1 – 1897–1949: Col. 5 plus the difference between farm depreciation on replacement cost basis and farm depreciation on original cost basis derived from data described in Table W-7, cols. 5 and 7.

Column 2 – 1897–1949: Table N-1, col. 4 minus col. 5 of this table. Cols. 1 and 2 do not add to Table N-1, col. 4 (the Department of Commerce figure) since the latter includes farm depreciation on replacement cost basis and other depreciation on original cost basis. A series consistent with Table N-1, cols. 2 to 5 may be obtained by adding to each column the difference between cols. 1 and 5 of this table, a difference which is equal to farm depreciation in replacement cost less farm depreciation in original cost. (See notes to col. 1.)

Column 3 – 1897–1949: Col. 1 minus tax payments by farmers obtained as follows: 1897–1909, rough estimates; 1910–1926, *Historical Statistics*, p. 98; 1927–1949, figures for real estate and personal property tax payments from *Agricultural Finance Review*, Nov. 1951, p. 102, and for income tax payments from *Agricultural Finance Review*, Nov. 1950, p. 42.

Column 4 – 1897–1949: Table N-1, col. 5 less col. 7 of this table. (See notes to col. 2 above.)

Column 5 – 1897–1898: Extrapolated on basis of gross farm income as given in Strauss and Bean, *Gross Farm Income and Indices of Farm Production and Prices in the U.S. 1869–1937*, p. 24.
1899–1949: Estimates of realized net income of farm operators from agricultural sources (1899–1909, National Industrial Conference Board figures, *Studies in Enterprise and Social Progress*, p. 95, linked in 1910 to Bureau of Agricultural Economics series; 1910–1949, Bureau of Agricultural Economics, *Farm Income Situation*, Aug. 1950, including government payments adjusted for inventory change [Table A-32, col. 7] and raised 20 percent [see Table A-5, col. 2] to allow for nonfarm income of farmers).

Column 6 – 1897–1949: Table N-1, col. 8 less col. 5.

Column 7 – 1897–1949: Col. 5 less tax payments from source indicated in note to col. 3.

Column 8 – 1897–1949: Table N-1, col. 9 less col. 7.

Columns 9 to 12 – 1897–1949: Cols. 5, 6, 7, and 8, respectively, multiplied by gross national product deflator, i.e. ratio of Table N-2, col. 1 to Table N-1, col. 1.

DISTRIBUTION OF TOTAL AND DISPOSABLE PERSONAL INCOME BETWEEN FARM OPERATORS AND OTHER PERSONS

1897 to 1949

$ mill.

Year	Current values, original cost depreciation				Current values, replacement cost depreciation				1929 values			
	Personal income		Disposable personal income		Personal income		Disposable personal income		Personal income		Disposable personal income	
	Farm operators	Others	Farm operators	Others	Farm operators	Others	Farm operators	Others	Farm operators	Others	Farm operators	Others
	1	2	3	4	5	6	7	8	9	10	11	12
1897	2 126	9 840	2 028	9 767	2 153	9 916	2 055	9 843	4 827	22 233	4 608	22 069
1898	2 356	9 875	2 254	9 804	2 375	9 910	2 273	9 839	5 337	22 269	5 108	22 100
1899	2 472	11 733	2 369	11 659	2 462	11 700	2 359	11 626	5 097	24 224	4 884	24 070
1900	2 517	12 672	2 410	12 590	2 488	12 589	2 381	12 507	5 016	25 381	4 801	25 217
1901	2 204	14 626	2 097	14 526	2 188	14 570	2 081	14 470	4 402	29 316	4 187	29 114
1902	3 270	14 051	3 157	13 952	3 246	13 975	3 133	13 876	6 415	27 619	6 192	27 423
1903	2 684	15 989	2 569	15 884	2 657	15 901	2 542	15 796	5 080	30 404	4 861	30 204
1904	3 163	15 292	3 038	15 201	3 145	15 210	3 020	15 119	6 167	29 825	5 922	29 647
1905	3 182	16 760	3 055	16 661	3 152	16 648	3 025	16 549	6 038	31 892	5 795	31 703
1906	3 483	20 346	3 351	20 242	3 427	20 171	3 295	20 067	6 164	36 280	5 926	36 093
1907	3 114	23 252	2 980	23 133	3 046	23 037	2 912	22 918	5 154	38 980	4 927	38 780
1908	3 848	18 754	3 706	18 615	3 814	18 593	3 672	18 454	6 897	33 622	6 640	33 370
1909	4 497	22 433	4 345	22 299	4 459	22 273	4 307	22 139	7 977	39 844	7 705	39 604
1910	4 748	23 088	4 584	22 934	4 691	22 892	4 527	22 738	7 882	38 462	7 609	38 216
1911	3 717	24 290	3 551	24 123	3 664	24 086	3 498	23 919	6 086	40 010	5 811	39 731
1912	5 169	25 348	4 986	25 188	5 120	25 139	4 937	24 979	7 913	38 855	7 631	38 608
1913	4 125	27 531	3 934	27 373	4 074	27 183	3 883	27 025	6 287	41 949	5 992	41 705
1914	4 870	25 173	4 652	24 993	4 829	24 855	4 611	24 675	7 487	38 535	7 149	38 256
1915	5 003	28 157	4 781	27 949	4 948	27 789	4 726	27 581	7 566	42 491	7 227	42 174
1916	4 825	34 866	4 582	34 625	4 732	34 325	4 489	34 084	6 509	47 215	6 175	46 883
1917	9 771	43 103	9 511	42 722	9 589	42 188	9 329	41 807	11 022	48 492	10 723	48 053
1918	10 579	54 626	10 287	53 620	10 238	53 383	9 946	52 377	10 458	54 528	10 159	53 498
1919	11 128	60 674	10 817	59 285	10 728	58 902	10 417	57 513	9 735	53 450	9 452	52 187
1920	9 317	67 014	8 924	65 459	8 818	64 633	8 425	63 078	7 083	51 913	6 767	50 664
1921	3 663	57 219	3 180	55 845	3 377	55 742	2 894	54 368	3 201	52 838	2 743	51 535
1922	5 113	55 841	4 603	54 657	4 956	54 834	4 446	53 650	4 956	54 834	4 446	53 650
1923	5 857	65 264	5 348	63 886	5 660	63 930	5 151	62 552	5 560	62 798	5 060	61 445
1924	5 566	66 210	5 050	64 941	5 353	64 907	4 837	63 638	5 321	64 518	4 808	63 256
1925	7 607	66 601	7 096	65 181	7 403	65 315	6 892	63 895	7 208	63 597	6 711	62 214
1926	6 822	72 114	6 242	70 629	6 625	70 922	6 045	69 437	6 413	68 652	5 852	67 215
1927	6 923	71 782	6 333	70 202	6 749	70 629	6 159	69 049	6 729	70 417	6 141	68 842
1928	7 090	71 978	6 480	70 280	6 900	70 855	6 290	69 157	6 825	70 083	6 221	68 403
1929	7 311	77 987	6 685	75 970	7 140	77 168	6 514	75 151	7 138	77 145	6 512	75 128
1930	5 078	71 237	4 438	69 370	4 958	70 582	4 318	68 715	5 151	73 335	4 486	71 395
1931	3 718	61 179	3 080	59 959	3 656	60 794	3 018	59 574	4 208	69 980	3 474	68 576
1932	2 361	46 920	1 780	46 046	2 354	46 941	1 773	46 067	3 018	60 183	2 273	59 063
1933	2 783	43 835	2 278	42 876	2 794	43 792	2 289	42 833	3 723	58 353	3 050	57 075
1934	2 967	50 309	2 534	49 147	2 921	50 052	2 488	48 890	3 692	63 271	3 145	61 802
1935	6 169	53 730	5 749	52 262	6 131	53 525	5 711	52 057	7 584	66 210	7 065	64 395
1936	5 095	63 309	4 664	61 482	5 044	63 016	4 613	61 189	6 201	77 466	5 671	75 220
1937	7 067	66 990	6 631	64 505	6 986	66 506	6 550	64 021	8 224	78 291	7 711	75 366
1938	5 415	62 985	4 967	60 571	5 342	62 503	4 894	60 089	6 403	74 916	5 866	72 022
1939	5 469	67 195	5 025	65 199	5 412	66 734	4 968	64 738	6 536	80 588	5 999	78 178
1940	5 681	72 724	5 229	70 572	5 623	72 196	5 171	70 044	6 606	85 971	6 158	83 408
1941	8 449	86 967	7 988	84 135	8 341	86 137	7 880	83 305	9 211	95 120	8 702	91 994
1942	12 717	110 189	12 211	104 714	12 532	108 805	12 026	103 330	12 156	105 541	10 933	93 937
1943	14 666	135 870	13 780	118 911	14 416	134 073	13 530	117 114	13 064	121 497	11 181	96 783
1944	14 815	151 412	14 068	133 224	14 480	149 206	13 733	131 018	12 848	132 390	10 813	103 164
1945	15 273	157 034	14 053	137 387	14 893	154 626	13 673	134 979	12 830	133 210	10 683	105 459
1946	18 202	159 916	16 928	142 382	17 808	157 503	16 534	139 969	14 104	124 742	13 123	111 093
1947	19 378	172 308	18 001	152 179	18 692	168 298	17 315	148 169	13 422	120 850	12 434	106 400
1948	22 462	187 937	20 797	168 451	21 594	182 928	19 929	163 442	14 412	122 086	13 300	109 080
1949	18 222	188 866	16 665	171 749	17 252	183 868	15 695	166 751	11 611	123 743	10 563	112 230

TABLE N-4

Column 1 – 1910–1928: See Kendrick, "National Productivity and Its Long-Term Projection," *Long-Range Economic Projection, Studies in Income and Wealth,* Volume XVI. Estimates are tied to Department of Commerce concepts.
1929: From Table N-1, col. 1.

Column 2 – 1910–1929: Col. 1 less Table N-6, col. 1.

Columns 3 to 5 – 1910–1929: Derived from col. 2 by same adjustments as were used to derive Table N-1, cols. 7, 8, and 9 from Table N-1, col. 6 for this period.

Column 6 – 1910–1929: Same source as for col. 1, shifted from 1939 base to 1929 base ratio of current value to 1939 value of gross national product in 1929 (1.2084). (Cf. notes to Table N-2, col. 1.)

Columns 7 to 10 – 1910–1929: Cols. 2, 3, 4, and 5, respectively, times annual ratio of col. 6 to col. 1.

ALTERNATIVE ESTIMATES OF NATIONAL PRODUCT, NATIONAL INCOME, AND PERSONAL INCOME: 1910 to 1929

$ mill.

Year	Current values, replacement cost depreciation					1929 values				
	Gross national product	Net national product	National income	Personal income	Disposable personal income	Gross national product	Net national product	National income	Personal income	Disposable personal income
	1	2	3	4	5	6	7	8	9	10
1910	34 400	31 317	29 481	28 569	28 251	59 700	54 351	51 164	49 581	49 030
1911	35 500	32 288	30 396	30 043	29 710	61 600	56 026	52 743	52 131	51 553
1912	38 100	34 690	32 740	32 471	32 128	63 900	58 182	54 912	54 460	53 885
1913	39 600	35 961	33 993	33 393	33 044	66 500	60 389	57 084	56 077	55 491
1914	39 700	36 053	34 034	33 566	33 168	65 300	59 300	55 979	55 209	54 555
1915	40 700	36 863	34 772	33 782	33 352	64 600	58 509	55 190	53 619	52 936
1916	51 000	46 375	44 130	41 130	40 646	71 800	65 287	62 126	57 903	57 221
1917	65 500	59 556	57 000	52 734	52 093	74 200	67 465	64 570	59 737	59 011
1918	83 000	75 456	72 433	69 402	68 104	81 400	74 000	71 035	68 063	66 790
1919	89 400	81 102	77 550	73 715	72 015	80 400	72 935	69 741	66 292	64 763
1920	95 000	84 915	80 989	77 195	75 247	70 200	62 744	59 843	57 039	55 600
1921	70 200	61 718	57 633	56 840	54 983	67 800	59 607	55 662	54 896	53 103
1922	74 900	67 023	62 206	61 915	60 221	75 600	67 646	62 785	62 491	60 781
1923	87 500	78 614	73 480	71 598	69 711	85 700	76 995	71 966	70 123	68 275
1924	84 400	75 362	69 901	68 720	66 935	83 500	74 556	69 153	67 985	66 219
1925	95 300	85 884	80 066	77 673	75 742	91 400	82 371	76 791	74 496	72 644
1926	97 800	87 946	81 727	78 417	76 352	95 800	86 152	80 060	76 817	74 794
1927	95 700	85 672	79 008	77 701	75 531	95 900	85 852	79 174	77 864	75 690
1928	98 200	87 787	80 871	78 762	76 454	97 600	87 251	80 378	78 282	75 988
1929	103 828	93 332	85 675	84 308	81 665	103 828	93 332	85 675	84 308	81 665

TABLE N-5

Column 1 – 1897–1928: Sum of cols. 2 and 3.
1929–1949: *Survey of Current Business*, National Income Supplement, July 1947, Table 4, and July 1950, Table 4.

Column 2 – 1897–1928: Value for 1929 extrapolated on basis of depreciation of fixed capital (including fire losses, but excluding other accidental damage to fixed capital derived as explained in Table W-7).
1929–1949: Same source as col. 1. Includes accidental damage to fixed capital.

Column 3 – 1897–1928: Table C-47, col. 1 plus Table C-49, col. 1.
1929–1949: Same source as that for col. 1.

Column 4 – 1897–1928: Not estimated; probably very small.
1929–1949: Same source as that for col. 1.

Column 5 – 1897–1928: From Table N-7, col. 7, linked to Department of Commerce series by ratio of 1929 values (0.9404).
1929–1949: Same source as that for col. 1.

Column 6 – 1897–1928: Not estimated. Omission results in a slight overestimate of national income, but does not affect personal income.
1929–1949: Same source as that for col. 1.

Column 7 – 1897–1928: Not relevant, since estimate is based on gross national product, rather than on personal income.
1929–1949: Same source as that for col. 1.

Column 8 – 1897–1928: Reported corporate saving (from Table C-1, col. 1) plus adjustments for coverage and comparability (from Table C-2, col. 1) less capital gains (from Table C-3, col. 3) plus depletion charges (from Table C-46, col. 5). The resulting series is conceptually comparable with the figures for the period after 1928.
1929–1949: Same source as that for col. 1.

Column 9 – 1909–1928: Sum of federal income tax liabilities reported by corporations (from *Historical Statistics*, col. P-156, p. 308) plus additional liabilities, disclosed by audit (from Table C-34, col. 3 less col. 6), plus state and local government income tax liabilities of corporations, estimated as one-half of income tax collections in following year (from *Historical Statistics*, p. 317; see notes to Table N-8, col. 4).
1929–1949: Same source as that for col. 1.

Column 10– 1897–1928: From Table P-19, col. 8. Figures shown here do not incorporate a later revision made in Table P-19, col. 8 for the period 1919–1928.
1929–1949: Same source as that for col. 1.

Column 11– 1897–1919: From Table N-8, col. 5.
1920–1928: From Table N-9, col. 1.
1929–1949: Same source as that for col. 1.

Column 12– 1897–1928: Assumed as zero, as for 1929–1942.
1929–1949: Same source as that for col. 1.

Column 13– 1897–1928: From Table N-11, sum of cols. 4 and 9.
1929–1949: Same source as that for col. 1.

Column 14– 1897–1928: From Table N-10, col. 1.
1929–1949: Same source as that for col. 1.

SERIES RELATING GROSS NATIONAL PRODUCT, NET NATIONAL PRODUCT, NATIONAL INCOME, AND PERSONAL INCOME: 1897 to 1949

$ mill.

Year	Capital consumption allowances, original cost			Government enterprises' subsidies less current surplus	Indirect business tax and nontax liabilities	Business transfer payments	Statistical discrepancy	Undistributed corporate profits	Corporate profit tax liability	Corporate inventory valuation adjustment	Contributions for social insurance, employees and employers	Excess of wage accruals over disbursements	Government	
	Total	Depreciation (including accidental damage)	Capital expenditures charged to current expense										Net interest	Transfer payments
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1897	1 424	1 324	100		985			292		−23	0		61	158
1898	1 485	1 373	112		1 062			372		0	0		64	158
1899	1 588	1 434	154		1 165			912		−344	0		68	154
1900	1 686	1 501	185		1 238			671		35	0		64	155
1901	1 756	1 570	186		1 301			741		−68	1		61	156
1902	1 857	1 647	210		1 309			994		−246	2		60	157
1903	1 965	1 725	240		1 333			924		172	3		60	159
1904	2 077	1 866	211		1 323			522		−116	4		60	161
1905	2 151	1 903	248		1 392			695		14	5		61	164
1906	2 527	2 216	311		1 483			961		−200	6		63	161
1907	2 502	2 159	343		1 547			901		−76	7		66	173
1908	2 483	2 264	219		1 632			453		47	8		72	188
1909	2 616	2 360	256		1 685			933	21	−430	9		74	192
1910	2 796	2 495	301		1 836			962	34	266	10		77	192
1911	2 888	2 611	277		1 892			621	29	86	11		83	191
1912	3 079	2 733	346		1 950			981	35	−344	12		90	203
1913	3 296	2 888	408		1 968			816	43	27	13		90	214
1914	3 355	3 039	316		2 019			510	39	194	14		102	213
1915	3 446	3 120	326		2 091			1 663	57	−401	15		113	208
1916	3 843	3 294	549		2 245			5 593	184	−2 218	15		125	208
1917	4 396	3 577	819		2 556			5 518	2 285	−2 569	18		130	223
1918	4 960	3 950	1 010		3 023			2 921	3 429	−1 442	19		302	262
1919	5 144	4 303	841		3 552			5 248	2 362	−1 271	23		806	339
1920	5 873	4 788	1 085		3 926			2 567	1 789	2 723	86		1 108	432
1921	5 832	5 154	678		4 085			−1 897	823	4 494	128		1 101	481
1922	6 111	5 387	724		4 817			2 273	897	−637	117		1 091	509
1923	6 638	5 679	959		5 134			3 261	1 061	−133	130		1 018	505
1924	6 867	5 980	887		5 461			2 145	1 009	168	141		916	498
1925	7 280	6 320	960		5 818			3 413	1 324	−196	150		916	532
1926	7 756	6 708	1 048		6 219			2 899	1 402	1 212	165		876	586
1927	8 044	7 092	952		6 543			1 481	1 310	636	186		848	627
1928	8 474	7 518	956		6 916			2 842	1 335	5	212		815	654
1929	8 816	7 966	850	−147	7 003	587	−80	2 597	1 398	472	243	0	983	912
1930	8 747	8 042	705	−123	7 155	534	−705	−3 045	848	3 260	253	0	964	1 010
1931	8 312	7 834	478	−49	6 859	649	1 188	−5 381	500	2 414	262	0	1 084	2 024
1932	7 663	7 279	384	−45	6 768	737	1 437	−5 998	382	1 047	278	0	1 141	1 415
1933	7 245	6 883	362	18	7 055	659	1 235	−2 428	524	−2 143	285	0	1 170	1 454
1934	7 218	6 763	455	283	7 815	641	864	−1 619	746	−625	304	0	1 230	1 552
1935	7 369	6 813	556	403	8 190	594	−346	−613	965	−227	333	0	1 141	1 795
1936	7 684	6 988	696	39	8 663	594	862	−284	1 411	−738	598	0	1 101	2 926
1937	7 972	7 142	830	60	9 157	567	−1 050	−8	1 512	−31	1 800	0	1 204	1 851
1938	7 992	7 281	711	176	9 154	429	−91	−906	1 040	963	1 977	0	1 192	2 405
1939	8 101	7 304	797	485	9 365	451	1 375	1 209	1 462	−714	2 136	0	1 205	2 512
1940	8 440	7 474	966	420	10 021	431	1 624	2 398	2 878	−148	2 282	0	1 291	2 688
1941	9 294	8 151	1 143	102	11 296	502	1 593	4 921	7 846	−2 617	2 784	0	1 289	2 617
1942	9 981	9 196	785	150	11 769	495	2 337	5 136	11 665	−1 204	3 468	0	1 517	2 655
1943	10 680	9 903	777	183	12 735	505	915	6 153	14 406	−773	4 516	209	2 140	2 466
1944	11 887	10 944	943	705	14 127	506	4 035	6 128	13 525	−287	5 173	−193	2 803	3 091
1945	12 410	11 266	1 144	835	15 522	532	4 890	3 803	11 215	−564	6 138	14	3 663	5 647
1946	12 163	10 224	1 939	929	17 349	557	1 684	8 073	9 583	−5 193	5 981	−30	4 432	10 863
1947	14 845	12 653	2 192	−75	18 658	674	324	11 988	11 940	−5 757	5 683	15	4 378	11 129
1948	17 395	14 730	2 665	−24	20 424	691	−2 929	13 444	12 969	−2 032	5 238	30	4 464	10 559
1949	18 772	16 317	2 455	118	21 299	697	−1 903	9 203	10 601	2 233	5 665	−45	4 656	11 591

TABLE N-6

Column 1 – 1897–1949: Sum of cols. 2 and 3.

Column 2 – 1897–1928: Table N-5, col. 2 times annual ratio of depreciation in replacement cost to depreciation in original cost, derived from data described in Table W-7.

1929–1949: Same source as that for 1897–1928, except that depreciation on farm buildings and equipment, used in *Survey of Current Business* (Department of Commerce data), is subtracted from Table N-2, col. 2, and then added back after the nonfarm depreciation is multiplied by the ratio described above. This step is required since farm depreciation allowances used in *Survey of Current Business* are already on a replacement cost basis.

Column 3 – 1897–1949: Table N-5, col. 3.

Column 4 – 1897–1949: Table N-5, col. 8, adjusted to replacement cost basis by subtracting Table C-41, col. 6.

CAPITAL CONSUMPTION ALLOWANCES AND UNDISTRIBUTED CORPORATE PROFITS; REPLACEMENT COST DEPRECIATION: 1897 to 1949

$ mill.

Year	Capital consumption allowances			Undistributed corporate profits
	Total	Depreciation including accidental damage	Capital expenditures charged to current expense	
	1	2	3	4
1897	1 325	1 225	100	315
1898	1 446	1 334	112	376
1899	1 635	1 481	154	898
1900	1 795	1 610	185	645
1901	1 834	1 648	186	719
1902	1 958	1 748	210	969
1903	2 075	1 835	240	902
1904	2 188	1 977	211	493
1905	2 306	2 058	248	652
1906	2 762	2 451	311	901
1907	2 803	2 460	343	815
1908	2 706	2 487	219	391
1909	2 857	2 601	256	852
1910	3 083	2 782	301	871
1911	3 212	2 935	277	501
1912	3 410	3 064	346	859
1913	3 639	3 231	408	821
1914	3 647	3 331	316	536
1915	3 837	3 511	326	1 640
1916	4 625	4 076	549	5 352
1917	5 944	5 125	819	4 885
1918	7 544	6 534	1 010	1 580
1919	8 298	7 457	841	3 866
1920	10 085	9 000	1 085	736
1921	8 482	7 804	678	−3 070
1922	7 877	7 153	724	1 514
1923	8 886	7 927	959	2 347
1924	9 038	8 151	887	1 277
1925	9 416	8 456	960	2 563
1926	9 854	8 806	1 048	1 993
1927	10 028	9 076	952	650
1928	10 413	9 457	956	2 026
1929	10 496	9 646	850	1 736
1930	9 946	9 241	705	−3 589
1931	8 953	8 475	478	−5 637
1932	7 527	7 143	384	−5 883
1933	7 186	6 824	362	−2 326
1934	7 674	7 219	455	−1 818
1935	7 799	7 243	556	−838
1936	8 202	7 506	696	−509
1937	8 933	8 103	830	−485
1938	8 922	8 211	711	−1 354
1939	9 014	8 217	797	757
1940	9 485	8 519	966	1 881
1941	10 846	9 703	1 143	4 199
1942	12 319	11 534	785	4 182
1943	13 474	12 697	777	5 156
1944	15 081	14 138	943	5 140
1945	15 844	14 700	1 144	2 777
1946	16 106	14 167	1 939	6 543
1947	21 532	19 340	2 192	9 311
1948	25 672	23 007	2 665	10 176
1949	26 788	24 333	2 455	6 185

TABLE N-7

Column 1 – 1897–1930: *Historical Statistics*, sum of cols. P-110 to P-119, p. 302.

Columns 2 and 3 – 1897–1930: *Ibid.*, cols. P-90 and P-126, pp. 298 and 304, respectively.

Column 4 – 1897–1930: Sum of cols. 1, 2, and 3.

Column 5 – 1897–1929: Average of fiscal years in col. 4 overlapping given calendar year.

Column 6 – 1897–1929: From Table N-8, col. 6 minus col. 7.

Column 7 – 1897–1929: Col. 5 plus col. 6.

INDIRECT BUSINESS TAX AND NONTAX LIABILITIES
1897 to 1930

$ mill.

Year	Federal				Federal	State and local	Total government
	Excise taxes	Customs duties	Capital stock tax	Total			
	Fiscal year				Calendar year		
	1	2	3	4	5	6	7
1897	146	177		323	322	725	1 047
1898	171	150		321	396	733	1 129
1899	266	206		472	496	743	1 239
1900	287	233		520	528	789	1 317
1901	296	239		535	526	858	1 384
1902	262	254		516	512	880	1 392
1903	224	284		508	500	918	1 418
1904	230	261		491	493	914	1 407
1905	233	262		495	522	958	1 480
1906	249	300		549	575	1 002	1 577
1907	269	332		601	569	1 076	1 645
1908	251	286		537	542	1 193	1 735
1909	246	301		547	574	1 218	1 792
1910	268	334		602	602	1 350	1 952
1911	288	314		602	602	1 410	2 012
1912	292	311		603	616	1 458	2 074
1913	309	319		628	614	1 479	2 093
1914	308	292		600	570	1 577	2 147
1915	330	210		540	566	1 658	2 224
1916	380	213		593	614	1 773	2 387
1917	399	226	10	635	800	1 918	2 718
1918	759	180	25	964	1 142	2 073	3 215
1919	1 106	184	29	1 319	1 446	2 331	3 777
1920	1 158	323	93	1 574	1 500	2 675	4 175
1921	1 034	309	82	1 425	1 343	3 001	4 344
1922	824	356	81	1 261	1 298	3 824	5 122
1923	692	562	82	1 336	1 350	4 110	5 460
1924	732	546	87	1 365	1 299	4 508	5 807
1925	595	548	90	1 233	1 264	4 923	6 187
1926	628	579	97	1 304	1 220	5 393	6 613
1927	523	605	9	1 137	1 124	5 834	6 958
1928	534	569	9	1 112	1 124	6 231	7 355
1929	527	602	6	1 135	1 136	6 311	7 447
1930	551	587	0	1 138	—	—	—

TABLE N-8

Column 1 – 1897–1929: From Table G-13, col. 1. (Average of fiscal years overlapping given calendar year.)

Column 2 – 1897–1929: From Table G-1, col. 1.

Column 3 – 1897–1929: Col. 1 plus col. 2.

Column 4 – 1919–1929: Estimated as one-half of state and local income tax revenues as given in *Historical Statistics*, col. P-242, on basis of relationship in years when corporate and individual taxes are shown separately.

Column 5 – 1901–1914: Linearly interpolated between zero in 1900 and in 1915 value.
1915–1929: From Table N-9, col. 2.

Column 6 – 1897–1929: Col. 3 minus cols. 4 and 5.

Column 7 – 1897–1929: Estimated as 20 percent of col. 6 on basis of relationship in *Survey of Current Business*, July 1947, Table 8.

Column 8 – 1897–1910: Legacy, succession, and inheritance taxes from *Historical Statistics*, col. P-130. Calendar-year values derived as averages of overlapping fiscal years.
1911–1929: *Historical Statistics*, cols. P-127 and P-128; averages of overlapping fiscal years.

Column 9 – 1914–1929: Figures from *Historical Statistics*, col. P-147, lagged one year to maintain comparability with Department of Commerce statistics, which report personal tax figures in year paid.

Column 10– 1897–1929: Sum of cols. 8 and 9.

Column 11– 1897–1929: Sum of cols. 7 and 10.

PERSONAL TAX AND NONTAX PAYMENTS: 1897 to 1929

$ mill.

Year	State and local revenues						Estimated personal tax	Federal tax revenues			Total personal payments
	State	Local	Total	Corporate income tax	Contributions for social insurance	Personal tax; indirect business tax		Estate and gift tax	Income tax	Total	
	1	2	3	4	5	6	7	8	9	10	11
1897	152	754	906			906	181	0		0	181
1898	154	762	916			916	183	1		1	184
1899	159	770	929			929	186	2		2	188
1900	170	816	986			986	197	4		4	201
1901	180	894	1 074		1	1 073	215	5		5	220
1902	192	910	1 102		2	1 100	220	5		5	225
1903	201	950	1 151		3	1 148	230	4		4	234
1904	207	939	1 146		4	1 142	228	1		1	229
1905	220	982	1 202		5	1 197	239	1		1	240
1906	236	1 022	1 258		6	1 252	250	0		0	250
1907	262	1 090	1 352		7	1 345	269	0		0	269
1908	282	1 217	1 499		8	1 491	298	0		0	298
1909	304	1 227	1 531		9	1 522	304	0		0	304
1910	333	1 365	1 698		10	1 688	338	0		0	338
1911	352	1 422	1 774		11	1 763	353	0		0	353
1912	364	1 470	1 834		12	1 822	364	0		0	364
1913	390	1 472	1 862		13	1 849	370	0		0	370
1914	436	1 549	1 985		14	1 971	394	0	28	28	422
1915	462	1 626	2 088		15	2 073	415	0	41	41	456
1916	495	1 736	2 231		15	2 216	443	3	68	71	514
1917	540	1 876	2 416		18	2 398	480	27	173	200	680
1918	616	1 994	2 610		19	2 591	518	65	795	860	1 378
1919	772	2 190	2 962	25	23	2 914	583	93	1 128	1 221	1 804
1920	945	2 466	3 411	33	34	3 344	669	129	1 270	1 399	2 068
1921	1 090	2 747	3 837	41	45	3 751	750	146	1 075	1 221	1 971
1922	1 204	3 681	4 885	49	56	4 780	956	133	719	852	1 808
1923	1 308	3 942	5 250	46	67	5 137	1 027	115	861	976	2 003
1924	1 428	4 330	5 758	50	73	5 635	1 127	106	662	768	1 895
1925	1 570	4 714	6 284	52	78	6 154	1 231	114	704	818	2 049
1926	1 706	5 188	6 894	67	86	6 741	1 348	109	735	844	2 192
1927	1 846	5 621	7 467	81	94	7 292	1 458	80	732	812	2 270
1928	1 997	5 988	7 985	92	104	7 789	1 558	61	831	892	2 450
1929	2 151	5 959	8 110	102	119	7 889	1 578	63	1 164	1 227	2 805

N-9

CONTRIBUTIONS FOR SOCIAL INSURANCE: 1915 to 1929

$ mill.

Year	Total	State and local	Federal				
			Total	Total	Employees	General fund	Premiums, government life insurance
	Calendar year			Fiscal year			
	1	2	3	4	5	6	7
1915	15	15					
1916	15	15					
1917	18	18					
1918	19	19					
1919	23	23					
1920	86	34	52				
1921	128	45	83	104	13		91
1922	117	56	61	62	14		48
1923	130	67	63	61	14		47
1924	141	73	68	65	15		50
1925	150	78	72	71	18		53
1926	165	86	79	73	18		55
1927	186	94	92	85	24		61
1928	212	104	108	98	26		72
1929	237	119	118	118	28	20	70
1930				117	29	20	68

Column 1 – 1915–1929: Sum of cols. 2 and 3.

Column 2 – 1915–1929: From Table G-19, col. 1 plus col. 2.

Column 3 – 1920–1929: Average of fiscal-year data in col. 4 overlapping given year.

Column 4 – 1921–1930: Sum of cols. 5, 6, and 7.

Column 5 – 1921–1930: From *Statistical Abstract*, 1931, p. 167.

Column 6 – 1929, 1930: From *Statistical Abstract*, 1938, p. 159.

Column 7 – 1921–1930: From *Statistical Abstract*, 1938, p. 152.

GOVERNMENT TRANSFER PAYMENTS: 1897 to 1929

$ mill.

Year	Total	State and local		Federal		
		Retirement benefits	Relief payments	Military pensions	Civilian retirement	Veterans' insurance
	1	2	3	4	5	6
1897	158		16	142		
1898	158		16	142		
1899	154		16	138		
1900	155		17	138		
1901	156		18	138		
1902	157		19	138		
1903	159		19	140		
1904	161	1	20	140		
1905	164	2	22	140		
1906	161	3	20	138		
1907	173	4	23	146		
1908	188	5	25	158		
1909	192	6	25	161		
1910	192	7	27	158		
1911	191	8	28	155		
1912	203	9	30	164		
1913	214	10	31	173		
1914	213	11	33	169		
1915	208	12	34	162		
1916	208	12	36	160		
1917	223	14	39	170		
1918	262	14	42	206		
1919	339	17	48	274		
1920	432	22	58	352		
1921	481	28	63	379	7	4
1922	509	34	77	384	8	6
1923	505	40	82	367	9	7
1924	498	42	88	346	10	12
1925	532	45	92	359	12	24
1926	586	50	101	388	14	33
1927	627	55	108	408	16	40
1928	654	60	115	415	17	47
1929	682	72	122	419	21	48

Column 1 – 1897–1929: Sum of cols. 2 to 6.

Column 2 – 1897–1914: Assumed to increase from 1904 on by $1 million a year to 1915 value.
1915–1929: Table G-19, col. 4.

Column 3 – 1897–1929: Estimated at 2 percent of Table G-13, col. 2, converted to calendar year by arithmetic averaging of successive years, plus Table G-1, col. 2.

Columns 4 to 6 – 1897–1929: Fiscal-year figures from *Statistical Abstract*, 1938, pp. 150, 159, and 149, respectively, converted to calendar year by averaging.

TABLE N-11

Column 1 – 1897–1915: Calendar-year figures obtained as average of overlapping fiscal-year figures from *Historical Statistics*, p. 300.
1916–1929: Calendar-year figures obtained from semi-annual estimates in Table F-27, cols. 1 and 2.

Column 2 – 1917–1918: Arbitrary division of estimate for total for period before December 31, 1918, given in Williams, *Review of Economic Statistics–Supplement No. 1*, June, 1921, p. 201.
1919–1929: November 15 figures from Department of Commerce, *Balance of Payments of the United States in 1932*, p. 36, less amounts included on account of sale of war supplies, as noted.

Column 3 – 1918–1929: Estimated at 4 percent of June 30 holdings of U.S. Government securities by federal agencies and trust funds (from *Annual Report of the Secretary of the Treasury for 1946*, p. 666).

Column 4 – 1897–1929: Col. 1 less sum of cols. 2 and 3.

Column 5 – 1897–1929: Average of June 30 state debt outstanding from Table G-21, col. 1, plus local government debt outstanding from Table G-21, col. 2.

Column 6 – 1897–1901: Assumed to be the same as in 1902.
1902, 1913: Col. 7 divided by col. 5.
1903–1912, 1914–1929: Linear interpolations between 1902, 1913, and 1932 values (1932 = 3.69 percent, based on same source as 1902 and 1913 values).

Column 7 – 1897–1901, 1903–1912, 1914–1929: Col. 5 multiplied by col. 6.
1902, 1913: From *Historical Statistics*, p. 314.

Column 8 – 1897–1929: Estimated as same percentage of col. 7 as securities held by sinking funds, trust funds, and general funds of state and local governments (from Table G-7, cols. 2 and 3, Table G-8, cols. 3 and 4, Table G-16, cols. 2 and 3, and Table G-17, cols. 3 and 4) are of total debt outstanding as shown in col. 5.

Column 9 – 1897–1929: Col. 7 minus col. 8.

GOVERNMENT NET INTEREST PAYMENTS: 1897 to 1929

$ mill.

Year	Federal government				State and local governments				
	Interest on public debt	Interest received		Net interest paid	Debt outstanding	Rate of interest (percent)	Interest paid	Interest received	Net interest paid
		Foreign government loans	Own securities						
	1	2	3	4	5	6	7	8	9
1897	38			38	1 766	3.06	53	30	23
1898	39			39	1 851	3.06	55	30	25
1899	40			40	1 933	3.06	58	30	28
1900	36			36	2 014	3.06	60	32	28
1901	31			31	2 100	3.06	63	33	30
1902	29			29	2 192	3.06	67	36	31
1903	27			27	2 320	3.06	70	37	33
1904	25			25	2 452	3.05	74	39	35
1905	24			24	2 582	3.04	77	40	37
1906	24			24	2 745	3.04	82	43	39
1907	23			23	2 970	3.03	89	46	43
1908	22			22	3 294	3.02	99	49	50
1909	22			22	3 491	3.02	105	53	52
1910	21			21	3 803	3.01	114	58	56
1911	22			22	4 131	3.00	124	63	61
1912	23			23	4 430	3.00	133	66	67
1913	23			23	4 521	2.99	135	68	67
1914	23			23	4 990	3.02	151	72	79
1915	23			23	5 473	3.05	167	77	90
1916	24			24	5 987	3.08	184	83	101
1917	71	50		21	6 393	3.11	199	90	109
1918	399	210	4	185	6 727	3.14	211	94	117
1919	884	174	20	690	7 069	3.17	224	108	116
1920	997	6	14	977	7 864	3.20	252	121	131
1921	989	17	18	954	8 663	3.25	282	135	147
1922	1 025	104	20	901	10 384	3.31	344	154	190
1923	1 009	167	20	822	10 884	3.36	366	170	196
1924	912	159	16	737	10 775	3.42	369	190	179
1925	851	160	22	669	13 033	3.48	454	207	247
1926	808	160	28	620	13 764	3.51	483	227	256
1927	762	160	32	570	14 844	3.54	525	247	278
1928	709	157	36	516	15 811	3.57	564	265	299
1929	669	145	40	484	16 878	3.60	608	285	323

PART VI

THE AGGREGATE VALUE AND DISTRIBUTION OF NONOPERATING ASSETS OF PRIVATE NONFINANCIAL NONPROFIT INSTITUTIONS

BY RAYMOND W. GOLDSMITH

This Appendix consists of a set of four tables of rough estimates dealing with the aggregate value and the distribution of the nonoperating assets of private nonprofit institutions for the period from 1900 to 1949, which were required for the national balance sheet of the United States and are utilized in Table W-25.

Whoever reads the notes to the tables—or has ever worked in the field—will be aware of how precarious the estimates are. Quantitatively the largest source of error is probably contained in the guesses for the funds of labor unions.

X-1

NONOPERATING ASSETS[1] OF PRIVATE NONFINANCIAL NONPROFIT INSTITUTIONS

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
1. Cash	20	50	150	265	530	1 035	2 540	3 360
2. U.S. Government securities	—	—	190	105	265	415	1 410	1 800
3. State and local government securities	35	85	190	265	265	345	375	360
4. Other bonds	365	800	1 560	2 175	2 120	2 415	1 410	1 920
5. Preferred stocks	35	85	190	265	265	345	565	720
6. Common stocks	35	255	570	1 060	795	1 380	2 160	3 000
7. Farm mortgages[2]	40	100	230	160	160	140	95	—
8. Nonfarm mortgages[2]	65	155	340	475	425	345	280	240
9. Farm real estate	15	20	40	55	50	—	—	—
10. Nonfarm real estate	90	150	340	475	425	480	565	600
11. Total	700	1 700	3 800	5 300	5 300	6 900	9 400	12 000

[1] Total assets excluding land, buildings, and their contents used by the organization itself; generally identical with or slightly larger than endowment funds.

[2] After the estimates were completed a check on those for mortgages (lines 7 and 8) was provided by the new statistics of real estate loans of registrants under Regulation X of the Federal Reserve Board. Nonprofit organizations who registered under this regulation reported $229 million of real estate loans as of May 31, 1951 (*Federal Reserve Bulletin*, 1952, p. 634). Since not all nonprofit institutions, particularly the smaller ones, were liable to registration this figure may be regarded as a minimum for real estate loans of all nonprofit organizations and, therefore, is compatible with the estimate of $240 million given above, as real estate loans of nonprofit organizations increased somewhat between Jan. 1, 1950 and May 31, 1951.

Source: Obtained by applying the distribution percentage of Table X-2 to aggregate holdings as shown in Table X-4, line 11.

DISTRIBUTION OF NONOPERATING ASSETS OF PRIVATE NONFINANCIAL NONPROFIT INSTITUTIONS

X-2

Selected Years: 1900 to 1949

Percent

	1900	1912	1922	1929	1933	1939	1945	1949
1. Cash	3	3	4	5	10	15	27	28
2. U.S. Government securities	–	–	5	2	5	6	15	15
3. State and local government securities	5	5	5	5	5	5	4	3
4. Other bonds	52	47	41	41	40	35	15	16
5. Preferred stocks	5	5	5	5	5	5	6	6
6. Common stocks	5	15	15	20	15	20	23	25
7. Farm mortgages	6	6	6	3	3	2	1	—
8. Nonfarm mortgages	9	9	9	9	8	5	3	2
9. Farm real estate	2	1	1	1	1	—	—	—
10. Nonfarm real estate	13	9	9	9	8	7	6	5
11. Total	100	100	100	100	100	100	100	100

The distribution of the endowment funds of private nonprofit institutions, shown in Table X-2, has been built up from a combination of sources. In view of the nature of the available data it can claim to give only an approximate picture of the situation, particularly for 1900 and 1912, and is rather arbitrary in the allocation of mortgages and real estate between farm and nonfarm properties as these are not distinguished in the sources. It would seem, however, that the table reflects the main trends over the last twenty-five years in the distribution of the endowments of private nonprofit institutions among their chief types of investments with a reasonable degree of correctness.

Although the sources usually do not specify this point, the figures as a rule have to be understood as referring to book rather than market values. This distinction is particularly important for common stocks, which at most dates would represent a somewhat larger proportion of total funds than shown in Table X-2 if the valuation throughout were on the basis of market values.

The main sources used in deriving Table X-2 are listed below. In combining the information available on specific types of institutions account was taken of the relative size of their funds. This, for instance, explains the sharp increase between 1900 and 1912 in the proportion allocated to common stocks, which reflects the appearance of some of the large foundations, a considerable part of whose endowments consisted of such securities, and the sharp increase in the proportion of cash between 1939 and 1949, which is due to a good extent to the rapid increase in the assets of labor unions, which keep a large part of their funds in this form.

1. Federal Trade Commission's estimates of the distribution of endowment funds of religious institutions and of foundations in 1922 (*National Wealth and Income*, 1926, pp. 172–175).

2. "Abstracts of Returns of Property Held for Literary, Benevolent, Charitable, Scientific and Other Purposes" in Massachusetts, published in the *Annual Report of the Commissioner of Corporations and Taxation* for various years, which were utilized for 1922 and 1929.

3. Data on endowment funds of private colleges and universities in Cain, *College Investments under War Conditions*, American Council on Educational Studies, for 1929, 1939, and 1943, and in Scudder, Stevens, and Clark, *Survey of College and University Funds*, for 1946.

4. Data on endowment funds of four large foundations in Cain, *What Is Happening to College and University Investment and Income*, for 1940.

5. Tabulations of balance sheets for 1943 of about 3,000 private nonprofit organizations which reported gross receipts from business—hence not a representative selection. (See *Supplement to Statistics of Income for 1943*, Part 2, p. 21, and *Supplement to Statistics of Income for 1946*, Part 2, p. 13.)

6. Estimates derived from the annual reports of about thirty labor unions for 1946.

X-3

INDUSTRIAL COMPOSITION OF SECURITY HOLDINGS OF PRIVATE NONFINANCIAL NONPROFIT INSTITUTIONS

Selected Years: 1900 to 1949

	1900	1912	1922	1929	1933	1939	1945	1949
	A. Percent of total nonoperating assets							
1. Total nonoperating assets	100	100	100	100	100	100	100	100
2. Bonds	57	52	51	48	50	46	34	34
3. Government	5	5	10	7	10	11	19	18
4. Railroad	34	17	10	6	5	4	2	2
5. Utility	10	8	5	5	5	5	3	2
6. Industrial	8	22	26	30	30	26	10	12
7. Stock	10	20	20	25	20	25	29	31
8. Railroad	4	3	2	2	1	1	1	1
9. Utility	1	2	3	2	2	2	2	2
10. Industrial	5	15	15	21	17	22	26	28
	B. $ mill.							
1. Total nonoperating assets	700	1 700	3 800	5 300	5 300	6 900	9 400	12 000
2. Bonds	400	885	1 940	2 545	2 650	3 175	3 195	4 080
3. Government	35	85	380	370	530	760	1 785	2 160
4. Railroad	240	290	380	320	265	275	190	240
5. Utility	70	135	190	265	265	345	280	240
6. Industrial	55	375	990	1 590	1 590	1 795	940	1 440
7. Stock	70	340	760	1 325	1 060	1 725	2 725	3 720
8. Railroads	28	50	75	105	55	70	95	120
9. Utility	7	35	115	105	105	140	185	240
10. Industrial	35	255	570	1 115	900	1 515	2 445	3 360

Source: A – Same sources and methods as in Table X-2.

B – Section A applied to Table X-4, line 11.

Line 1 – 1900, 1912: Estimated at about 14 percent of total assets of religious institutions as given in *Census of Religious Bodies*, 1916, Volume I, the ratio prevailing in 1922.
1922: Federal Trade Commission, *National Wealth and Income*, 1926, p. 172.
1929, 1933: Estimated at about 14 percent of total assets as given in Keller, *A Study of the Physical Assets Sometimes Called Wealth of the United States, 1922–33*, p. 128.
1939, 1945, 1949: Estimated as slowing increasing from the level of 1929. (Estimate is probably on the low side.)

Line 2 – 1900, 1912, 1922, 1929, 1933, 1939: From *Biennial Survey of Education*, various issues (1922, 1933, and 1939 averages of adjacent years). For 1900 and 1912, when private institutions were not separated from public institutions, nonoperating assets of the former have been estimated at 90 percent of total on basis of years for which separate data are available.
1945: From Scudder, Stevens, and Clark, *Survey of University and College Funds*, 1947. As this survey covered fifty-nine institutions holding approximately 77 percent of all college and university endowment funds, the reported figures (which are specifically designated as book values) have been increased by 30 percent.
1949: Federal Security Agency, Office of Education, *Finances in Higher Education, Statistical Summary for 1947–1948* and *1949–1950*; figures exclude funds temporarily functioning as endowment and annuity funds and student loan funds.

Line 3 – 1900–1949: Estimated, in absence of useable data, at 10 percent of nonoperating assets of private colleges and universities. The nonoperating assets of parochial schools are assumed to be included in those of religious institutions.

Line 4 – 1900, 1912, 1922: Estimated at about 54 percent of line 2, the 1922 ratio. Endowment of libraries and that of museums in 1922 were estimated at $203 million and $133 million, respectively (*National Wealth and Income*, p. 186).
1929, 1933, 1939, 1945, 1949: Estimated at about 45 percent (1929) and 40 percent (1933–1949) of line 2, as these institutions probably did not increase their endowments as much as colleges and universities.

Line 5 – 1900: Rough estimate.
1912: Estimated at 40 percent of 1922 on basis of relationship of total assets in 1912 and 1922, as shown in *National Wealth and Income*, p. 179.
1922: Estimated at 35 percent of total assets, the 1922 ratio for hospitals and other private benevolent institutions together (see *National Wealth and Income*, pp. 179–180).
1929: Slightly increased over 1928 estimate of Rorem, *The Public's Investment in Hospitals*, p. 94.
1933, 1939: Estimated as slightly below and above, respectively, 1935 figure for endowments as given in U.S. Public Health Service, *Business Census of Hospitals, 1935*, Supplement No. 154 to Public Health Reports, p. 35.
1945, 1949: Rough estimates, implying rate of increase somewhat in excess of that for hospital beds (*Historical Statistics*, p. 51.)

Line 6 – 1900, 1912: Estimated at about 110 percent of line 5 on basis of relation of value of total assets in 1910 (*National Wealth and Income*, p. 179). This line covers institutions for the care of children and of old, blind, deaf, and crippled persons, and dispensaries.
1922: Estimated at 78 percent of line 5 on basis of data for that year (*ibid.*, p. 179).
1929, 1933, 1939, 1945, 1949: Estimated at about 70, 65, 55, 50 and 50 percent, respectively, of line 5 assuming tendency of ratio to decline shown between 1910 and 1922 to have continued, though less sharply.

Line 7 – 1900, 1912: Assumed to be negligible.
1922–1949: Assumed equal to total capital assets as given in Andrews, *Philanthropic Giving*, p. 109.

Line 8 – Assumed to be equal to total capital assets. Estimated as follows:
1900: Assumed to be equal to original endowment of eleven foundations organized before 1900 (see Harrison and Andrews, *American Foundations for Social Welfare*, pp. 103–185).
1912: Estimate for 1900 plus original endowment of thirteen foundations organized between 1900 and 1912. (This estimate like that for 1900, is probably too low because of increase in value of assets since organization.)

1922: *National Wealth and Income*, p. 175. (It is possible either that the definition of "foundations" used in this report is broader, or that the coverage is more comprehensive than would correspond to the figures available for the earlier and later periods.) Of the total, about $515 million was accounted for by four foundations—Rockefeller, General Education Board, Carnegie, and Sailors' Snug Harbor (*ibid.*, p. 176).

1929, 1933, 1939: Figures given by Harrison and Andrews (*op. cit.*, p. 64) for somewhat over 100 foundations increased by 60 percent to make them comparable in coverage to their own figures for 1944 for 505 foundations.

1945: Harrison and Andrews' figure for 1944 ($1,818 million) increased slightly to take account of foundations organized during 1945 and increases in endowment.

1949: Based on estimate by Andrews, *Philanthropic Giving*, p. 93, substituting, in the case of the Ford Foundation, the figure in the Foundation's report for 1950 ($493 million) for Andrews' figure of $238 million. Even this figure is probably below an approximation to market value as it would be obtained from capitalization of earnings per share of stock of the Ford Motor Company.

Line 9 – 1900–1945: Estimates obtained by applying to 1949 value an index of earnings of union members derived from (a) number of union members and (b) average weekly earnings in manufacturing industries. (*Historical Statistics*, p. 67; continued for 1949 from *Statistical Abstract*, 1950, p. 916, and *Supplement to Survey of Current Business, Business Statistics*, 1951, p. 65.)

1949: Based primarily on estimate by Lipsett, *Labor's Partnership in Industrial Enterprise, 1950*, p. 7, according to which the combined assets of parent and local unions amounted to "at least $3 billion." This estimate has been accepted although it is considerably higher than one given in *Business Week*, Nov. 19, 1949, according to which the total net worth of labor unions was somewhat in excess of $1 billion, and other scattered evidence, because it seems to present the only opportunity of reconciling available figures on total assets and their distribution for the various types of nonprofit organizations with the estimates of the demand deposits held by nonprofit organizations reported in the Federal Reserve Board's "Semi-Annual Survey of Ownership of Demand Deposits"; (see, e.g., *Federal Reserve Bulletin*, May 1951, p. 507). Even then the reconciliation presupposes that most of the assets of labor unions, particularly of locals, are held in the form of bank deposits. Consistent with this assumption on the composition of intangible asset holdings of labor unions is an estimate of their security holdings obtained by capitalizing interest and dividend receipts of labor unions reported to the Bureau of Internal Revenue on Form 990 (see *Supplement to Statistics of Income for 1946*, Part 2, p. 13), on the basis of reports (e.g., Lipsett) that securities held were mostly U.S. Government issues.

Line 10 – 1900–1949: Sum of lines 1 through 9.

Line 11 – 1900–1949: Line 10 increased by a decreasing percentage (from 20 percent in 1900 to 5 percent in 1945 and 1949) and rounded to the nearest $100 million, to make a rather arbitrary allowance for private nonprofit organizations for which no data are available, primarily fraternal organizations (other than fraternal life insurance), Chambers of Commerce, trade organizations, and employees' beneficiary associations.

TOTAL NONOPERATING ASSETS OF DIFFERENT GROUPS OF PRIVATE NONFINANCIAL NONPROFIT INSTITUTIONS

Selected Years: 1900 to 1949

$ mill.

	1900	1912	1922	1929	1933	1939	1945	1949
1. Religious institutions	150	240	387	650	680	750	900	1 000
2. Colleges and universities	150	321	624	1 133	1 310	1 548	1 770	2 202
3. Other educational institutions	15	32	62	113	131	155	177	220
4. Libraries and museums	80	175	336	510	525	620	710	880
5. Hospitals	70	145	365	450	500	550	650	700 [1]
6. Other benevolent institutions	80	160	285	315	325	300	325	350
7. Community trusts	—	—	8	30	40	52	75	100
8. Foundations	25	350	1 065	1 300	1 150	1 650	1 900	2 800
9. Labor unions	30	100	300	300	200	800	2 400	3 000
10. Total, lines 1 through 9	600	1 523	3 432	4 801	4 861	6 425	8 907	11 252
11. Total, including allowance for institutions not included in line 10	700	1 700	3 800	5 300	5 300	6 900	9 400	12 000 [1]

[1] Reexamination of the material indicates that the estimate for hospitals in 1949 is considerably too low (as is true to a lesser extent of the estimates for these institutions in 1945, 1939, and 1933).

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