PART I

Report of the Director of Research

Characteristics of Our Program

The National Bureau enters its Twentieth Year was devoted mainly to demonstrating how the numerous parts of our varied program are related to one another through a central theme. Starting in 1920 with estimates of national income, we went on in later years to examine various factors in this grand aggregate and certain types of changes they undergo. Our reports upon physical production and the mechanization of industry, immigration, employment, wage rates, and earnings, prices of commodities and securities, profits and interest, the formation and consumption of capital, seasonal, cyclical, and secular movements all contribute toward an understanding of national income and its fluctuations. Conversely, our estimates of national income, as they have been extended in time and perfected in detail, have provided a general framework into which each investigation fits and have enabled us to see how each bears upon the others. Thus our program is organized in a fashion that becomes clearer and more stimulating the more fully it is developed. Recent additions—the project on consumer financing, of which the first report has been published, on bond ratings which is in process, on financing business enterprises, which is in its early stages, and on fiscal policy, which is planned—fit as neatly into the general scheme as their predecessors. Since all are thus related to one another, each

new undertaking is facilitated by what we have already learned, and each fresh finding helps to confirm or to correct earlier findings. In short, our results cumulate so that the program as a whole is more significant than the sum of its parts considered as single items.

No doubt we might have been more prolific and attracted more attention had we pursued a different policy. We might have concentrated on questions of the day, endeavoring to enlighten public opinion upon this, that, or the other matter uppermost in men's minds for the moment. Work of that type has its usefulness, and we have at times done service jobs for governmental or philanthropic organizations. But most of our energy has been spent upon fundamental processes that must go on in every society every day if men are to live—the production and distribution of goods. These processes we have studied for the most part as they are organized in our own country in our own time. But what happens here and now cannot be understood without some knowledge of the past here, and of both present and past elsewhere, so that many phases of our researches are extended to earlier years and foreign countries. Always we try to understand economic processes as they run in the actual world, not in an imaginary static world, or one that changes according to some simple rule devised to facilitate reasoning.

This effort to understand as best we can the situations with which men have to wrestle is attended by many difficulties. We have to collect large quantities of data from many scattered sources, inquire critically into their representativeness, and experiment with different methods of extracting their significance or invent new methods adapted to special needs. The costs in time and money are much greater than those entailed by setting up postulates and thinking out their logical consequences. Our procedure does not even have the advantage of requiring less thought than speculative theorizing; for in planning our researches we must evolve working concepts with care, and in studying relations among processes we must usually think out several hypotheses before deciding which to adopt.

When the stage of publication is reached at long last, new difficulties appear. As scientific writers we must exhibit the evidence on which our findings rest. This means the publication of serried tables of statistics, accompanied by critical annotations, explanations of technical methods, and warnings about the limitations and uncertainties of the results. We do not present these results as definite conclusions that readers can trust implicitly; they are simply the best approximations we can attain at the time—approximations we hope others or ourselves will improve upon as superior data become available or more powerful methods of analysis are invented. Nor can we heighten interest by applying our findings to practical issues. What men want to know about problems is how to solve them. But we are bound by our own rules to publish merely our findings, and to leave each reader to decide for himself what bearing they have upon policies. We make heavy demands upon the intelligence and patience of our readers, yet do not satisfy their desire for directions how to act.

Criticisms of Our Aims and Methods

It is no wonder that our procedure is criticized by many impatient people and by some thoughtful ones. When the world at large and our country in particular is suffering from many obvious ills, critics ask, "What is the justification for spending money, time, and energy in mulling over figures, if the outcome is no more than a colorless statement of approximations, each hedged about by qualifications? If economic research has any value," the critics go on, "it ought to aim directly at solving pressing problems. If the economists who do the research cannot draw any conclusions of practical significance, their work is futile. If they can draw conclusions, it is their duty to state clearly and forcefully what they think should be done."

Society's Need of Economic Science

Everyone connected with the National Bureau shares in full measure the regret that our investigations take a long time,

cost large sums, yield only approximations, and make books that are hard reading. But we think that practical action is most likely to be successful when guided by knowledge, we are certain that at present economics is woefully inadequate to social needs, and we have found no royal road to the knowledge we are striving to acquire.

Emphatically we do not hold that all attempts to improve economic organization should be postponed until economic science has been perfected. On the contrary, our annual reports have recognized the necessity of attacking issues as they arise with whatever insight men possess. In this respect, the Directors and staff of the National Bureau are in the same boat as other citizens. But surely it is well that at least a few devote themselves to working for a better day when there will be less guesswork in public policy and business planning.

Social engineering is indeed much needed. Making useful inventions, however, is not a simple matter. Consider the way in which progress has been achieved in the technology of industry, which is far less complicated than social organization. Almost every industrial invention passes through a long period of trial and adjustment before it wins general acceptance. Students of technology put the usual interval between the first working model or first patent of an invention and the date of its commercial success at twenty to thirty years.* During all this time the idea is being experimented with by several or many experts. Often the ultimate outcome is failure, not success. Many a scheme that promised well in the blue-print stage proves impracticable or not so good as something quite different. The social engineer who supposes that plans of his imagining can skip this long process of gradual perfecting and pass into successful operation, changing at once the ingrained habits of millions of his fellow men, has a self-confidence that we mistrust. The social inventions that have paralleled the technological progress of recent times—for example, the joint

* See S. C. Gilfillan, The Prediction of Inventions, *Technological Trends and National Policy* (National Resources Committee, Government Printing Office, Washington, 1937), p. 19.

stock company with limited liability, trade unions, progressive taxation, central banking, social insurance, instalment buying, chain stores—have been gradual developments, and few would claim that any one of them is thoroughly satisfactory in its latest form.

It is a commonplace that our economic organization has progressed less since Adam Smith wrote the *Wealth of Nations* than industrial methods have progressed since his friend, James Watt, attached a separate condenser to the steam engine. One reason for this disparity is the difference between the growth of the natural and the social sciences. Dealing with relatively simple subject matter and free to experiment, physics, chemistry, and branches of biology have made enormous strides, and their discoveries have been applied in the numberless industrial improvements that have given us railways and steamships, telegraphs, telephones, and radios, sanitary plumbing and air conditioning, gas, kerosene, and electric lighting, high explosives and plastics, better varieties of plants and animals, automobiles and airplanes. Meanwhile the social sciences, economics among them, unable to experiment at will upon human beings, unable until of late even to observe many social processes on a large scale, have had to rely chiefly upon less efficient methods of investigation. They have perforce used methods more like those of Euclidean geometry or theoretical mechanics than like those of experimental physics, chemistry, or biology. The economist, for example, has had to make suppositions concerning human motives, the prices people are ready to pay for certain goods in certain quantities, the quantities that will be forthcoming for sale at various prices, the conditions of competition, and so on. On the basis of these suppositions he could deduce what it is to the economic interest of men to do. Granted the correctness of his reasoning, his conclusions may be precise and valid in the sense that they are logically derived from the premises. But whether his conclusions are valid in the sense that they explain what actually happens depends upon whether his suppositions represent actual men living under actual conditions. Seldom has it been

possible to investigate the relations between the theorist's assumptions and the real circumstances under which men must act and which they need to understand. Nor have economists often been able to measure the factors they discuss. They have confined themselves mainly to what they call 'qualitative' as opposed to 'quantitative' analysis. For the most part they have imagined a 'stationary state'. The cumulative changes that occur in the actual world are too complicated for their technique.

For all these reasons, the applicability of economic theory to economic practice has been open to question. This uncertainty has not prevented economists from offering plentiful advice on practical problems. But responsible officials and men of affairs have not listened to them with the deference they pay to engineers. For the folk who give their strength to economic reforms do not have such well-tested knowledge of economic processes as engineers possess of physical processes. Indeed on most practical issues the opinions of professional economists differ widely—a natural result of their enforced reliance upon speculative methods. The upshot is that such betterments of economic organization as have been achieved have come about through the application of commonsense and humanitarian feeling quite as much as through the application of scientifically established knowledge.

The National Bureau tries to serve society by laying the foundations for a more useful type of economics. We do not hold that speculative theorizing has been vain or that it can be dispensed with in future. Indeed, our experience gives us exceptionally detailed knowledge of the extent to which lack of data made it impossible to observe most economic processes closely in the past and still makes it impossible to observe many of these processes adequately. Nor do we seek to dispense with imaginary experiments; on the contrary, we rely upon their aid in nearly every analysis. But the gradual accumulation of economic data enables men now to observe many phenomena about which their predecessors could only speculate. Economists of this generation should take full advantage of these

improved working conditions. To do so has been our chief endeavor.

The field covered by the National Bureau during its twenty years is not wide. Many of the problems posed by speculative theory are not amenable to treatment by its methods, unless they are stated in other terms. For example, the National Bureau has not laid down 'laws' of wages, profits, and rents like those of the classical economists; but it has determined approximately what fraction of the national income in successive years comes in the form of wages and salaries, entrepreneurial income, dividends, and interest, rents, and royalties. Surely these empirical findings are of fundamental importance to society, and they cannot be attained by speculative reasoning. Also the National Bureau has published a tentative estimate of the distribution of personal incomes by size. Through the Income Conference it is collaborating with other agencies in gathering and analyzing current data. About the precision of our figures there are differences of opinion, but these differences can be narrowed as data and methods improve. If what we have done and are doing is continued by ourselves and others, the time will come when economics will be a modest science on which men can rely, not for a solution of all their economic problems, but for basic determinations to which their plans should be adjusted.

Our Founders' Expectations

The National Bureau was established by men who believed that it is becoming possible to apply quantitative methods to the study of economic behavior. They realized that this field is far more difficult than the fields in which science has won its major triumphs and demonstrated its practical usefulness most conclusively. Also they recognized that investigators can not experiment at will upon society; though society can and does experiment loosely upon itself. Hence our founders did not expect quick and sweeping successes. The natural sciences as they emerged one by one from the stage of uncontrolled speculation into the stage of careful observation and experi-

ment grew by making one small discovery after another. Economics was not likely to grow faster at this turning point in its career than its elder sisters. But at the close of the first World War the materials for observing actual behavior were multiplying so rapidly, and analytic methods of extracting significant conclusions were becoming so versatile and powerful that our founders thought their staff had good prospects of rendering valuable service at once. Also they hoped that one modest success would lead to others, fostering cumulative growth of the kind that has characterized systematic research in other fields. They did not feel that they were embarking upon a reckless venture; a commonsense view of experience indicated fair chances of reasonable returns. Nor did our founders claim originality; on the contrary, they derived confidence from the fact that many sensible men were beginning to think the time ripe for more serious effort to understand what really happens in economic life.

Why We Restrict Ourselves to Research

Twenty years of effort along the lines laid down in 1920 have confirmed our faith in the social value of what the National Bureau set out to do. Our accomplishments have not been spectacular, but they have been substantial, and they afford a secure foundation on which to build in future. We have more reason than ever to believe that in trying to establish a few economic fundamentals firmly we are aiding thoughtful men of all persuasions to plan wisely. If tested knowledge is the safest and surest guide in practical affairs, our work has social meaning, however technical its character. Because the subjects to which we have given most attention are fundamental, they bear upon every current issue of the day and will be relevant to the issues of tomorrow. Because we have a program in which one part helps to check and to interpret other parts, our results grow more secure and more significant as they accumulate. On these grounds, we believe we are contributing more toward the improvement of economic organization than we could by tackling what are commonly called 'practical problems'. Nor

are we delaying the process of adapting economic organization to human needs by devoting ourselves to basic problems and encouraging others to look before they leap. On the contrary, we hold that advance will be rapid and continuous in proportion as the workings of our economic system are understood. In trying to replace speculative opinions about economic relations by conclusions resting upon evidence we are expediting progress in the most effective manner we know.

Even the self-denying rule that we shall publish no recommendations as to practical policies is a device for enhancing the social usefulness of what we do—a device that experience justifies us in thinking effective. To be serviceable, knowledge of economic relations must be accepted and acted upon. One difficulty that impedes acceptance is a wholesome skepticism regarding the objectivity and fairness of what are alleged to be scientific investigations. The more the arts of propaganda are refined, the more this skepticism is needed, and the more pervasive it becomes. We should be the last to deprecate this attitude; but we must do all we can to convince the skeptics that our results are honestly derived. One way is to publish our evidence in full. In consequence, as already noticed, our publications become so bulky, so difficult to read, and so costly that they cannot reach directly more than a few of those we seek to serve. Another device, peculiar to the National Bureau, is to select Directors who have divergent views on public policy and give each an opportunity to criticize every manuscript. That device has been of inestimable help to us in keeping our reports non-partisan and therefore worthy of credence by the public. Having such a Board we cannot expect unanimous consent from its members to many policies that individuals among us favor. But the mere fact that the National Bureau never takes sides upon controversial issues adds its bit of protection against bias in our publications and helps toward meriting and winning public confidence.

While some critics deplore the restrictions we have imposed upon ourselves, our founders were right in believing that a growing minority of people in public and in private life cherish the faith that methods of science may become as useful in the social as they have proved themselves to be in the industrial sphere. How good a science of economics can be constructed by the analysis of observations, and how useful the results will be as guides to practice, no one can yet say. But any doubt upon the spread of this faith should be dispelled by the intellectual and financial support that has been given to the National Bureau's program. The movement of which we are a part is a social movement in the fullest sense.

Needless to say, our supporters, without whose aid we could accomplish little, are a relatively small group of exceptionally thoughtful people. The endeavor to enrich knowledge has no such emotional appeal as have direct endeavors to relieve human suffering. Economic research enjoys no such prestige as research in the natural sciences. We cannot promise striking constructive results in a short time. Only those who grasp the role that systematic thinking plays in solving human problems and take long views of social evolution feel justified in granting us funds that might be spent on obviously worthy causes. In consequence, our support has come mainly from those philanthropic agencies which review requests for help in the most thorough fashion—the great foundations.

It was natural and proper that donors should put short limits upon their grants to the National Bureau. We have been on trial, and to get our lease on life renewed we have had to justify repeatedly the confidence reposed in us. At no time in our first twenty years was our income assured for more than three years in advance. This precarious existence was stimulating. Although it made hazardous our policy of persistent work upon economic fundamentals, we chose to live dangerously, carrying on as if our future were financially secure. Frequently we

started undertakings that could not yield adequate returns for five or ten years, knowing that this was the most efficient procedure in the long run and trusting that means would be forthcoming to finish what we had begun.

This bold policy has been justified by the event. But the uncertainties we have had to face have been a handicap upon systematic planning, the heaviness of which we realized most keenly when they were reduced. Last spring the Rockefeller Foundation granted the National Bureau $870,000 to be expended over ten years. While this generous gift does not meet all our requirements and we continue 'on approval', we can, for the first time, plan without acute anxiety and give our associates reasonable assurance that they can finish what they begin.

The Problem of Diffusing Our Findings

What causes us deepest concern is the small number of people with whom we can share our findings directly. To repeat what has been said twice, the full presentation of data, methods, and results makes our publications virtually unreadable by, if not inaccessible to, a large majority of people. I see no way of changing this condition. The members of our staff try to organize their material logically and to describe it simply. Our editor is a persistent stickler for lucidity and succinctness, and our Directors are critics of form as well as substance. But much close thinking goes into writing our books and some close thinking is essential to understand them. And economics threatens to become less and less intelligible to laymen; for as we push beyond the boundaries of everyday thinking we have to formulate technical concepts and sometimes to invent new terms. Yet we must maintain the strictly scientific character of our publications at whatever cost of popularity if we are to perform properly the social duty we have assumed.

One obvious remedy we have frequently considered is to prepare two versions of each report, one technical with all the evidence appended, the other popular and brief. Unfortunately, that is a task we cannot do well with our present staff, who were

selected for their abilities as investigators. They must be addicted by temperament and training to exact thinking and skeptical inquisition. They must have stern consciences that insist meticulously upon mentioning every qualification to which their conclusions are subject. Such people are congenitally unfitted for popularizing anything; if we did succeed in turning a staff member into an effective writer for the general public we might dull his keenness as an investigator. Now and then a man has both gifts; but most of the scientists who come to mind as skillful popularizers are elderly people who have ceased to do serious research. Happily only one member of our staff can be called elderly, and he would be miserable if shifted from active participation in the National Bureau's researches to the task of preparing easy summaries of its findings. And when the budget committee is requested to provide a salary for a popularizer, the members think how urgently the money is needed for one of our investigations, and develop conscientious scruples against diverting sums given primarily for research to other uses. Even our donors seem to be more interested in adding to than in popularizing knowledge. We have tried, as yet without success, to get a special grant for experiments in popular presentation.

How Our Findings Are Put to Use

This problem has confronted the natural sciences for decades. It is by way of being solved in this country partly by the rise of a special profession, represented by 'Science Service', by science writers for the daily press, and by a growing number of free lancers. The men who get their living in this way are sufficiently well trained in the more highly developed sciences to read technical papers intelligently, and to interpret the conclusions in language most people can comprehend. They are rendering a highly valuable service to both the scientific fraternity and the general public. Economists receive help from them when economic findings impress journalists as having 'news value'. Now and then luck is with us in this respect, and one of our ponderous tomes has 'timely' interest or catches

the imagination of a lively writer who can turn it to his own uses, as Harry Scherman did in the *Saturday Evening Post* with Simon Kuznets' *Commodity Flow and Capital Formation.*

The more thoughtful sections of the public we are now reaching in various ways. Physical scientists are coming to recognize the contributions of research in economics; for example, in *I Believe** Robert A. Millikan says:

"In economics and the social sciences long and elaborate statistical studies must be made in order to eliminate the disturbing factors and thus obtain the controlled conditions. We are just beginning to have available, through the National Bureau of Economic Research and other similar agencies, a large amount of such definite, dependable, statistical knowledge in economics."

The economic journals give generous attention to our publications; we might compile a long list of gratifying reviews, American and foreign. Several lines of work that we began have been taken over by the federal government as part of its current statistical service to the public, for example, estimates of national income and consumer instalment credit. Our results are cited in evidence before Congressional committees, in governmental reports, textbooks, treatises, and papers in technical and popular magazines. It is through the minds of economists in schools, colleges, governmental bureaus, and private enterprises that our findings have their largest circulation and their greatest influence.

In this respect our experience resembles that of the natural sciences. General diffusion is not the main channel through which their benefits have been conferred upon society. Popularizers can pass on a smattering of scientific results to the busy public and in so doing widen men's thoughts and inculcate respect for scientific methods. That is admirable service. Vastly more influential, however, have been the achievements of those who have applied scientific discoveries to cure ills, lighten toil, and increase production. It is mainly through physicians, engineers, and men of affairs that the cumulative increase

* Clifton Fadiman, Editor (Simon & Schuster, 1939), p. 395.

in knowledge since the scientific renaissance of the seventeenth century has changed the lives men live and the thoughts they think.

Corresponding professions of technical experts upon social affairs played no such role in the nineteenth century. Nor are the reasons far to seek. The powerful impetus of the profit motive must be credited with most industrial applications of physical, chemical, and biological discoveries. And physicians can get a living by practice. Until recently there have been few opportunities to make money by applying the work of economists, political scientists, sociologists, anthropologists, or psychologists. Teaching has been almost the only occupation open to them. To put into effect what these men recommend usually requires either philanthropic or governmental action. Few philanthropists or public officials have the versatile initiative of men on the make. They do not grasp new ideas so avidly or take such risks. Nor have many social scientists been able to support their families by selling services to individuals after the fashion of physicians. Yet had the social sciences demonstrated their practical efficiency in guiding action as forcefully as have the natural sciences, they would have been utilized in larger measure. It is fundamentally the deficiencies of economics itself to speak only of the social science with which the National Bureau is most concerned, that have prevented it from giving rise to a vigorous profession of practical experts serving individuals, business enterprises, and government.

Conditions are changing, however, and microscopes are no longer needed to descry the beginnings of such a profession. Practicing economists are now employed by a considerable number of corporations, by major labor organizations, and by some philanthropic agencies. A few independent enterprises sell economic services of various sorts to clients or subscribers. The Civil Service Commission reports that the federal government has no fewer than 6,600 economists on its payroll, while it has 5,250 lawyers and judges, and 17,702 engineers. If these practicing economists in private and public employ render valuable services, their number will increase. Among them are

many of our most helpful collaborators and many eager consumers of our products. They are perforce occupied with actual economic processes, and the prospects of turning economics into a realistic science are brightened by their daily labors. We must, I think, look forward to the growth of this professional group as the chief agents who will apply to the betterment of economic organization whatever the National Bureau and its co-workers may discover. They read and use our reports in much the same way that well-trained physicians read and use the publications of institutes of medical research.

The Focus of Our Program in the Early 1940's

Among the undertakings in which we have invested most and from which we have as yet had least proportionate returns is our study of business cycles. A beginning in this field was authorized by the Executive Committee in 1921, when our initial volumes on national income were in press. The first fruits of the new venture were the two books prepared for a committee of President Harding's Conference on Unemployment and published in 1923—*Business Cycles and Unemployment,* written by eighteen collaborators, and *Employment, Hours, and Earnings in Prosperity and Depression,* by Willford I. King. Leo Wolman's analyses of labor problems, Frederick R. Macaulay's classic on interest rates, bond yields, and security prices, Harry Jerome's *Migration and Business Cycles,* as well as Wolman's and Arthur D. Gayer's successive reports upon public construction, were originally planned as parts of the business-cycle program, and grew into monographs having independent values of their own.

Meanwhile we began to collect systematically the materials needed to determine what phenomena are characteristic of business cycles. To that end, Willard L. Thorp ransacked contemporary accounts of changes in business conditions in seventeen countries over periods ranging from thirty-five to one hundred and thirty-five years. *Business Annals,* published in 1926, summarized his results. The next year we issued *Business Cycles: The Problem and Its Setting* which utilized a review of

current business-cycle theories, a sketch of economic organization, an analysis of business indexes, and Thorp's annals to build up a working definition of business cycles and a plan for studying their manifestations intensively.

Since 1927 we have been perfecting and applying a technique for carrying out its suggestions. A small staff has been compiling time series from the United States, Great Britain, France, and Germany, representing a wide variety of economic activities, and subjecting them to a uniform analysis designed to show how each behaves with respect to business cycles. Some of our methods and results were used in J. M. Clark's *Strategic Factors in Business Cycles,* Carl Schmidt's *German Business Cycles, 1924-1933,* and several National Bureau Bulletins. Meanwhile I prepared a tentative interpretation of the findings at an early stage to determine whether the data we were gathering formed significant samples and whether our statistical technique was effective. This trial indicated how we could better our plans, as did a fuller summary completed in 1932. By that time we had attained a fairly clear idea of what was needed, and on that basis could test our technique rigorously, improve its details, fill gaps in our data, and begin writing what we hoped would be a final version of the results. Arthur F. Burns took the materials relating to construction, I took those relating to the physical production of commodities, transportation, and communication. We discovered more of significance in our standard analyses than we had foreseen, but these discoveries came through supplementing them by a large and varied body of information about the processes we were studying. This experience convinced us that to utilize the National Bureau's cyclical measurements to the full we must have help from experts who knew more than we about several of the subjects to be treated. Some of this help we could get from our own colleagues. Wolman and Mills were especially equipped for treating the cyclical behavior of wages and prices. Of our Carnegie Associates, Moses Abramovitz of Harvard University took sales and inventories, Geoffrey H. Moore of Rutgers University, agricultural output, and W. Allen Wallis of

Stanford University, other branches of production, while G. H. Evans, Jr. of Johns Hopkins began compiling data upon incorporations. In addition we have secured the cooperation of James W. Angell and Rollin F. Bennett, of Columbia University, upon currency and banking and upon foreign commerce, respectively, and of Oskar Morgenstern, of Princeton University, upon other international transactions. Each collaborator will prepare a monograph upon the cyclical behavior characteristic of the processes assigned to him. Several other assignments are required to round out the program; and we hope that Simon Kuznets and Milton Friedman will soon join the group. As advisers we are promised the help of Walter W. Stewart, Winfield W. Riefler, and Robert B. Warren, all of the Institute for Advanced Study. Mr. Burns and I will act as general coordinators and editors of the studies. Our computers and library asistants will serve the whole group. To date they have analyzed some 1,160 time series besides gathering data, compiling descriptions, and testing the representative value of the results yielded by our standard technique.

Thus a majority of our staff members, plus several specially selected associates, will spend at least the early years of this decade in utilizing the large collection of materials upon business-cycle behavior the National Bureau has been putting into comparable form. The first publication in the new series will be *Methods of Measuring Cyclical Behavior*—a monograph by Mr. Burns and myself explaining our statistical technique in detail, testing its reliability for our purposes, and pointing out its limitations. By the end of 1940 one or two of the substantive monographs may be approaching completion, but most of them will require more time. Every series used by one of our collaborators must be studied with critical care. To comprehend its characteristic cyclical behavior much must be learned about the relations of the process it represents to other parts of the economy. And we expect that in the materials we have ready every collaborator will find gaps that must be filled by our compilers and computers.

The ultimate aim of our business-cycle program is clearer

understanding of the complicated processes that bring about financial crises and industrial depressions. Such knowledge we think prerequisite to intelligent efforts to prevent, or even to mitigate appreciably, these recurring disasters. While the general treatise will rest upon the detailed factual analyses presented in the Studies of Cyclical Behavior, it is not necessary to wait for the completion of all the monographs before beginning the book we plan to call *Business Cycles: The Rhythm of Economic Activity*. Indeed, it would be an error to wait, because the best way to make sure that the monographs contain what is needed is to write a preliminary draft of the final volume at once and find the serious gaps in our knowledge while there is yet time to fill them so far as may be possible. Having prepared one treatise on business cycles nearly thirty years ago, and being tolerably familiar with the National Bureau's measurements, I feel that I know how to plan a better treatise—one that will rest upon a fuller knowledge of the facts and acquaintance with the wide range of theorizing in recent years.

Other Features of the Program

Focusing our efforts upon cyclical fluctuations will not check our other investigations: instead it will stimulate them. A study of business cycles should embrace the whole economy as truly as do estimates of national income. As members of the business-cycle group, Mills and Wolman will continue working on prices and wages, and each of our other enterprises in process or in prospect will contribute to one or more of the Studies in Cyclical Behavior. For example, our estimates of national income and its components afford an invaluable standard by which to judge the relative economic significance of the many processes the business-cycle group must analyze; the studies in consumer financing will help us appreciate the place of instalment buying in retail trade; what we can learn about the economic effects of taxation, government expenditures, and public debt will help us treat important factors in business activity that have usually been neglected.

As soon as Mr. Kuznets' estimates of national income since 1919 have been completed, Lillian Epstein will carry them back to 1879. Together with William H. Shaw's work on the flow of commodities during this period and *National Income and Capital Formation* these will give us a sixty-year panorama of national income and capital formation that will facilitate a clearer understanding of the economy. The Conference on Research in National Income and Wealth is cooperating in the tabulation of income tax returns in Delaware; assisting in the analysis of Wisconsin State income tax returns for 1929-36, already tabulated; and following the progress of the income study in Minnesota, which covers income tax returns, unemployment compensation data, and original data from a field study of urban and farm incomes. Further, the Conference is actively canvassing fourteen bodies of data concerning the distribution of income by size, cooperating with Paul Studenski of New York University in a critical survey of foreign income estimates, and continuing its analytic examination of the ways in which national income estimates can be built up and broken down for different purposes.

The last of the industrial studies of the Conference on Price Research, that on Distributional Costs and Pricing Policies at Retail, is undergoing editorial revision and review. The Conference is now passing on to analytic studies of price relationships. Under the joint auspices of the National Bureau, the Cowles Commission for Research in Economics, and the University of Chicago, Joel Dean is seeking to determine empirically the relations between costs and selling prices in several widely different enterprises ranging from retail stores to factories and railroads, both in short periods and in periods long enough to allow of increases in the size of fixed plant. Committees on Cost-Price Relations and Price Determination and on Governmental Price Regulation are functioning, and a third will probably be formed to study various policies of exercising control over prices by the joint action of business enterprises no one of which has a monopoly but all of which

wish to avoid what they believe would be destructive price cutting.

A second appropriation by the Maurice and Laura Falk Foundation for our studies of production and productivity makes it possible to extend them to several other industries for which fairly reliable and complete statistics are available —agriculture, mining, public utilities, and construction. Solomon Fabricant's manuscript of the first volume on production in manufacturing industries, 1899-1937, is being critically examined by members of the staff. He is writing a companion volume on the productivity of labor and management in manufacturing. Closely related to the projected work on farming are the studies carried on by the National Bureau in cooperation with the Department of Agriculture, an outgrowth of studies begun under a grant by the Falk Foundation.

For his examination of wage rates Mr. Wolman has found rich materials in sources that have been little utilized, particularly the Aldrich and Weeks reports. Some of the series there presented run back to 1840 and many to 1860. Data collected by the Department of Labor continue the record through later years, though there are serious gaps, especially in 1903-20, some of which may be difficult to fill. As Mr. Wolman fits the prices of labor into the business-cycle frame their influence upon commodity prices and production will be brought out.

The activities of our Research Associates are so integrated with the National Bureau's program that they must be mentioned in several connections. The primary aim of these appointments is not to enlarge our staff, but to give young scholars of high promise opportunities to devote themselves for a year exclusively to research in close association with more experienced men. Typically the appointees are junior members of university departments of economics. As explained in our annual report for 1937, such men are commonly given

heavy teaching loads that leave them little time and less energy for constructive thinking at the stage of life when they are most likely to make valuable discoveries. By enabling the National Bureau to select a few Research Associates each year the Carnegie Corporation is meeting a need that should be generally recognized by University authorities.

The financial research staff, under R. A. Young's direction, is completing an investigation of consumer instalment financing in its many phases. *Personal Finance Companies and their Credit Practices,* the first volume of the series, was published in January. Later issues will cover the four other leading types of credit agencies, total consumer credit, the characteristics of its users, risk factors, effects of legislation upon it, and its role in economic fluctuations. This program, the costs of which are being met by grants from the Board of Trustees of the Banking Research Fund of the Association of Reserve City Bankers and from the Rockefeller Foundation, centers at 'Hillside', which the Carnegie Corporation helps us maintain.

The investigation of the ratings, prices, yields, and terms of issue of corporate bonds, 1900-38, is proceeding with the active cooperation of several federal and business agencies. The clerical labor, and hence most of the cost, is provided by the Work Projects Administration. The forms and methods to be used have been tested on a sample of two hundred and fifty bonds, and the titles of all bonds noted in the railway, public utility, and industrial manuals since 1900 have been indexed. If an adequate number of competent clerks are available and the turnover rate is not too high, progress should be steady if not rapid during 1940.

It is generally known that during the last forty years business demand for credit has changed in character and declined relative to total transactions. But it is not known whether these changes are permanent or transitory, and opinions concerning their causes differ widely. One explanation ascribes them mainly to difficulties created by the World War; a second,

to industrial technology; a third, to financial policies adopted by business enterprises; a fourth, to federal monetary and fiscal policies. To determine and evaluate the fundamental character of shifts in the financial requirements of American business is the broad objective of a third project recently started under the financial research program.

The Exploratory Committee on Research in Fiscal Policy, appointed in 1937 on recommendation of the Universities-National Bureau Committee, has been raised to the status of a Conference and enlarged. Its membership, like that of our other Conferences, constitutes a balanced representation of divergent viewpoints. If the experience of the National Bureau's Board of Directors affords a precedent, thoughtful critics of recent tax policies, thoughtful advocates of these measures, and competent students who have not committed themselves to sweeping conclusions can work harmoniously even in this highly controversial field. Their differences of opinion should prevent the slurring over of any significant issue, and give confidence to the technical staff, to the Directors, and finally to the general public that we treat fiscal policy in a spirit of impartiality and thoroughness.

Through carefully chosen planning committees, the Conference has outlined two basic inquiries, and is experimenting with a third. The first concerns the nature of and the reasons for the divergencies between taxable net income and net income as determined by the various methods accepted by accountants for preparing reports to stockholders and to the public. The second project covers the relation of public borrowing to commercial and central banking, including such matters as the floating and management of government securities and their distribution among different types of holders. The third is a classification of federal expenditures by significant economic categories. How rapidly the Conference can carry out these plans will depend upon the securing of adequate funds.

The Conferences on research in national income and wealth, prices, and fiscal policy were formed at the suggestion of the Universities-National Bureau Committee, and that on financial research has been adopted by it. Each is a collaborating group of specialists chosen for their varied experience in and their knowledge of the several fields. Numerous governmental bureaus, professional firms, business enterprises, philanthropic foundations, and universities are represented. One of our pleasantest experiences is the cordial spirit in which organizations of all these types and individuals carrying heavy responsibilities welcome invitations to share in our researches. Their aid begins with the crucially important stage of planning and continues through the tasks of gathering information and making preliminary analyses to the critical examination and revision of the final reports. In these undertakings the National Bureau becomes primarily an agency through which the intelligence of groups far larger and more versatile than it could employ is focused upon problems with which they are intimately acquainted. This method of organizing economic research enhances greatly what can be accomplished with a given fund; for a large part of the time and thought bestowed upon the work is contributed out of professional interest and public spirit. So generous and so genuine is this co-operation that it seems almost impertinent to thank our many collaborators for serving causes they have at heart as much as we.

How numerous and distinguished are these collaborators is partly revealed by Part II which is compiled from statements prepared by the chiefs of staff of our several sections and Conferences. No argument is needed to demonstrate that each undertaking contributes toward a better understanding of the country's economic organization and its workings, and hence toward performance of the National Bureau's social function.

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