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CHAPTER 1

INTRODUCTION

I. THE QUESTIONS TO BE ANSWERED

What is the aggregate income of the American people?

How much does that income vary from year to year?

What part of the changes is due to fluctuations in prices and what part to fluctuations in the production of goods?

How is the aggregate income divided among individuals?

What proportion of the whole income goes to wage-earners and salaried employees?

How does per capita income in the United States compare with that in other countries?

These questions mark out the field in which the National Bureau of Economic Research has made its first investigation. The present volume summarizes the answers which the Bureau's staff has been able to obtain by more than a year's work. The second volume of the report shows in detail

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the sources from which the data for the answers have been drawn, the methods used by the staff, and the margins of doubt by which their results are bordered. On these topics some general statements are presented here, but the reader who wishes to form his own opinion of the investigation and the results must consult the second volume. He will find there much information about particular industries which does not come into this Summary at all.

II. MATERIAL AND METHODS

Only one country in the world—Australia—has ever taken a census of incomes. In other countries what is known about the size of the national income and the mode of its distribution rests upon estimates. These estimates can only be made by dovetailing together data that are diverse in form, content, scope, date, and source; bulky at some points, scanty at others, and generally requiring adjustment of some sort before they are fit for use.

Among the important bodies of data that can be used in estimating the income of the United States in recent years are the Internal Revenue Bureau's tables of personal and corporate incomes, many records of wages per hour, day or week, scattered reports on the salaries of teachers and clergymen

and the annual earnings of physicians and engineers, a few investigations into the incomes of farmers, the rent surveys of many towns made by the American Telephone & Telegraph Company, collections of family budgets, the Census statistics of occupations, the quinquennial Census of Manufactures, the Department of Agriculture's annual estimates of the value of the crops, the Geological Survey's data on mineral products, the Interstate Commerce Commission's reports on transportation, monographs on special industries investigated by the Tariff and Federal Trade Commissions, various state and municipal documents dealing with government expenditures, production, wages and the like, statistics compiled by the national associations or service bureaus of leading industries, and the files of technical journals. From all of these sources and from others too numerous to list materials must be collected, compared, criticized and fitted together.

One of the most serious difficulties in working with these data is the difficulty of definition. Precisely what is the National Income? Is it money, or commodities and services, or satisfactions? Is the National Income the sum of the incomes of individuals, or may an individual have personal income which is not income to the nation? Ought

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the undistributed incomes of business enterprises to be added to the incomes of individuals to get the total? Ought taxes paid by individuals to be deducted from their incomes? What part of the selling value of an industry's output is produced by the industry itself? What individual incomes are merely parts of other incomes? Are there negative incomes to be deducted from the sum of positive incomes? It is hard enough to tell accurately what is the income of a single family or business, as most people who have struggled with income-tax blanks will testify. It is harder still to frame a definition which will cover both individual and National Income. And it is hardest of all to frame a definition which will include both of these concepts and at the same time enable one to use the exceedingly miscellaneous data from which an estimate of the aggregate must be made.

Fresh complications are introduced by the factor of time, complications which have been magnified by the recent fluctuations in prices. Many of the most valuable pieces of evidence refer to some one year or to two or more years separated by intervals that vary in length. It is necessary to utilize much of this evidence and desirable to utilize all. Yet complete data are not to be had for any one year; indeed, every year has its special

treasures and its deplorable gaps. To make an acceptable estimate of the National Income for any recent year it is therefore necessary to make an estimate for every recent year and to check these estimates against each other with due allowances for changes in the level of prices. What allowances are "due" on this score is itself a difficult problem.

Clearly, no care taken in working up such data as are now available can guarantee precise results. The task of putting a figure on the National Income is more like the task of valuing a railway system than like the task of drawing up its profit and loss statement. The work must be done in a broad style. It is estimating, rather than enumerating or measuring. In his recent summary of the estimates of the national incomes of the chief powers, Sir Josiah Stamp put in his highest grade those estimates "not likely to be inaccurate to a greater extent than 10 per cent."¹ Judged by this standard, the American estimates for the last two or three years would belong in the highest grade if the errors were not likely to exceed some six billions of dollars.

The estimates, however, need not be uncontrolled. They can, if the work is properly planned

¹See *Journal of the Royal Statistical Society*, July, 1919, pp. 444-491.

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in advance, be safeguarded in considerable measure by a system of cross-checking. As will presently be explained, two independent estimates of the total National Income can be made by distinct methods applied mainly to different collections of data. These estimates can be used to test each other. More than that, most of the large items that enter into each estimate can be arrived at in two or more ways. In the present investigation much attention has been given to devising and applying such tests of the partial results, a branch of the work in which invaluable help has been received from correspondents who have scrutinized our tentative results with expert eyes. Such precautions, to repeat, do not ensure a high degree of accuracy; but they do guard against gross errors.

We have not leaned heavily upon the statistician's fond hope that errors made by the way will cancel each other in the end. Doubtless they do so to some extent and our totals are the better for that fact; but we have tried to make the estimate for each item considered by itself as nearly correct as our data, time, and means have permitted. Of course the estimated errors of our figures vary widely from item to item with the quantity and quality of the underlying statistics. Therefore,

we have been careful to indicate the degree of confidence we feel in the various results. Some readers of the second volume will think that we have been meticulous in our treatment of minor factors. It is true that in very many of the items figures several times too large or too small would not appreciably affect the final aggregates, which run in tens of billions of dollars. But that is another comfort of which we prefer to make sparing use. Many of these minor items have an interest quite independent of their contribution to the total, and if mistakes are found even in the smallest of them by men who have special knowledge of the facts, we shall be grateful for their help in rectifying our estimates.

It is true also that many of the important uses which an estimate of the National Income and its distribution serves, are served almost as well by a fair approximation as by an exact measurement, could such a measurement be made. We have treated that consideration, however, not as an excuse for slighting details, but as a spur to check the validity of our broad results as carefully as possible. These broad results are the matters of chief concern. It is necessary in many of our computations to adopt definite figures of two or three digits to express sub-totals and grand totals.

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But we attach no importance to the third digits, except as an aid in computation, and in the great majority of cases, including the grand aggregates of National Income, we regard the second digits as subject to a wide margin of error. The statements in which we have most confidence and to which we attach most importance are put in the form of ranges within which the National Income and its major constituents probably fall.

Finally, we have profited much by the work done in this difficult field by our predecessors in America and in other countries, pioneers who achieved valuable results despite their slender resources and scanty data. Happily, economic statistics is a progressive field, and the latest comers should be able to improve upon the results of earlier workers. We believe that the results presented in this report do constitute an advance beyond earlier American work. But at most they are merely the best approximations we can frame now from the current data. We do not regard the tables in this report as final. On the contrary, we hope to revise our estimates as fresh data become available and as better analytic methods are devised. In this process of constructive criticism and revision of the figures we cordially invite every one interested to share.

III. THE TWO WAYS OF ESTIMATING THE NATIONAL INCOME

The collections of data listed in the preceding section as available for estimating the National Income are of two kinds. One kind shows income received—the income-tax returns, reports on wages and salaries, investigations of the profits of farmers, and the like. The second kind shows income produced—the statistics of coal and metals mined, lumber cut, crops grown, raw materials transported or manufactured, and the like.

These two kinds of sources cannot both be completely utilized in making a single estimate of the National Income. For how can one combine, for example, the statistics of personal incomes over \$2000 compiled by the Internal Revenue Bureau with the statistics of “value added by manufacture” reported by the Census Bureau? Then which set of sources should be used—the set that shows income received, or the set that shows income produced? It is hard to say in advance which set will yield the more trustworthy results, and, in view of the margin of uncertainty to which the best estimates in this field are subject, one is exceedingly reluctant to relinquish the use of any body of data from which help can be had.

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The Bureau's solution of this problem is to use both sets of data and to make two independent estimates of the National Income for each year. One estimate, called the "Estimate by Sources of Production," is derived from a study of the separate industrial fields in which the income originates. The second estimate, called the "Estimate by Incomes Received," utilizes the data which show the income received by individuals, plus the income received by business enterprises but not distributed to their owners.

To ensure their independence, these two estimates were made by different members of the staff. Mr. King had charge of the Estimate by Sources of Production and Mr. Knauth of the Estimate by Incomes Received. Not until the last large items in the more laborious estimate had been figured was it possible to tell whether the two parallel investigations were leading up to similar or to widely divergent results. Then it was found that the maximum discrepancy in any year between the two sets of preliminary totals was 7.0 per cent. After the few items in the two estimates which could properly be compared were set against each other, each estimate was critically revised. The object of the revision was not to force the two estimates into agreement, but to

make each considered by itself as perfect as the staff could make it on the basis of the available data. Some of the changes introduced in revision tended to bring the two series closer together, while others tended to force them further apart.

In reporting the outcome of the Bureau's work it is best to begin with the general results and then to take up details. First, the two estimates of the aggregate National Income will be presented in their final form. Next, the more important items of which each estimate is made up will be shown. This exhibit will raise in concrete form the problem whether an estimate of the National Income by sources of production theoretically ought to yield the same results as an estimate by incomes received. Discussion of that problem will pave the way for a consideration of the margin of error in both estimates, of the most probable values of the National Income in the years covered, and of how this income compares with that of other countries. Then will come an estimate of what the enormously inflated money incomes of the war years would amount to if reduced to dollars of constant purchasing power. Last but most interesting of all, we shall consider the way in which the National Income is distributed among individuals.