MEASURING THE NATION'S WEALTH

MATERIALS DEVELOPED BY THE
WEALTH INVENTORY PLANNING STUDY
THE GEORGE WASHINGTON UNIVERSITY
AND PRESENTED BY THE
CONFERENCE ON RESEARCH IN INCOME
AND WEALTH

TO THE
SUBCOMMITTEE ON ECONOMIC STATISTICS
OF THE
JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

DECEMBER 1964

Printed for the use of the Joint Economic Committee

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1964
LETTERS OF TRANSMITTAL

DECEMBER 10, 1964.

To the Members of the Joint Economic Committee:

Transmitted herewith for use in connection with prospective hearings by the Subcommittee on Economic Statistics is a study prepared by the Wealth Inventory Planning Study of The George Washington University under a grant from the Ford Foundation entitled “Measuring the Nation’s Wealth.”

The Subcommittee on Economic Statistics plans to hold hearings next spring on the improvement of wealth data, primarily based on this study. The principal witnesses will be those who prepared the materials and other experts who will give their appraisal of the findings contained in the study. These materials do not necessarily reflect the views of the committee or any of its members.

Faithfully,

Paul H. Douglas, Chairman.

December 9, 1964.

Hon. Paul H. Douglas,
Chairman, Joint Economic Committee,
U.S. Congress, Washington, D.C.

Dear Mr. Chairman: As you know, the Subcommittee on Economic Statistics and other members of the Joint Economic Committee have in the past expressed considerable interest in the development of improved data on the wealth of the United States, both for some benchmark period and on a continuing yearly estimate basis. This was brought out particularly in 1962 when the Subcommittee on Economic Statistics held hearings on the measurement of productive capacity.

In June of this year, a report was released by the Wealth Inventory Planning Study, established by The George Washington University in February 1963 under a grant from the Ford Foundation. This report contains recommendations for the expansion of wealth data collection by Federal statistical agencies as a basis for continuing balance sheet and wealth estimates to supplement the national income and product accounts. Briefly stated, its purpose has been to explore the problems and possibilities of a meaningful national inventory of wealth and to develop guidelines for the collection of the requisite data and preparation of finished estimates.

This study “Measuring the Nation’s Wealth” has been presented by the Conference on Research in Income and Wealth to the Subcommittee on Economic Statistics for consideration in connection with hearings the subcommittee plans to hold in the spring of 1965. The Wealth In-
IV

LETTERS OF TRANSMITTAL

The Wealth Inventory Planning Study group has kindly granted the committee permission to have a limited number of copies printed for the use of members of the committee, prospective witnesses, and the press preparatory to the hearings.

I am pleased to transmit this volume to the Joint Economic Committee as a background document for the subcommittee's hearings on the improvement of wealth data and estimates.

Sincerely,

William Proxmire,
Chairman, Subcommittee on Economic Statistics.

November 20, 1964.

Dear Senator Proxmire,
Chairman, Subcommittee on Economic Statistics, Joint Economic Committee, Congress of the United States, Washington, D.C.

The Wealth Inventory Planning Study of The George Washington University has transmitted to us its report "Measuring the Nation's Wealth" for possible inclusion in the series of Studies in Income and Wealth.

The purpose of the Conference on Research in Income and Wealth has been to promote the development of income and wealth statistics, or, more broadly, national economic accounts, and their use in economic analysis. The Wealth Study report is directed precisely to these objectives, and it has seemed appropriate to the executive committee that the report of the Wealth Inventory Planning Study be published as one of the series of Studies in Income and Wealth.

Several previous volumes in the Studies in Income and Wealth series have been devoted in whole or in part to balance sheet and wealth estimation. But the Wealth Study report represents the most comprehensive review to date of the state of knowledge in this important and relatively underdeveloped area of the national accounts. We are pleased that the National Bureau of Economic Research has accepted our recommendation to distribute it as part of the Studies in Income and Wealth series so that it may be more generally and permanently available to scholars in this field.

Before the Wealth Study organization disbanded in June 1964, upon completion of its report, they mentioned to us your possible interest in holding hearings on the subject in 1965. At the request of its staff and Advisory Committee, we take pleasure in transmitting to you, with our commendation, the report of the Wealth Inventory Planning Study.

If it is the pleasure of your subcommittee to print the report as background for subsequent hearings, we should be pleased to receive permission to order additional copies of the print for distribution to our members and to make it more widely available generally as one of the Studies in Income and Wealth, as mentioned above.

In conclusion, we should like to commend the staff, Advisory Committee, and the many contributors to "Measuring the Nation's Wealth" for their part in advancing the state of this branch of economic sta-
statistics. No one can read the report without realizing the need for substantial improvements in wealth estimates, and the wide range of uses to which improved estimates may be put.

Sincerely yours,

Daniel H. Brill
Richard A. Easterlin
Simon A. Goldberg
Morris R. Goldman
F. Thomas Juster
John W. Kendrick
Robert J. Lampman
Charles L. Schultze
Tibor Scitovsky
Mildred E. Courtney, Secretary,

Members of the Executive Committee of the Conference on Research in Income and Wealth.
MEASURING THE NATION’S WEALTH

REPORT OF THE WEALTH INVENTORY PLANNING STUDY OF THE GEORGE WASHINGTON UNIVERSITY, WASHINGTON, D.C., JUNE 1964

Research Staff

John W. Kendrick (Director)
David J. Hyams
Joel Popkin

Advisory Committee

Raymond T. Bowman
Daniel H. Brill
Daniel Creamer (Chairman)
Edward F. Denison
A. Ross Eckler
Joseph L. Fisher
Raymond W. Goldsmith
Douglas Greenwald
Richard H. Holton
George Jaszi
John W. Kendrick
James W. Knowles
Nathan M. Koffsky
William H. Shaw

Consultants

Philip T. Allen
David K. Gillogly
John A. Gorman
Stephen A. Hoenack
Stanley C. Hollander
F. Thomas Juster
Adam Kaufman
Robinson Newcomb
Almarin Phillips
Neal Potter
Thomas K. Rymes
Robert L. Sammons
Allan D. Searle
Yataka Shimizu
Vernon L. Smith
Eleanor J. Stockwell
Robert C. Wasson
Erin M. Woodall
FOREWORD BY THE ADVISORY COMMITTEE TO THE WEALTH INVENTORY PLANNING STUDY

Significant improvement and expansion of information relating to the wealth of the United States are both desirable and feasible. Firmly based wealth estimates, developed within a consistent framework and in reasonable detail, would enhance our ability to relate capital formation to economic growth, to project future production possibilities, and to analyze the demand for capital goods. We base these and our other broad conclusions below on the investigations of the Wealth Inventory Planning Study, which we have served in an advisory capacity over the past year.

In view of the major role of capital in nearly every facet of the economy it is not surprising that potential uses of comprehensive estimates of the Nation's capital stock are many and important, as enumerated in chapter 2 of the staff report. A principal purpose of obtaining information on wealth is to achieve a better understanding of the relationships between capital and output. While Government statistical agencies have made great progress in securing information on the supply and use of labor, they have made much less progress in providing information on the capital and land which are combined with labor to produce goods and services. The proposed wealth information would help to answer questions such as these: How is the capital stock related to a given volume of output? How large a percentage addition to the capital stock would be needed to raise the output by, say, 10 percent? How much investment would it take to increase the capital stock by any given percentage? How do these relations change over time? What is the age distribution of capital goods, and what implications does it have for their productivity?

We need better answers to these questions, both for the economy as a whole and for the different industries and sectors. With such knowledge our understanding of the underlying costs and efficiencies of our economy would be advanced. Ultimately we may hope to improve the analytical basis for comparisons in this area between the United States and other countries of the world.

Capital goods are important not only as a factor of production but also as a component of the current output of the economy. Demand for capital goods fluctuates widely. Additional data on the value and composition of the stock of capital goods, its utilization, and its age distribution would assist in studies of the demand for equipment, structures and related investment, and provide analyses of value both for business decisions and public policies.

A fuller knowledge of the allocation of our capital resources to different uses would enhance understanding of structural changes in our economy. How is capital allocated among industries, and what is

---

1 The views expressed are those of the Advisory Committee members and do not necessarily represent the views of the organizations with which they are affiliated.
the relation of this allocation to productivity and rates of returns? To what extent has capital accumulated outside the business sector—in governments, households, and nonprofit institutions? What are the value and location of taxable and tax-exempt property? Greater knowledge of the location of our structures and equipment would add an important dimension to regional analysis.

Major movements of capital abroad and movements from abroad into this country play a significant role in the Nation's balance of payments. Improvements of our data on the extent of such investments is of strategic value in enhancing our analysis of a particularly difficult problem of our economy.

A complete view of capital formation and a full use of data on wealth require national and sector balance sheets that combine financial data and estimates of tangible wealth on a consistent basis. These would enrich the study of capital markets and assist in the evaluation and formulation of monetary and fiscal policies.

Whether and how well these potential uses will be served depends upon the resources that can be devoted to the collection and processing of data, and upon the ingenuity that can be brought to the solution of some difficult statistical and conceptual problems.

The staff report discusses both tangible assets and financial assets and liabilities. Data for both are important, need improvement, and can and should be improved. The Advisory Committee agrees with the staff report that present information concerning tangibles—structures, equipment, land, inventories, and the like—is on the whole less satisfactory than data for financial items and deserves priority in the collection of additional data.

The Advisory Committee believes that the time is now at hand to initiate the planning and testing within the Federal statistical establishment that must precede an expansion of wealth data collection. Since the Office of Statistical Standards, Bureau of the Budget, has the responsibility for planning and coordinating Federal statistical programs, we urge it to move ahead vigorously in this field.

Neither the staff nor the Advisory Committee envisage a one-time census of wealth. Rather, the procedure suggested is to tie in the collection of wealth data with existing Federal programs. This procedure promises greater efficiency and economy than a comprehensive one-time survey. Given the reporting cycle followed by the Census Bureau, all industries could be covered over a 5-year period if it includes the year 1970, since the censuses of population and housing are taken decennially, while the industry censuses are taken quinquennially. Most of the noncensus reporting programs identified by the staff report are annual and could be fitted into the census cycle, as could surveys of industries not covered by existing programs. If the 5-year period for benchmark data collection is to include the 1970 decennial census, the necessary advanced planning, coordination, consultation, and testing must be initiated promptly.

The proposed procedure implies that the most detailed and accurate data would refer to different years in different sectors of the economy. However, these basic data, together with collateral or sample information, would be used to develop comprehensive and consistent, though less detailed, estimates for a single benchmark year, perhaps 1970. The benchmark year estimates, in turn, would be extended
annually, with periodic adjustment to new basic data as they become available for particular sectors. The annual series would also be deflated to provide estimates of the value of tangible assets in constant prices.

We wish to make it clear that respondents to census and other inquiries usually neither should nor would be expected to provide information in such a form that it could be directly incorporated into the aggregate estimates. The burden of transforming reported data into a consistent and significant whole would rest upon the responsible Federal statistical agencies. Questions to respondents should, of course, be framed to provide information in the form most useful to the estimating agencies, but only within the limits of what respondents can reasonably provide.

We can illustrate this point by reference to the valuation of tangible assets. Wealth estimates should be made in terms of current values that are approximations to market values and in terms of constant dollars. This is necessary both for valid comparisons among sectors and for consistency with gross national product valuations. Current value estimates for certain important types of tangible assets, particularly houses, can be and already are obtained from respondents. But in most cases the basic obligation of respondents would be only to report on a book-value basis, since too few could accurately report the current values of their tangibles. The estimating agency would then have the responsibility of processing these data and revaluing them. The revaluation would be carried out by use of price indexes and other associated and collateral data obtained through special studies and, where necessary and possible, from small samples of respondents.

Plans for improving collateral information such as prices and service lives of capital goods should proceed along with plans for the collection of tangible-asset data as such.

The general approach described here for relating data collection to estimation, and for use of benchmark data in continuing series, is similar to that followed in the compilation of other aggregate economic series, such as industrial production, gross national product, the flow of funds, or the balance of payments.

Proposals for collection of additional financial data to permit improvement and expansion of the financial as well as the real components of national and sectoral balance sheets merit careful attention. The suggestions of the Wealth Study staff and the Working Group on Nonfarm Business Financial Claims with respect not only to the collection of data but also to valuation and to the sector and item structure of balance sheets furnish a constructive point of departure for further progress.

The general guidelines developed in the report (see particularly the summary in ch. 12) provide a necessary background for the formulation of consistent data-collection plans, and for the subsequent preparation of wealth estimates. The Advisory Committee has not itself tried to formulate a position with respect to the detailed conclusions of the staff report as summarized in chapter 12, nor to the recommendations of the 14 sector working groups. We do recommend the entire Wealth Study report for serious consideration by all those persons, both in and out of the Federal Government who are interested in
improving economic statistics. This report should serve as a most helpful basis for further discussion within the statistical agencies in planning for the improvement of wealth estimates. We believe the report also contains much that will be of value to scholars concerned with these problems.

During the 15 months devoted to the Wealth Inventory Planning Study, the Advisory Committee has met as a group four times. We have advised with the staff on its general plan of operation, and on the major conceptual, statistical, and procedural problems that are involved in improving and expanding national wealth estimates by industry, and national balance sheets by sector.

We wish to congratulate the project staff, particularly its director, John W. Kendrick, and the senior staff members, David J. Hyams and Joel Popkin. Theirs was a yeoman's task, and this full and constructive report bears witness to the high order of their imagination and professional competence. The still more detailed working group reports form an invaluable reference source. They reflect the good will and hard work of some 150 experts. They are also a tribute to the administrative ability and the strong powers of persuasion of the project staff. All users of national accounts now and in the future owe the project staff and the working group panelists a large debt of gratitude. Appreciation is also due The George Washington University for sponsoring the project and for releasing Professor Kendrick to direct it. The project owes a particular debt to President Thomas H. Carroll, who maintained an active interest throughout. And, without the financial backing of the Ford Foundation, the project would not have been possible.

In conclusion, the Advisory Committee again urges that within the Federal statistical establishment a prompt start be made on plans to expand the collection of wealth data and to provide more comprehensive and detailed wealth statements and balance sheets to complement the existing national economic accounts. We recognize fully that not all the conceptual and statistical problems have been solved, and that the wealth estimates which eventually emerge obviously will not be perfect. But if we had waited for complete answers to all questions, we still would not have the U.S. national income and product accounts. These have proved to be an indispensable tool for economic analysis and decisionmaking. Yet the original income and product estimates were constructed from data drawn from many sources and collected for other purposes. In many areas they were fragmentary and uncertain. Improvements in data, estimating techniques, and presentation have come with time and experience, and further improvements are continually underway. Systematic planning for collection of data to serve as the basis for wealth estimates will give Government statisticians one advantage over the early national income estimators. We stress that a long period of development lies ahead before the requirements for all potential uses can be met. But once the data base has been created, and continuing wealth estimates become part of the economic accounts, we are con-
vinced that they can and will be steadily improved to provide the empirical basis for a major advance in economic understanding.

RAYMOND T. BOWMAN,
Bureau of the Budget

DANIEL H. BRILL,
Board of Governors of the Federal Reserve System

DANIEL CREAMER,
(Chairman), National Industrial Conference Board

EDWARD F. DENISON,
Brookings Institution

A. Ross ECKLER,
Bureau of the Census

JOSEPH L. FISHER,
Resources for the Future, Inc.

RAYMOND W. GOLDSMITH,
Yale University

DOUGLAS GREENWALD,

RICHARD H. HOLTON,
Department of Commerce

GEORGE JASZI,
Office of Business Economics

JOHN W. KENDRICK,
The George Washington University

JAMES W. KNOWLES,
Joint Economic Committee, U.S. Congress

NATHAN M. KOFFSKY,
Department of Agriculture

WILLIAM H. SHAW,
E. I. du Pont de Nemours & Co.
The Wealth Inventory Planning Study was established by The George Washington University in February 1963, under a grant from the Ford Foundation. Briefly stated, its purpose has been to explore the problems and possibilities of a meaningful national inventory of wealth, and to develop guidelines for the collection of the requisite data and preparation of finished estimates.

This preface is intended to describe briefly the background, genesis, and organization of the study and to acknowledge the assistance of the many persons who have contributed to the report. It is preceded by a foreword written by the project Advisory Committee containing its general recommendations. The preface is followed by the summary report by the staff, and the appendixes, which comprise the basic background papers and the sector reports with recommendations of the various working groups set up to study the problems and possibilities of wealth estimates in each of the major sectors of the U.S. economy.

While this report is the final product of the Wealth Inventory Planning Study, it is only the first step toward a national inventory of wealth. It may take the better part of a decade before the inventory is completed—if it is tied into the existing Federal statistical system, as contemplated. When completed, it is intended that the inventory will make possible comprehensive and reasonably accurate continuing balance sheet and wealth estimates as an integral part of our national economic accounts.

Background and Genesis of the Study

Ever since the beginnings of economics as an organized discipline, economists have recognized the importance of the wealth as well as the income of nations as an analytical concept, and have made sporadic attempts to estimate its magnitude. In the development of official statistics, however, the estimation of national income and product has taken precedence. Begun in 1932, U.S. national income estimates were expanded in 1942 to comprise national product, and in 1947 an integrated system of accounts was developed. A few other countries had continuing official estimates of national income prior to World War II, but afterward the number grew rapidly, and at the present time over 80 countries provide national income and product estimates to the Statistical Office of the United Nations.

Continuing balance sheet and wealth estimates have been much slower to develop than the income and product estimates. The United States had a census of wealth approximately every decade from 1850 to 1922, but it was on a quite aggregative basis with unknown completeness of coverage, and with considerable ambiguity of valuation. After
it was dropped, individual investigators occasionally attempted estimates of national wealth based on available fragmentary data. In the late 1950's, in connection with its flow of funds estimates, the Federal Reserve Board began to publish partial balance sheets, by sector. But the data base was not strong enough to support comprehensive wealth estimates.

In 1955, Japan instituted a quinquennial wealth survey. In 1959, the Soviet Union began a detailed inventory of its tangible assets in both physical and value terms. Investigators in a number of other countries have made occasional wealth estimates, but like those in the United States, they have been based on partial data.

One reason for the prior development of regular national income and product estimates has been the availability of more or less adequate data, generally as a byproduct of Census, Internal Revenue, Social Security, and other statistical programs. Equally important, macroeconomic demand theory developed by J. M. Keynes and his early followers in the 1930's placed chief emphasis on current flows of income and expenditure. Keynes' conceptual development of the income and product framework gave a strong impetus to its statistical implementation to provide the tools for testing and refining theory, and for policy formulation.

While there has not been an equally influential single body of theory centered around asset or wealth variables, economic analysts have been according an increased emphasis to the role of stocks. On the supply side, there has been renewed interest in and further development of the production function concept, and the role of capital in economic growth and development. On the demand side, there is increasing recognition of the importance of the size and composition of real wealth and of financial assets, and the influence on demand of attempts to adjust asset ratios to desired positions. In the report and in appendix I, part A, there is detailed discussion of actual and potential uses of wealth and balance sheet estimates in analysis, projections, and policy determination.

**GENESIS**

The growing importance of stocks in economic theory, and the potential usefulness of wealth estimates and balance sheets as integral parts of the national economic accounts, were reflected in the 1957 report of the National Accounts Review Committee. This Committee of experts was set up in late 1956 by the National Bureau of Economic Research, at the request of the Office of Statistical Standards of the Bureau of the Budget, to review the major questions in the field of national economic accounting and to prepare recommendations for improvements of the accounts as effective tools for economic analysis. The relevant portion of the Committee's report follows:

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

The committee, however, recognizes that there are still so many unresolved conceptual problems in this field and that the estimates are in many cases necessary still so rough that the next step should not be the immediate attempt by a Government agency to develop balance sheets or even national wealth statements. It seems to the committee that this is the field for a thorough study, exploratory and experimental in part, possibly by one of our private research in-
Such a study would probably require an intensive effort over several years. It might be expected to result in, first, the development of superior methods of estimation and in improved actual estimates for many types of assets and liabilities; and, secondly, in a concrete plan for the collection of data in fields where only a Government agency is likely to secure the necessary information. After such a preparatory study the time will probably have arrived for one of the statistical agencies of the Federal Government to take over the preparation of periodic national and sectoral balance sheets as a regular feature, integrated, of course, with other parts of the national accounts.¹

Although a number of the recommendations of the National Accounts Review Committee were carried out in the next several years, little progress was made toward planning for wealth and balance sheet estimates. In 1961, the Census Advisory Committee of the American Economic Association renewed the appeal for a study to determine the feasibility and content of a wealth inventory.²

In the spring of 1962, the present staff director, John W. Kendrick, together with Raymond Goldsmith, Daniel Creamer, and Edward Denison, drafted a project proposal for an exploratory and planning study for a possible wealth inventory. The advantages of a Washington location were apparent, and the initiating group received encouraging support, and sponsorship, from Thomas H. Carroll, president of The George Washington University. The proposal was submitted to the Ford Foundation in the summer of 1962.

The project proposal pointed to the need for, and potential uses of, a wealth inventory, but noted the difficult conceptual and statistical problems which made an exploratory study necessary. The desirability of a nongovernmental project located in Washington was stressed in the following words:

The exploratory nature of the enterprise is the main reason for recommending a study independent and outside of the Federal Government, but conducted in close contact and in cooperation with the relevant Federal agencies. It is the sort of preliminary work for which Congress is unlikely to appropriate funds, and other interested Government agencies do not have available "free funds" to divert to this research and planning task.

Because of the need for liaison between the project committee members and staff and Federal agency representatives, it seems appropriate that an organization with headquarters in Washington such as The George Washington University sponsor the preparatory study. The university department of economics will be represented on the project committee.

The responsibility for the exploratory study and the formulation of a practical plan for the conduct of the inventory will be centered in a small, full-time, and highly competent secretariat under the active guidance of the project committee of leading experts in the field of national wealth. The organizational plans also call for the use of a few subcommittees for particularly difficult or specialized sectors of the economy.

Organization of the Study

The director of the research staff of the study took office in February 1963. The first 2 months were devoted to reviewing available wealth data estimates, planning procedures for the study, choosing an Advisory Committee, and selecting the two staff associates and administrative secretary provided for by the terms of the grant.

² The members of this Committee when the recommendations were made were: Solomon Fabricant, Director of Research of NBER, Chairman; Morris A. Adelman; Prof. Harold Barger; Edward F. Denison; Prof. Millard Hastay; Prof. Carl Kaysen; Prof. H. Gregg Lewis; Prof. John Lintner; Prof. Anthony Tang; Arthur M. Okun.
The Advisory Committee was set up for the purpose of reviewing the staff work, providing guidance as needed, and preparing recommendations of its own based on the staff report. At the suggestion of Ford Foundation officials, approximately half of the Advisory Committee was composed of representatives of the Federal statistical agencies which would presumably be most heavily involved in a wealth inventory; the other members were chosen from experts in the wealth field with academic and research backgrounds.

At its initial meeting on April 8, 1963, the Advisory Committee approved the staff director’s plan of action, as described below. It also decided that, while the members would review the staff report and offer suggestions, the Committee should not assume responsibility for the report. The views of the Advisory Committee were to be reflected in its statement contained in the foreword. The project was planned to last approximately 1 year, and a final meeting of the Advisory Committee, at which its recommendations were hammered out, was held on April 24, 1964. At the initial meeting, and the two subsequent meetings on October 28, 1963, and January 3, 1964, the Committee discussed most of the major issues involved in the study.

In accordance with the staff plan, 14 sector working groups were formed, composed of experts in the various fields, drawn from universities, industry, and government agencies. The working groups were charged with the following responsibilities, which are reflected in the contents of their reports: (1) definition of the sector and consideration of actual and potential uses of wealth estimates for the sector; (2) review of existing wealth data and estimates for the sector; (3) evaluation of the data, and identification of the gaps; (4) recommendations for strengthening and expanding the basic data and for preparation of finished estimates.

A degree of direction and coordination of the activities of the working groups was achieved in several ways. Two sets of “guidelines” and several background papers on key issues were prepared by the staff for circulation to group members. Each staff associate served as working secretary to three groups, and as a member of four others; the staff director attended one or more meetings of each of the groups. In December 1963, there was a meeting of group secretaries for discussion of common problems and jurisdictional matters. Most of the sector reports, in at least preliminary form, were completed by February 1964.

Background materials were assembled by group secretaries, and the writing of the reports was their responsibility. Each secretary attempted to express the consensus of his group as faithfully as possible, and also to reflect possible minority views. Any member of a group was free to append a statement clarifying or elaborating his views, if he felt these had not been adequately represented in the final report.

The sector reports, which comprise appendix II, A to O, are an important part of the total Wealth Study report. Although they are summarized in the staff report, the reader must go to the sector statements for detailed discussion and recommendations.

The 10 background papers and commentaries which comprise appendix I, A to K, are also an important part of the study. Statements of the actual and potential uses of wealth estimates by economists from major organizations compose appendix I, part A.
It was also considered important to review the U.S. experience, and that of other countries, in conducting wealth inventories and preparing estimates, in order to see what might be learned to the benefit of future efforts (app. I, B to E). Appendix I, part F contains an explanation of the accounting framework for national and sector balance sheet and wealth estimates, and their interrelationships with the income and product accounts. The possibilities of obtaining capacity output data in conjunction with asset data, which would enhance the usefulness of a wealth inventory, are discussed in appendix I, part G. Various aspects of the difficult conceptual and statistical problems involved in valuation of assets are discussed in appendix I, H to K. The papers on valuation and on capacity served as the basis for two lively symposia held at the Wealth Study’s conference room in November and December 1963.

Drawing on the sector reports and background papers, the staff wrote its summary report during the first quarter of 1964. In essence, the staff report attempts to (1) deal with the major conceptual and statistical problems of a wealth inventory as they cut across sector and industry lines based on the background papers, other materials, and discussions by the staff with members of the Advisory Committee, working groups, and others; (2) summarize the available wealth data and estimates and required extensions to provide a comprehensive national stocktaking, based on the sector reports; (3) provide guidelines for wealth data collection and the subsequent process of estimation within a national accounting framework.

The Advisory Committee foreword contains the general recommendations that emerged from committee discussions, backed up by the staff report and the other materials developed by the staff during the course of the study. The recommendations express the consensus of the committee, but individual members were free to prepare supplemental statements on issues about which they were not in substantial accord. None chose to do so.

It is hoped that the present report, in its delineation and suggested solutions of major problems, offers a sufficiently clear plan for further steps that it may effectively spark the eventual attainment of the basic objectives. Each year our economy becomes more complex, and continued expansion of our economic intelligence is essential if economists are to be able to do the necessary analytical work as background for sound policy formation. We would be shirking our obligation to the future if we did not now seek to lay the groundwork for national and sector stock estimates to accompany the national income and product statistics. Just as the flow data now seem indispensible, so will wealth estimates and balance sheets once they are available and have become a part of the analytical toolkit that has made economics an effective instrument of policy.

Acknowledgments

The Wealth Inventory Planning Study would not have been possible without the generous grant provided by the Ford Foundation. In addition, during consideration of the proposal, helpful suggestions were made by Drs. Victor Fuchs and Henry Villard, then with the foundation.
The moving spirit behind the project proposal was Prof. Raymond Goldsmith, of Yale University. Although he has succeeded in preparing useful sectoral balance sheets and wealth estimates for the United States for selected years, he has been the first to stress the need for better and more extensive basic data to make possible more reliable and detailed estimates. He has also advocated eventual regular official estimates of sectoral and national balance sheets. Professor Goldsmith succeeded in interesting the present staff director in the project, and he provided moral support in the early days before a staff was assembled, as well as later. Dr. Raymond Bowman, Assistant Director for Statistical Standards, Bureau of the Budget, and Dr. Milton Moss of the same Office who was Dr. Bowman's chief liaison man with the Wealth Study, also provided early support.

The encouragement of President Thomas Carroll has already been mentioned; his support was unflagging throughout the study. At the university, appreciation is also due to Dean B. D. Van Evera and his associates in the Office for Sponsored Research, who handled administrative aspects of the project. Miss Jane Lingo advised on public relations.

The role of the Advisory Committee has been vital. The several meetings during which they provided a sounding board and furnished specific advice to the staff have been noted above. The wisdom of their recommendations is plain for all to see in the foreword. The membership of the Advisory Committee is given there, but special mention should be made of Daniel Creamer, who served as chairman and took an especial interest in following the month-to-month work of the study, and Edward Denison, who prepared the initial draft of the foreword. Each member of the committee reviewed intensively at least one appendix and one major section of the report, as well as reading the report generally. This not only served as background for formulation of recommendations but also resulted in constructive suggestions to staff members. While not a member of the Advisory Committee, Murray Dessel of the Census Bureau also read the entire report and suggested many worthwhile revisions.

Special thanks are also due to the more than 150 persons who served as members of the sector working groups or who prepared background papers for the study. All participants are named at the beginning of the various appendixes. Each of the working groups met at least two or three times, and in addition all members of each group reviewed their report at various stages of preparation and many offered suggestions. Especial gratitude is due to the working secretaries, eight of whom came from outside the staff, who prepared materials and wrote their groups' reports. Some groups also had chairmen, on whom additional responsibility fell. The authors of the background papers have all made significant contributions, and in some cases had to defend their papers at discussion sessions organized by the staff. The outside secretaries and authors of background papers are listed on the title page of the report as consultants.

In view of the large number of people who participated in the Wealth Study, perhaps it is not unreasonable to claim that one of its contributions has been to involve these people, some of whom may well participate in later stages of the development of wealth data and estimates, in thinking about the conceptual and statistical problems
posed. For all the time and thought they gave, we are grateful. We are also grateful to the Government agencies, private companies, universities, and other institutions who felt the study was important enough that they were willing to release the time of the participants and, in many cases, to cover their travel expenses.

Now I come to my staff; without their dedication to our common task, the study could not have been completed in such a relatively short time. David Hyams and Joel Popkin each prepared three sector reports, performed liaison with four other sector working groups, and together summarized most of the group reports in chapters 9, 10, and 11. Mr. Popkin also helped the director prepare parts of several other chapters. The intelligence and industry with which both performed their assignments were an important element in the final product of the study.

Courtney Knauth and Barbara-Ann Hoyler served ably as administrative secretaries of the study, from March through July 1963, and from August 1963 to June 1964, respectively. Mrs. Knauth was helpful in getting the rather complex organization of the study into operation. Mrs. Hoyler effectively performed the administrative and secretarial work in carrying it forward and getting out the completed report. Just as important, both contributed greatly to a happy working environment at the Wealth Study offices. Paulette Brombart, Judith Nevins, and Paula Metzl, served ably as typists for the report.

Finally, we are grateful to all those who are interested in this report and its implementation. Certainly, the expansion and improvement of economic statistics are prerequisite to improvement in the quality of economic analysis and decisionmaking. It is our belief that the most important single field in which improvements are needed is wealth.

John W. Kendrick,
Staff Director.
# CONTENTS

Letters of transmittal  ..........................................................  iii  
List of names: Research staff; advisory committee; consultants  ..........  vii  
Foreword by the advisory committee  ...........................................  ix  
Preface by John W. Kendrick  ....................................................  xv  

**THE STAFF REPORT**

(John W. Kendrick, David J. Hyams, and Joel Popkin)

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Summary of the staff report</td>
<td>3</td>
</tr>
<tr>
<td>Scope of a wealth inventory</td>
<td>3</td>
</tr>
<tr>
<td>Uses of wealth estimates</td>
<td>4</td>
</tr>
<tr>
<td>Experience with wealth inventories and estimates</td>
<td>4</td>
</tr>
<tr>
<td>Wealth inventories abroad</td>
<td>5</td>
</tr>
<tr>
<td>The design of wealth inventories and estimates</td>
<td>5</td>
</tr>
<tr>
<td>The design of national balance sheets</td>
<td>6</td>
</tr>
<tr>
<td>Valuation—general approaches</td>
<td>6</td>
</tr>
<tr>
<td>Valuation—major classes of assets</td>
<td>7</td>
</tr>
<tr>
<td>The Federal statistical system</td>
<td>8</td>
</tr>
<tr>
<td>Review and evaluation of wealth data</td>
<td>9</td>
</tr>
<tr>
<td>Summary guidelines</td>
<td>10</td>
</tr>
<tr>
<td>2. Scope and uses of a wealth inventory</td>
<td>11</td>
</tr>
<tr>
<td>Uses of wealth estimates, actual and potential</td>
<td>13</td>
</tr>
<tr>
<td>Summary</td>
<td>20</td>
</tr>
<tr>
<td>3. Experience with wealth inventories and estimates</td>
<td>21</td>
</tr>
<tr>
<td>Historical United States censuses of wealth</td>
<td>21</td>
</tr>
<tr>
<td>United States wealth estimates after 1922</td>
<td>23</td>
</tr>
<tr>
<td>The Soviet wealth inventory</td>
<td>26</td>
</tr>
<tr>
<td>The Japanese wealth surveys</td>
<td>31</td>
</tr>
<tr>
<td>4. The design of the wealth inventory and estimates</td>
<td>37</td>
</tr>
<tr>
<td>Relevant features of economic accounts</td>
<td>38</td>
</tr>
<tr>
<td>Domestic wealth by industry</td>
<td>39</td>
</tr>
<tr>
<td>Tangible asset classification</td>
<td>44</td>
</tr>
<tr>
<td>Supplemental physical volume data</td>
<td>47</td>
</tr>
<tr>
<td>Geographic detail</td>
<td>50</td>
</tr>
<tr>
<td>5. The design of national balance sheets and financial data collection</td>
<td>51</td>
</tr>
<tr>
<td>The saving-investment account and balance sheet approach</td>
<td>51</td>
</tr>
<tr>
<td>Sectors</td>
<td>56</td>
</tr>
<tr>
<td>Types of financial assets and liabilities</td>
<td>62</td>
</tr>
<tr>
<td>Linkage between industry wealth and sector balance sheet approaches</td>
<td>64</td>
</tr>
<tr>
<td>6. Valuation—general approaches</td>
<td>67</td>
</tr>
<tr>
<td>Book values</td>
<td>67</td>
</tr>
<tr>
<td>Current values</td>
<td>68</td>
</tr>
<tr>
<td>The limitations of capital goods markets</td>
<td>70</td>
</tr>
<tr>
<td>Proxies for market prices</td>
<td>70</td>
</tr>
<tr>
<td>Multiple approaches to estimating present values</td>
<td>76</td>
</tr>
<tr>
<td>7. Valuation—major classes of assets</td>
<td>77</td>
</tr>
<tr>
<td>Depreciable assets</td>
<td>77</td>
</tr>
<tr>
<td>Inventories</td>
<td>84</td>
</tr>
<tr>
<td>Manmade nonreproducible goods</td>
<td>86</td>
</tr>
<tr>
<td>Valuation of natural resources</td>
<td>87</td>
</tr>
<tr>
<td>Valuation of financial claims</td>
<td>88</td>
</tr>
<tr>
<td>8. The Federal statistical system: Introduction to wealth data reviews</td>
<td>91</td>
</tr>
<tr>
<td>The decentralized statistical system</td>
<td>91</td>
</tr>
<tr>
<td>Major statistical programs</td>
<td>94</td>
</tr>
</tbody>
</table>
9. Review and evaluation of wealth data: The nonbusiness sectors and net foreign claims
   Federal government
   State and local governments
   Net foreign claims
   Households

10. Review and evaluation of wealth data: The commodity-producing industries and business financial claims
   Agriculture
   Nonfarm business financial claims
   Construction
   Manufacturing
   Nonagricultural natural resources

11. Review and evaluation of wealth data: The noncommodity-producing industries
   Transportation
   Communications and public utilities
   Trade
   Finance, insurance, and real estate
   Services

12. Summary guidelines
   General guidelines
   Sector recommendations

TABLES IN THE STAFF REPORT
1. Revaluation of fixed reproducible tangible assets based on physical unit data
3. Coverage of the corporation universe by two Treasury surveys
4. Summary of major Federal reporting programs relating to assets, by sector
7. Comparative balance sheet of agriculture, January 1, 1940 and January 1, 1963
8. Fixed asset data and estimates for the U.S. manufacturing sector, SIC major groups, 1957
9. Wealth estimates for the various service subsectors

APPENDIX I: BACKGROUND PAPERS
Ten background papers (A–K):
A. Uses of Wealth Estimates
   1. Statement by Emerson P. Schmidt, economic consultant, U.S. Chamber of Commerce
   2. Statement by George Terborgh, research director, Machinery and Allied Products Institutes
   3. Statement by Frank L. Fernbach, AFL–CIO
   4. Statement by John P. Lewis, Council of Economic Advisers
   6. Statement by Herbert Stein, research director, Committee for Economic Development
   7. Statement by Joel Darmstadter, National Planning Association
   8. Statement of John DeWitt Norton, deputy director, Economic Program Center, National Planning Association
CONTENTS

Ten Background papers—Continued

B. Historical Censuses and Estimates of Wealth in the United States
   (By Stephen A. Hoenack, The George Washington University) ........................................ 177
   Foreword by John W. Kendrick ................................................................. 179
   Ch. I. Survey of the censuses of wealth ......................................................... 181
          Categories given for the assets, and their coverage .................................. 181
          Geographical breakdown of the valuations for each category ....................... 187
          Valuation ................................................................................................. 190
          Summaries of information given in the census reports on the methods of obtaining the estimates ......................................................... 193
   II. Critique of the censuses of wealth .............................................................. 196
          Quality of the valuations ........................................................................... 198
          Combination of valuation types .................................................................... 200
          Inadequacies of categorization ..................................................................... 201
          Alterations of valuations ............................................................................ 201
          Summary .................................................................................................... 203
   III. Notes on wealth estimates after 1922 .......................................................... 204
          Federal Trade Commission ........................................................................... 204
          Doane ......................................................................................................... 205
          National Bureau of Economic Research ....................................................... 206
          Agricultural capital ...................................................................................... 207
          Nonfarm residential real estate ..................................................................... 207
          Regulated industries ..................................................................................... 208
          Mining ......................................................................................................... 210
          Manufactures ............................................................................................... 211
          Kuznets ........................................................................................................ 211
          Goldsmith ..................................................................................................... 212
          Kendrick ....................................................................................................... 215
          Office of Business Economics ....................................................................... 216
          Summary .................................................................................................... 217

Bibliography ........................................................................................................... 217

Tables:
1. Probable intended coverage of the categories of the censuses of wealth .................. 182
2. Geographical units, by census, by type of asset .................................................... 188
3. Valuation types ................................................................................................ 191
4. Methods of valuation for the censuses of wealth (1900 and after) ......................... 194
5. Data sources by categories ................................................................................ 194
6. Census Bureau estimated tangible national wealth of the United States, by classes of property ......................................................... 197

C. National Wealth Measurement in Canada (By Thomas K. Rymes, Carleton University) ........................................................................................................... 219
   Consolidated national wealth statements ................................................................ 221
   Disaggregated national wealth estimates ................................................................ 224
   Conclusion ....................................................................................................... 227

Tables:
1. Preliminary estimates, fixed capital stocks project by DBS—1948 standard industrial classification—Industrial division and major groups ........................................ 222
2. Categories of balance sheets for which respondents are asked to report on the DBS experimental quarterly assets and liabilities survey ....................................... 225
### CONTENTS

**Ten Background papers—Continued**

**D. The Soviet Capital Stock Inventory and Revaluation**

- **By Adam Kaufman, economic consultant**
- Page 229

<table>
<thead>
<tr>
<th>General Review</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>231</td>
</tr>
</tbody>
</table>

- Revaluations of Soviet fixed assets preceding the 1960 revaluation | 234 |
- Preparatory measures in inventory registration | 236 |
- The administration of the preparatory stages of the census | 237 |
- Classification of Soviet fixed assets | 238 |
- Classification of fixed assets by sectors of the economy and branches of industry | 241 |

**Methods and procedures of revaluation** | 242 |
**Revaluation of machinery and equipment** | 243 |
**Revaluation of buildings, structures, and transmissions** | 246 |
**The determination of wear and tear** | 248 |
**Documents pertaining to the capital stock census** | 251 |
**Capital revaluation in the collective farms** | 257 |
**Revaluation of equipment and means of transportation** | 258 |
**Revaluation of buildings and structures** | 259 |
**The determination of the degree of physical wear and tear** | 260 |
**An appraisal** | 261 |

**Tables:**

1. Wholesale prices of selected machines in 1949–55 | 242 |
2. Equipment: Peat harvester, mark UMPF-4 | 249 |
3. Structure: Water tower | 249 |
4. Average depreciation rates in selected branches of industry | 251 |
5. Adjustment coefficients | 259 |

**Annex I.**—Summary report on the results of revaluation and determination of wear and tear of fixed funds as of January 1, 1960 | 263 |
**Annex II.**—Report on the results of revaluation and determination of wear and tear of buildings for productive, cultural, trade, and other uses (except residential housing) | 265 |
**Annex III.**—Report on the results of revaluation and determination of wear and tear of residential buildings | 267 |
**Annex IV.**—Report on the results and determination of wear and tear of structures and transmissions | 269 |
**Annex V.**—Report on the results of revaluation and determination of wear and tear of equipment | 269 |
**Annex VI.**—Report on the results of revaluation and determination of wear and tear on means of transportation | 270 |
**Annex VII.**—Soviet industrial classification | 271 |
**Annex VIII.**—Signs for the determination of percentage of wear and tear in components of buildings and elements of their accommodations | 276 |

**E. Wealth Surveys in Japan**

- **By Yataka Shimizu, National Accounts Section, Statistical Office, United Nations**
- Page 277

<table>
<thead>
<tr>
<th>I. Introduction</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>279</td>
</tr>
</tbody>
</table>

- A Brief description of Japanese national wealth estimates preceding the 1955 survey | 279 |
- B. Outline of the 1955 wealth survey | 280 |
- C. Outline of the 1960 wealth survey | 280 |

<table>
<thead>
<tr>
<th>II. 1955 national wealth survey</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Preparation of survey</td>
<td>281</td>
</tr>
<tr>
<td>B. Explanatory notes on the conduct of the survey</td>
<td>287</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III. Some findings from the 1955 and 1960 national wealth surveys</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Main features of the surveys</td>
<td>289</td>
</tr>
<tr>
<td>B. Major problems in the surveys</td>
<td>289</td>
</tr>
</tbody>
</table>
Contents

Ten Background Papers—Continued

F. Relationship of Balance Sheets and Wealth Estimates to National Income Accounts (By John A. Gorman, Office of Business Economics) .................................................. 291

Preparing income and product accounts ................................................. 293
Preparation of balance sheets ................................................................. 294
Derivation of complete set of national accounts ........................................ 295
Application of accounting framework ...................................................... 296
Sectoring ..................................................................................................... 296
Capital versus current items ................................................................. 297
Valuation of capital claims ......................................................................... 298

Tables:

Illustrative proprietors' accounts, 196X:
A. Proprietors' transaction statement ..................................................... 299
B. Proprietors' income and product account ........................................ 300
C. Proprietors' valuation statement ......................................................... 300
D. Proprietors' change in balance sheet account ..................................... 301
E. Proprietors' balance sheet ................................................................. 301

Illustrative national accounts, 196X:
1. Transaction statement ........................................................................... 302
2. Production account ............................................................................. 303
3. Appropriation account .......................................................................... 304
4. Saving and investment account .......................................................... 305
5. Valuation statement ........................................................................... 306
6. Change in balance sheet account .......................................................... 307
7. Beginning balance sheet ...................................................................... 308
8. Ending balance sheet ........................................................................... 309

Comments by Stanley J. Sigel .................................................................. 310

G. Notes on Measuring Capacity by Census Enumeration (By Almarin Phillips, University of Pennsylvania) .................................................. 321

Introduction ............................................................................................... 323
Capacity of the individual establishment ................................................ 323
Capacity of aggregates and establishments .............................................. 325
Areas for census questions ......................................................................... 326

H. The Measurement of Capital (By Vernon L. Smith, Purdue University) .... 329

I. What is capital ......................................................................................... 331
II. Traditional measures of the values of the capital stock ......................... 332
1. Gross value of tangible capital stock ................................................. 334
2. Net value of tangible capital stock ..................................................... 335

III. Critique of traditional measures ......................................................... 336
IV. A supplementary measure of capital-value added on wealth account.. 338
1. Definitions of gross and net wealth added ...................................... 338
2. Some difficulties ................................................................................... 340
3. Some examples .................................................................................... 341
4. Concluding remarks ............................................................................ 344

References .................................................................................................. 345

Supplementary bibliography ..................................................................... 346

Tables:

1. General Motors, 1961 .......................................................................... 342
2. Syntex Corp., 1961 ............................................................................... 342
3. Standard Oil of Indiana, 1961 ............................................................. 343

Comments by Edward F. Denison .............................................................. 346

Supplemental Paper by W. Hochwald and H. J. Barnett ......................... 350

J. Capital Goods Pricing (By Allan D. Searle, Bureau of Labor Statistics) .. 355

Problems and prospects ........................................................................... 357
Availability of capital goods price indexes .............................................. 357
Purposes, concepts, problems ................................................................. 360
The gaps and challenges ahead ............................................................... 364

Table 1.—Price coverage for capital goods industries ............................... 358
Ten Background papers—Continued


Bias in the use of a single mean ........................................ 369

Use of a curve in distributing lives ................................... 370

Internal Revenue Service studies of useful life ..................... 370

Biases in deriving service lives from gross stock and deprecia-
tion data ........................................................................... 371

Treatment of stock acquisitions as service life weights ............. 373

Importance of consistency in defining structures and equip-
ment .................................................................................. 373

Adjustment of IRS data for postwar legal changes ................... 373

Apparent difference between the war and postwar service lives..... 374

Comments by George Terborgh ............................................ 374

Further comments by Mr. Wasson ........................................ 378

APPENDIX II: SECTOR REPORTS

Reports of the sector working groups (A—O)

A. Federal Government (prepared by Joel Popkin, The George Wash-
ington University) ............................................................. 383

List of members .................................................................... 384

Preface ................................................................................. 385

I. Introduction ....................................................................... 387

II. Survey of existing data ..................................................... 390

III. Discussion of the existing data ........................................ 402

IV. Conclusions and recommendations .................................... 412

Supplemental statement by Joseph D. Cohn ............................ 422

Tables:

1. Grand recapitulation of the personality and reality of the U.S. Government, classified by major asset type for selected holders as of June 30, 1962 ................................................................. 392

2. Grand recapitulation of the personality and reality of the U.S. Government, classified on a functional use basis, as of June 30, 1962 ................................................................. 404

B. State and Local Governments (prepared by Erin M. Woodall, The George Washington University) ......................................................... 423

List of members .................................................................... 424

Preface ................................................................................. 425

I. Scope of State and local government sector ........................ 427

II. Special uses of State and local government wealth data ........ 427

III. Summary review of available data .................................... 428

IV. Summary of recommendations ........................................ 432

V. Valuation problems and recommendations ........................ 435

VI. Financial assets and liabilities .......................................... 437

VII. Inventories ..................................................................... 438

Annex A. Categories of wealth in public school systems .......... 438

Annex B. Memorandum on land valuation techniques ............ 438

C. Households (prepared by F. Thomas Juster, National Bureau of Economic Research) ....................................................... 441

List of members .................................................................... 442

Preface ................................................................................. 443

I. Uses of wealth estimates .................................................... 445

II. Review of existing data ..................................................... 446

III. Coverage of the household sector ..................................... 449

IV. Conceptual problems in the measurement of household wealth ................................................................. 450

V. Problems in collecting wealth data ...................................... 452

VI. Summary of recommendations ........................................ 461

Annex A. Partitioning of wealth estimates among sectors ........ 462

Annex B. Listing of tangible assets ........................................ 466

Annex C. Listing of intangible assets ...................................... 469

Table 1.—Inventory information to be obtained from national sample of households ................................................................. 457
CONTENTS

Reports of the sector working groups—Continued

D. Net Foreign Claims (prepared by Robert L. Sammons, Federal Reserve System) 471
   List of members 472
   Preface 473
   I. Introduction 475
   II. The conceptual framework 479
   III. Data evaluation and recommendations 487
   Table 1.—International investment position of the United States, 1962 488
   Annex. Reporting forms presently in use 508

E. Agriculture (prepared by Philip T. Allen, Department of Agriculture) 521
   List of members 522
   Preface 523
   I. Uses anticipated for improved estimates of agricultural wealth 525
   II. Summary review of available data relating to agricultural wealth 526
   III. Summary of recommendations 527
   IV. Definition of agricultural sector, aspects of comparability of wealth and income concepts, and agricultural services 531
   V. Valuation of farm real estate 535
   VI. Crops 540
   VII. Farm machinery and equipment 541
   VIII. Livestock 542
   IX. Financial assets and claims 543
   Table 1.—Balance Sheet of agriculture, January 1, 1963 543

F. Natural Resources (prepared by Neal Potter, Resources for the Future, Inc.) 547
   List of members 548
   Preface 549
   I. Possible uses of an inventory of natural resources 551
   II. Problems of an inventory 552
   III. Summary conclusions 553
   IV. Existing data on natural resources and their values 556
   V. Minerals subgroup report 563
   VI. Timber resources subgroup report 570
   VII. Water resources subgroup report 577
   VIII. Fish and wildlife subgroup report 586
   IX. Public lands subgroup report 591

G. Construction (prepared by Robinson Newcomb, and David K. Gillogly, Newcomb, Gillogly & Associates) 595
   List of members 596
   Preface 597
   I. General objectives 599
   II. Potential uses and users of construction sector wealth data 599
   III. Data objectives 601
   IV. Review and appraisal of available data 604
   V. Definitions of the construction sector 607
   VI. Characteristics of wealth assets employed in the construction sector 609
   VII. Special problems 610
   VIII. Recommendations 613

H. Manufacturing (prepared by Joel Popkin, The George Washington University) 619
   List of members 620
   Preface 621
   I. Introduction 623
   II. Review of existing data and estimates 624
   III. Evaluation of gross book value and supplemental data required to make wealth estimates 632
   IV. Recommendations 639
   Table 1.—Summarized features distinguishing BDSA estimates of manufacturers’ stocks of depreciable capital assets from alternative estimates 630
Reports of the sector working groups—Continued

J. Finance, Insurance, and Real Estate (prepared by David J. Hyams, The George Washington University) ........................................... 647

List of members ................................................................. 648
Preface .................................................................................. 649
I. Purpose and scope of report ................................................. 651
II. Review of existing data ....................................................... 651
III. Data required for wealth estimates ..................................... 656
IV. Recommendations ........................................................... 659

K. Trade (prepared by Stanley C. Hollander, Michigan State University) ..................................................................................... 662

List of members ................................................................. 664
Preface .................................................................................. 665
I. Uses of wealth in trade data ................................................... 667
II. Currently available data ....................................................... 669
III. Recommendations ........................................................... 675

L. Transportation (prepared by David J. Hyams, The George Washington University) ................................................................. 681

List of members ................................................................. 682
Preface .................................................................................. 683
I. Wealth in transportation ......................................................... 685
II. Data objectives within the transportation industries .......... 687
III. Railroad transportation ...................................................... 694
IV. Local and suburban transit and interurban passenger transportation ................................................................. 702
V. Motor freight transportation and warehousing .................. 705
VI. Water transportation ......................................................... 710
VII. Transportation by air ......................................................... 715
VIII. Pipeline transportation ..................................................... 718
IX. Transportation services ...................................................... 722
Annex A. The valuation problem with respect to transportation enterprises, by Ernest W. Williams, Jr. .......... 726
Annex B. Railroad form A: Inventory of equipment .......... 728

M. Communications and Public Utilities (prepared by David J. Hyams, The George Washington University) ................................................................. 731

List of members ................................................................. 732
Preface .................................................................................. 733
I. Data objectives ................................................................. 735
II. Communications .............................................................. 744
III. Electric, gas, and sanitary services ..................................... 751
Annex A. Supplemental comments by David A. Kosh and Gerald J. Glassman ................................................................. 760
Annex B. FPC electric plant in service accounts .......... 761
Annex C. FPC gas plant in service accounts .................. 762
Annex D. NARUC water plant in service accounts .......... 764

N. Service Industries (prepared by Joel Popkin, The George Washington University) ................................................................. 767

List of members ................................................................. 768
Preface .................................................................................. 769
I. Introduction ................................................................. 771
II. Review of existing data ...................................................... 772
III. Evaluation of gross book value and supplementary data required to make wealth estimates ................ 780
IV. Recommendations ........................................................... 784
Table 1.—Gross fixed assets, inventories, and land at book values of profitmaking service industry firms with tax years ending between July 1, 1959, and June 30, 1960 ........ 774
Annex A. The valuation of manmade nonreproducible wealth ................................................................. 787
Exhibit A. Report on a special meeting for the museum field ................................................................. 788
Exhibit B. American Association of Museums questionnaire and responses ................................................................. 789
Exhibit C. Statement of Richard H. Rush, Rye, N.Y. .... 790
# Reports of the sector working groups—Continued

O. Nonfarm Business Financial Claims (prepared by Eleanor J. Stockwell, Federal Reserve System) ................................................................. 791

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of members</td>
<td>792</td>
</tr>
<tr>
<td>Preface</td>
<td>793</td>
</tr>
<tr>
<td>I. Introduction</td>
<td>795</td>
</tr>
<tr>
<td>II. Uses of benchmark data</td>
<td>796</td>
</tr>
<tr>
<td>III. Review of existing data</td>
<td>799</td>
</tr>
<tr>
<td>IV. Needed improvements in existing data</td>
<td></td>
</tr>
<tr>
<td>V. Recommendations of the working group</td>
<td>805</td>
</tr>
</tbody>
</table>

Exhibit B. Balance sheet stub: Quarterly financial report for manufacturing corporations ................................................. 818
Exhibit C. Proposed industrial classification .................................. 818
Exhibit D. Proposed balance sheet stub: Nonfinancial corporations and partnerships .......................................................... 820
Exhibit E. Proposed balance sheet stub: Financial institutions .......... 822
Exhibit F. Proposed balance sheet stub: Commercial and mutual savings banks ................................................................. 825
Exhibit G. Proposed balance sheet stub: Insurance carriers .............. 831