

This PDF is a selection from a published volume from the National Bureau of Economic Research

Volume Title: Economic Progress and Economic Change

Volume Author/Editor: Solomon Fabricant

Volume Publisher: NBER

Volume ISBN:

Volume URL: <http://www.nber.org/books/annu54-1>

Publication Date: 1943

Chapter Title: Economic Progress and Economic Change

Chapter Authors: Solomon Fabricant

Chapter URL: <http://www.nber.org/chapters/c12288>

Chapter pages in book: (1 - 97)

Copy 1

NATIONAL BUREAU OF ECONOMIC RESEARCH
Library

Please do not remove from library

Economic Progress and Economic Change

SOLOMON FABRICANT

Director of Research

34th ANNUAL REPORT

NATIONAL BUREAU
OF ECONOMIC RESEARCH, INC.

Economic Progress and Economic Change

SOLOMON FABRICANT

Director of Research

THIRTY-FOURTH ANNUAL REPORT

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.

261 MADISON AVENUE, NEW YORK 16, N.Y.

MAY 1954

COPYRIGHT, 1954, BY
NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.
261 MADISON AVENUE, NEW YORK 16, N.Y.

ALL RIGHTS RESERVED

TYPOGRAPHY BY OSCAR LEVENTHAL, INC.
PRINTING BY BASSO PRINTING CORPORATION

OFFICERS, 1954

C. C. Balderston, *Chairman*
Percival F. Brundage, *President*
Gottfried Haberler, *Vice President*
George B. Roberts, *Treasurer*
W. J. Carson, *Executive Director*

DIRECTORS AT LARGE

Donald R. Belcher, *Assistant Director, Bureau of the Budget*
Wallace J. Campbell, *Director, Cooperative League of the USA*
Solomon Fabricant, *New York University*
Albert J. Hettinger, Jr., *Lazard Frères and Company*
Oswald W. Knauth, *Beaufort, South Carolina*
H. W. Laidler, *Executive Director, League for Industrial Democracy*
Shepard Morgan, *Norfolk, Connecticut*
C. Reinold Noyes, *Princeton, New Jersey*
George B. Roberts, *Vice President, The National City Bank of New York*
Beardsley Ruml, *New York City*
Harry Scherman, *Chairman, Book-of-the-Month Club*
George Soule, *Bennington College*
N. I. Stone, *Consulting Economist*
J. Raymond Walsh, *New York City*
Leo Wolman, *Columbia University*
Theodore O. Yntema, *Vice President-Finance, Ford Motor Company*

DIRECTORS BY UNIVERSITY APPOINTMENT

E. Wight Bakke, *Yale*
C. C. Balderston, *Pennsylvania*
Arthur F. Burns, *Columbia*
Melvin G. de Chazeau, *Cornell*
G. A. Elliott, *Toronto*
Frank W. Fetter, *Northwestern*
H. M. Groves, *Wisconsin*
Gottfried Haberler, *Harvard*
Clarence Heer, *North Carolina*
R. L. Kozelka, *Minnesota*
T. W. Schultz, *Chicago*
Jacob Viner, *Princeton*

DIRECTORS APPOINTED BY OTHER ORGANIZATIONS

Percival F. Brundage, *American Institute of Accountants*
S. H. Ruttenberg, *Congress of Industrial Organizations*
Murray Shields, *American Management Association*
Boris Shishkin, *American Federation of Labor*
W. Allen Wallis, *American Statistical Association*
Frederick V. Waugh, *American Farm Economic Association*
John H. Williams, *American Economic Association*
Harold F. Williamson, *Economic History Association*

RESEARCH STAFF

Solomon Fabricant, *Director of Research*
Geoffrey H. Moore, *Associate Director of Research*
Moses Abramovitz
Harold Barger
Morris A. Copeland
David Durand
Milton Friedman
Raymond W. Goldsmith
Millard Hastay
W. Braddock Hickman
F. F. Hill
Daniel M. Holland
Herbert B. Woolley
Thor Hultgren
John W. Kendrick
Simon Kuznets
Clarence D. Long
Ruth P. Mack
Ilse Mintz
Raymond J. Saulnier
Lawrence H. Seltzer
George J. Stigler
Leo Wolman

CONTENTS

| | PAGE |
|--|------|
| PART ONE: ECONOMIC PROGRESS AND ECONOMIC CHANGE | 3 |
| PART TWO: ACTIVITIES DURING 1953 | |
| New Studies | 19 |
| Publications during the Year | 21 |
| Forthcoming Publications | 25 |
| Conferences and Related Activities | 26 |
| Conference on Research in Income and Wealth | 27 |
| Special Conferences | 28 |
| Directors and Research Staff | 31 |
| Relocation of National Bureau Offices | 31 |
| Research in Process | 32 |
| PART THREE: STAFF REPORTS | |
| 1. Business Cycles | 33 |
| Statistical Indicators | 33 |
| Consumption and Production of Consumer Goods | 36 |
| Costs and Profits | 38 |
| Money and Banking | 39 |
| Foreign Trade | 42 |
| War Cycles | 44 |
| Long Cycles | 45 |
| Other Studies | 47 |
| 2. National Income and Capital Formation | 48 |
| Capital Formation and Financing in the United States | 48 |
| Agriculture | 48 |
| Mining | 49 |
| Transportation and Public Utilities | 51 |
| Government | 52 |
| Financial Intermediaries | 53 |
| General Studies | 54 |
| Other Studies | 55 |

| | |
|--|----|
| 3. Wages, Employment, and Productivity | 55 |
| Trends in Wages and Productivity in the United States | 55 |
| Wages | 55 |
| Productivity | 56 |
| Trends and Cycles in German Wages | 57 |
| Employment Trends in the Service Industries | 57 |
| Employment and Productivity in Trade | 60 |
| Other Studies | 61 |
| 4. Banking and Finance | 61 |
| Federal Lending, Loan Insurance, and Loan Guarantees | 61 |
| Corporate Bond Research | 62 |
| Bank Capital Problems | 64 |
| Exploratory Project on Research Needs in the Capital and Securities Markets | 65 |
| Study of Unincorporated Business | 66 |
| Other Studies | 68 |
| 5. Government Revenue, Expenditure, and Debt | 69 |
| The Individual Income Tax | 69 |
| The Tax Treatment of Stockholders | 72 |
| Federal Debt Management since 1860 | 74 |
| National Debt and Fiscal Operations in Four Countries since 1920 | 75 |
| Other Studies | 76 |
| 6. International Economic Relations and Foreign Economies | 76 |
| Structure of World Trade and Payments | 76 |
| Indexes of American Foreign Trade | 79 |
| Canada's Balance of Payments since 1868 | 79 |
| Growth of Governmental Economic Activity | 80 |
| Industrial Concentration in Canada | 82 |
| Other Studies | 83 |

Part One

ECONOMIC PROGRESS AND ECONOMIC CHANGE

The National Bureau was founded, we have been told by N. I. Stone, to answer questions like the one that brought him and Malcolm Rorty together. It was "a most important question which deeply affects the lives of every man, woman, and child in this country," namely, "what part of the national income goes to each element of society?"¹ The Committee on the Distribution of Income, to which their meeting led, became the National Bureau of Economic Research, and the first task undertaken by the new organization was a study of the nation's income.

Under Wesley Mitchell's leadership the staff's perspectives were wide; their question was therefore posed broadly. They wished to know not only the distribution of income "among individuals and families, as well as by basic sources," but also its change from year to year and "whether this income is increasing as rapidly as the population." That initial investigation covered no more than the decade 1909-1918, yet it was enough to suggest that—averaging good years with bad—real national income was growing significantly more rapidly than population and that the increase was being widely distributed among the people.

So with its first report the National Bureau began to extend our knowledge of the economic progress of the United States, and much of the work that followed was aimed directly at this question. The past year has been no exception: it has seen the first fruits of a major study in this area and the beginning of another. These developments in our research program prompt me to highlight what our work suggests of the rate and nature of this country's economic progress. This emphasis on the long-term growth is especially desirable when so much of the public's attention is being absorbed by the problem of stability.

¹ *Twenty-Fifth Annual Report of the National Bureau of Economic Research* (1945), p. 6.

This report was presented at the annual meeting of the Board of Directors of the National Bureau, held March 1, 1954. I am greatly indebted to my colleagues for helpful suggestions on Part One, and to Geoffrey H. Moore for advice and assistance on Parts Two and Three as well.

I

The National Bureau's first estimates of real national income have been extended by King, and then improved and further extended by Kuznets and his collaborators. They now cover some eight decades. During this period, long enough to leave little doubt about the trend, yet not much longer than the present span of a single lifetime, the growth of national income in relation to population has been substantial indeed. The average per capita volume of goods consumed or added to the tangible capital stock of the nation has been multiplied over fourfold.² Were we to include in national income the goods and services devoted to the nation's defense, the rise would be greater still.

That the national income has been growing even more rapidly than the rapidly increasing population of the United States is a fact on the truth of which one should no longer need to dwell. But the underlying upward trend of income per capita has often been obscured by the sharp rises and declines in national income associated with general fluctuations in the state of business. For this reason it has sometimes failed to attract contemporary attention. Even a better than fourfold increase in income per capita over a period spanning only two or three generations, such as we have enjoyed, means an annual average rate of long-term growth of slightly under 2 per cent per annum — 1.9 per cent, to be more exact than one perhaps should. This rate is to be compared with — it is the net difference between — expansions averaging about 6.5 per cent per annum and contractions averaging about 4.5 per cent per annum.³

On a few occasions — we all remember what happened in 1937 — a rise in per capita income has been brought to a halt before the preceding peak level was regained. This observation points to another, less familiar and less well-established aspect of the growth of income per capita. In addition to the shorter swings associated with business cycles, completed usually well within a decade and always marked by absolute rises and falls, our economic advance appears to have been characterized by longer swings, averaging about twenty years in length, and marked by a shift back and forth between relatively high and relatively low (though usually still positive) average rates of growth. Burns detected signs of this phenomenon in his study of production trends: he called it the

² Except where otherwise stated, change over the past eight decades means change between the average of 1869–1873 and the average of 1949–1953, or the nearest approximation to it. All money figures are deflated, that is, expressed in constant prices.

³ These averages of changes between calendar years understate the degree of fluctuation. Annual rates of change between monthly or even quarterly peaks and troughs would be bigger.

“trend cycle.” Kuznets has been studying it with the aid of his newly developed long series of annual estimates on national income and its components; and Hastay has been critically examining Kuznets' tentative findings to see whether these long swings are merely the reflection of a haphazard succession of mild and severe business cycles.

Whatever the outcome of these investigations, it is clear that income per capita has moved forward with considerable irregularity. This being the case, it is not easy to answer a question frequently asked about the long-term rate of growth of income per capita: Has there been any tendency for the rate of growth of income per capita to diminish? The record of the past eighty years provides little secure evidence that this rate has tended to decline systematically from a level significantly above the full-period average of 1.9 per cent per annum to one significantly below it. It is true that our records for the period immediately following the Civil War indicate a rate of growth higher than any shown later, and the severe depression of the 1930's brought the rate of growth to a point below that of any period before. The early high rate and the recent low rate tempt the eye studying the chart to see retardation in the long-term rate of growth. But the early records are least satisfactory (we know that the 1869 census, crucial in estimating the rate for the 1870's, suffered from undercoverage); since the 1930's the rate has been high; and during the half-century between about 1880 and 1930 no systematic tendency to decline was at all evident.

Had we asked this question in 1939 — as some did — and had our information extended only to 1939 — as theirs did — we might have concluded that the rate of growth in national income per capita had fallen with the years. But the evidence now available is less than convincing.

If retardation in the rate of growth of per capita income has occurred, it has been so slight as to be undetectable in the presence of the fluctuations to which I have referred. This means that in the record to date we can find no clear signs that the forces pushing our national level of living upward have lost their potency.

Conclusions of this sort are not easily assimilated even by professional economists. Let me therefore restate them in another form. The average family in the United States had an income of somewhat over \$5,000 in 1953. If we progress at as high and consistent a rate in the next eighty years as in the last, our grandchildren or great-grandchildren will have average family incomes of about \$25,000 of 1953 purchasing power — a level now attained only by the top 1 per cent or so of the nation's families.

A rate of expansion in income per capita of 1.9 per cent per annum sustained over eight decades would, I suspect, find little precedent or parallel in any other age or nation. Of course, the destructive effects of the two world wars have cut average rates of growth in many nations. But even in the peacetime records — such as they are — of these and other countries it is hard to find sustained rates of increase in income per capita comparable to ours.

II

How did this remarkable growth in income per person come about?

We think immediately of two proximate factors: the increase, per capita, in economic resources put into production and the increase in output per unit of resources, that is, efficiency. Of course, it is difficult to distinguish between the two. Apart from chance, a country's output always depends on what its people put into production — on the hours and the energy, the tangible machines and the intangible knowledge and skill, the enterprise and the prudence, the habits of independence and of cooperation, which they bring to their work. But something may be learned if we define input narrowly as hours of labor and the services of tangible capital, place the other items under the rubric of efficiency, and examine long-term changes in each of these major components into which income per capita may be resolved. We begin with input.

Those who stress the role of savings in our economic growth are right to do so, for they point to the dominant factor in the increase of our material resources. The nation's tangible wealth (net of depreciation, depletion, and obsolescence reserves and adjusted for price changes) has been multiplied several times more rapidly over the past eight decades than our population. To judge from estimates prepared by Kuznets and Goldsmith, the per capita stock of reproducible goods — not the whole of our tangible wealth, but certainly the larger part of it — has in recent years been over four times its size in the 1870's.⁴ This accumulation of savings has greatly strengthened our power to produce: it has provided us with more plant and equipment of familiar types and it has enabled us to make quickly many improvements in plant and equipment.

It is a challenging fact that most of the rise in tangible capital per

⁴ The estimates cover structures (including housing), equipment, inventories, and net foreign assets; they exclude consumers' equipment (such as automobiles), military assets, and land and subsoil assets. Consumers' equipment and military assets have undoubtedly grown more rapidly than other reproducible tangible wealth; land and subsoil assets have grown less rapidly.

person came in the period before the Great Depression. Between the 1870's and the 1920's, capital per person rose at a fairly consistent average annual rate of about 2.5 per cent. During the depression, however, and after a brief interruption, again during World War II, it fell while population continued to rise. Since the war capital per person has grown rapidly, but this recent acceleration has not yet done much more than offset the decline during the preceding fifteen years: on net balance, per capita real tangible reproducible capital today is only moderately above the pre-depression high.⁵

Taking the eight decades as a whole, it is clear that the stock of tangible capital resources has risen in relation to population at about the same rate as income per capita. If we assume that the trends in the stock of capital and in its productive services have been parallel — we classify increases in the "skill" of a machine per dollar of cost with increase in efficiency, rather than increase in resource input — we may conclude that tangible capital input per capita has grown on the average at something close to 2 per cent per annum.⁶

In addition to capital there is manpower. Indeed, manpower is the major resource at the disposal of any nation. Change — or lack of change — in the average amount of work done by each member of the population will therefore greatly influence the trend of total input per capita.

Two opposing trends have influenced the amount of work done per capita. On the one hand, as Wolman, Barger, and others tell us, hours have generally fallen, perhaps more rapidly in recent than in earlier decades. This reduction is one of the fruits of economic advance, and may have contributed to it by raising efficiency. On the other hand, Long's studies indicate that a growing proportion of the population has entered the labor force, probably at a somewhat more rapid pace in earlier than in recent decades.⁷ The net result seems to have been a modest increase — about 10 per cent — in annual hours of work per

⁵ If we add consumers' equipment and the military equipment held by the federal government, the recent increase is much more substantial, though even this inclusion does not lift capital per person to the point that would have been attained had the earlier long-term rate of growth continued.

⁶ The rate would probably be lower — down to perhaps 1.5 per cent — if we included all the omitted items.

⁷ The rise has come because persons of working age have come to form a larger percentage of the population. The percentage of the population of working age counted as in the labor force has been stable: women have come to participate in commercial work on an expanding scale while the participation of young and old has fallen.

head of the population during the first four decades; followed, as Mills pointed out in his recent Occasional Paper, by an equal or perhaps somewhat larger decline during the second four decades. If our data were better — our information on hours is sketchy, and we know still less of the rate of employment, working conditions, and other relevant dimensions of the average job — we could determine the shape and slope of the trend with more precision. But for our present purpose it is unnecessary to press the data. Labor input per capita has on net balance changed surprisingly little during the past eight decades. Certainly compared with the great increase in capital input per person, any change in labor input per person has been slight.

With labor per person moving about a slightly rising and then slightly falling trend, and capital per person about a sharply rising and then roughly horizontal trend — with the turning point much later than that in labor — we cannot decide how the combined input of the two factors of production has moved without an explicit calculation. We may venture to measure the change in the combination by weighting the two main classes of input by their respective market values, in a manner parallel to that followed in combining diverse types of goods to reach the index of national output.⁸ Following this procedure, it seems that total input — services of both labor and capital — rose moderately in relation to population during the first four decades and fell slightly during the second four decades. Over the eight-decade period as a whole, there appears to have been a net rise of no more than a fifth or sixth. The combination moves more like labor alone than like capital alone, because labor is weighted about three times as heavily as capital.

III

If national income per capita has been multiplied over fourfold during the past eight decades and total input per capita has risen by less than a fifth, it follows that the major source of our economic advance has been a vastly improved efficiency. With a given “dose” of labor and tangible capital we have learned to produce a larger and larger volume of goods for consumption and investment: output per unit of input has risen somewhat under fourfold, or about 1.7 per cent a year on the average.

⁸ As we are interested in comparing input with output, the same weight-base should be used for the former as the latter, that is, 1929. Use of an earlier base would make the combined input go up faster, but presumably it would make combined output go up faster also — whether equally is uncertain.

Like national income per capita, to which it contributed so much, national efficiency seems to have moved forward irregularly. Some of the erratic changes from one year to another are probably due to faults in our statistics, since small errors in the output and input indexes may mean large errors in the ratio of the two. Even the fluctuations that occur in sympathy with general changes in business some would feel to be exaggerated by the use of capital assets as the index of capital input and, for some periods, nominal rather than actual hours of work. During periods of sharp contraction in business, when national product per unit of *available* resources also falls sharply, output per unit of employed resources contracts to a lesser extent, and sometimes continues to rise. But it would be a mistake to define efficiency so narrowly. Unemployment and idle equipment during depression surely mean inefficient use of resources. On the other hand, even in contraction and depression, when this source of inefficiency is dominant, the forces of progress are making themselves felt. Information for a fair number of individual industries indicates that output per man-hour worked rose even during the great contraction following 1929. And the displacement of old by new products and methods has gone on in bad as well as good times: Hultgren finds that motor transport tended to displace railroad transport in Britain and the United States most rapidly during contraction.⁹

It seems safe to say that few periods of any length have failed to see a significant rise in national efficiency. Further, the data suggest (and again like the rise in national income per capita) that the rise in efficiency has not tended to slow down. The average annual rate of increase of about 1.7 per cent characteristic of the eight-decade period as a whole appears to be representative of the trend of national efficiency during each of the several major parts of that period.¹⁰ Improvement in national efficiency has been a remarkably persistent process.

This trend in national efficiency may be viewed as the average of the separate trends of output per unit of labor and output per unit of capital. The trend of output in relation to labor input has been pretty

⁹ The role of railroad rate regulation needs to be disentangled, however, as Moore points out in his introduction to Hultgren's recent Occasional Paper on British transport.

¹⁰ The data clearly indicate some retardation in growth of total input per capita. As has been noted earlier, the data are not nearly as clear about real income per capita. If real income per capita has in fact grown at a constant rate, then real income per unit of input has grown at an accelerating rate; if there has been slight retardation in growth of income per capita, then real income per unit of input has grown either at a constant or at a slightly accelerating rate. But the statement in the text seems all that can be said with confidence.

consistently upward at a more rapid pace than this average; and the trend of output per unit of capital has been horizontal or even downward during most of the period. Yet all too frequently we measure the rise in the nation's productive efficiency by comparing growth in national product with growth in labor input alone. When capital per worker increases, this method of measurement leads to some overstatement. As we have just noted, output per unit of labor and capital combined — "total productivity" — has risen somewhat less rapidly than would be indicated by output per man-hour, that is, "labor productivity," alone.

This exclusive concentration on labor input, and use of the terminology associated with it, has the further, and perhaps more serious, disadvantage of suggesting to many people that labor's efficiency has increased by an amount equal to the rise in output per man-hour, and that the indicated rise in labor's efficiency is responsible for the advance in the nation's economic level. Of course, output per man-hour should imply nothing of the sort. A rise in output per man-hour often reflects increased plant and equipment per worker as well as improved labor efficiency. It reflects also the result of a cooperative process that engages the white-collar worker and management, as well as the wage earner; it involves the sharing of risks by everyone who seeks to earn his daily bread and improve himself economically in a changing world, whether he be the entrepreneur, the investor, or the young man who commits himself to his chosen occupation.¹¹

IV

Not only has efficiency tended to rise persistently; it has also tended to rise in all corners of our economy.

We found the trend of output per man-hour to have been upward in virtually every industry for which estimates had been prepared by Mills and others in the National Bureau's studies of productivity. Even in trade, of which Barger has just completed his study, output per man-hour appears to have risen, though less rapidly than in most commodity-producing industries. The few apparent exceptions to the rule of rising

¹¹ The entrant into a trade, profession, or business bears not only the burden of uncertainty but also the cost of an investment in education and training. This type of capital, substantial even eighty years ago, has grown still greater. Yet we count an hour of a man's labor today as equal to an hour of a man's labor eighty years ago; we fail to include in input the services of intangible capital invested in education, training, and good health. Because this investment per worker has increased, there is point to the claim that labor's efficiency has grown; however, output per man-hour is no measure of its growth.

output per man-hour are for the most part industries in which substantial product improvement has been inadequately recorded by our measures of output. Output per man, historically available for a more comprehensive list of industries, has risen in the great majority, and the reductions found in some industries are usually less than the reductions in average hours of work.

We need to look also at the changing relation between output and input other than labor before we can be sure that rise in efficiency has been widespread. The information gathered by Kuznets and his associates in our study of capital formation and financing throws new light on trends in output per unit of capital. Kendrick expects to combine this information with the information on output per unit of labor and thereby provide us with fairer measures of efficiency change in individual industries. Preliminary calculations suggest — as we should expect, knowing that labor is the major factor of production in most industries — that these will not usually differ greatly from output per unit of labor alone, though in most cases their rate of growth will be somewhat lower.

In some degree offsetting this upward bias in output per unit of labor as a measure of efficiency is another factor, often ignored. This is the saving made as materials, fuel, supplies, and other items are used more effectively. For the economy at large, these intermediate products are taken into account; national product is measured on a net basis. Were the outputs of individual industries also measured net, it is probable that most of them would rise more rapidly than the conventional indexes show.¹²

Why has increase in efficiency been so widespread?

A basic reason lies in the ubiquitous incentives that impel men to economic activity. Everywhere in our economy men constantly strive to advance themselves economically and to satisfy their instincts of workmanship. To expand income and to do a better job they seek new methods and short cuts in old, new products and improvements in old, new materials and better old materials, and better sources of supply of old materials. When their own inner drives are weak and hesitant, under the compulsion of competition for markets and resources they

¹² Exceptions would appear, however, when there was a strong trend toward industrial specialization. An example is the transfer of power production to the central power station. In the case of agriculture, the one industry for which a fairly adequate measure of net output has been calculated (by Kendrick and Jones in *Survey of Current Business*, September 1951), this shift of work to other industries has proceeded so rapidly that its "net" output has risen substantially less than the conventional index of "gross" output.

trail their more forceful fellows. Emphasis has been placed on the businessman's activities in this direction, and properly so, but only a narrow view would fail to reveal the entrepreneurial aspects of the activities of all persons working and living in our kind of economic system.

Some of the results of these activities — such as improvements in methods — lead directly to economies within the fields of production in which they take place; others — such as improvements in products — allow economies in the industries to which the products are shipped. But the effects of innovations travel farther. The methods, products, and materials that spring up here and there are not always so specific in character that they can be used to good advantage only in the industries in which they originate or in closely related industries. Sooner or later they are available to all; men who seek to improve their methods of production find the means to do so everywhere. The steam engine that begins by revolutionizing mining eventually makes its impact on manufacturing and transportation; the plant designed to provide superior energy for illumination soon comes to power factories and then to smelt bauxite; the systems of handling materials in meat packing eventually expedite automobile assembly and the production of cotton garments; improvements in steel manufacture lead to savings of materials, labor, and capital on the railroads, in building, and other manufactures; electric motors find a use everywhere. And so of small as well as large inventions.

The wider diffusion of new methods and materials and products is itself an economic activity. Men seek not only new products but new markets; new and better materials and machines are sought by buyers. Some industries are in the business of helping to raise efficiency in other industries.

The very process of growth — in population, national income per capita, and thus in total national income — may help raise efficiency by permitting specialization and localization on a scale not possible in a smaller national market. This, too, is a general factor affecting most industries. On the other hand, and especially in agriculture and mining, growth may bring diminishing returns, that is, lowered output per unit of input as production expands and natural resources of lower quality are brought into production. Yet none of our productivity records reveals this development. Perhaps technological advance has more than offset the deterioration in resources as rising output presses on available resources. Mining offers many examples; indeed, productivity in mining seems to have risen as rapidly as anywhere in the economy. Important, also, may be competition from other products and other areas, which enter the market as technology advances and trans-

port improves. These restrict the markets for commodities that would grow in cost were output to expand. The tendency toward diminishing returns may show itself not as lower efficiency but as lower output. Domestic petroleum and gas displace coal, and foreign petroleum displaces domestic petroleum.

The whole process operates across national borders. English manufacturers of railroad equipment helped construct and improve railroads of other countries; American engineers and agricultural technicians have in many ways helped to raise efficiency abroad. The technical assistance programs of today are extensions of activities that have long histories. International economic relations are economically beneficial not only because they enable nations to maximize their level of efficiency by specializing, but also because they help nations to raise the maximum level of their efficiency.

V

In an environment in which men find it profitable and interesting to improve methods, materials, and products, the relative positions of industries will change also. This divergence in rate of growth has been amply documented by Burns in his *Production Trends* and more recently by Barger, Stigler, and their colleagues in their reports on production, employment, and productivity.

Along with the rise in total output most industries will find their output rising. But the industries producing the new products and materials will enjoy greater than average increases, the industries producing the old products and materials less than average, and for some of these output will be falling. Industries learning to extract more product out of a given volume of material, or expanding the amount of work they do on a given piece of material, will increase their output more than the industries producing the materials. As capital is substituted for labor, the capital goods industries will expand in a proportion different from the industries that purchase capital goods; and as one type of equipment is substituted for another, the rate of advance will vary among the capital goods industries. As domestic resources become depleted, domestic scrap and foreign supplies will be sought. As new markets are found abroad, industries producing the favored export commodities will grow more rapidly than industries confined to the domestic market. As national income rises in relation to population, expenditures on food will rise less rapidly, and within the food group changes will occur as consumers shift to more desirable means of sustenance.¹³

¹³ A word of explanation may be necessary for emphasizing variation in output change

Nor is this the whole story. In addition to a wide distribution of rates of growth during each period, with a significant number of industries actually declining, there will also be a tendency for industries to shift downward in the distribution from one period to another. With the passage of time, they will move from the phase of very rapid to that of modest growth and then to that of decline. New industries enter the distribution at the top; old industries tend to sink to the bottom of the distribution, and some even pass out of it entirely. Retardation generally characterizes the rate of growth of output of individual industries and products. And for this the reasons are same as those that underlie divergence. "Retardation in the growth of individual industries is one of the expressions of the progressiveness of American industry."¹⁴

Divergence and retardation characterize the rates of growth not only of the output of industries but also of their input. Employment, and capital investment as well, of the various industries grow at widely divergent rates, and these rates tend to decline with the passage of time. The proportion of industries with falling employment is greater than the proportion with falling output, however, and the time patterns of neither employment nor investment are identical with those of output. For change is also occurring in the relation between input and output.

In the case of employment, the picture looks something like this: During the earlier stages of an industry's career, when output is shooting up quickly, employment also expands rather rapidly. During the mature phases, when output is expanding slowly, jobs may not increase in numbers, or they may even decrease unless offset by reductions in the length of the working week. In old and waning industries, falling output compounds the effects of diminishing labor requirements per unit of product, and even substantial cuts in weekly hours of work fail to stem reductions in the number employed.

When capital utilized per unit of product is generally falling, as Ulmer has shown was the case with the railroads in the United States over the period beginning with 1870, the picture for capital will resemble that of employment. When the characteristic trend of capital per unit is up and then down, as appears to have been the case in

among industries and saying little about the variation in efficiency change. One reason is the fact that the former exceeds the latter. Further, the industrial variation in the rate of efficiency change is less significant for our present purpose than the fact that virtually every industry shows some upward trend in efficiency.

¹⁴ Arthur F. Burns, *Production Trends in the United States since 1870* (National Bureau of Economic Research, 1934), p. 122.

manufacturing and mining, according to Creamer and Borenstein, the foregoing pattern will no longer hold.

But in every case economic progress involves substantial and continual shifts in the industrial distribution of resources — and also in their regional distribution. One might say that a progressive economy is characterized by attitudes and policies that on net balance favor mobility.

Obsolescence of skills and investments is therefore part of the story, as is the resulting frequently painful problem of readjustment that economic advance demands. In a progressive economy, the problem is viewed as that of easing the difficulties of adjustment more often than it is viewed as that of avoiding the need for adjustment by obstructing the progressive forces that cause it.

Economists find another job here. We need to study methods of insuring security and to review the experience of countries that have applied them, if we are to discriminate between policies that seriously inhibit progress and those that do not. The "clash between progress and security" refers not to an inevitability but to a problem: that famine has vanished from the Western world bears witness to the faith that progress and security can be reconciled.

VI

The question that Rorty, Stone, and others asked, four decades ago, was: What part of the national income goes to each element of society? Today's version of this question is: What part of the increase in national income goes to each element of society?

Many important parts of the answer will remain obscure until Wolman and others have made further progress in their studies of wages, and until we learn more about the other types of income. But a major long-run trend, which bears on the question, already stands outlined in the findings of Kuznets and King on national income.

This trend may be put most dramatically and simply as follows: workers, broadly defined to include salaried persons, professional people, and proprietors, as well as wage earners, have enjoyed an increase in rate of return — real income per hour — greater even than the increase in total productivity. For workers have gained in two ways: they have gained because the fruits of the increased efficiency of the economy have reached them (as they have other agents of production); and they have gained, further, because the price of their work relative to the price of capital has turned in their favor with the increase in amount of capital

per worker.¹⁵ Indeed, the increase in the relative price of work appears to have been enough to offset the decrease in its relative quantity. The aggregate return to work has approximately kept pace with the aggregate return to capital: the share of workers in the national income (and therefore also in increments to the national income) has remained remarkably stable at around three-fourths or four-fifths.¹⁶ Real income per man-hour has thus increased in approximately the same proportion as real income per capita, and this is more than the increase in income per unit of total input, including capital as well as labor.

The trend may be described also from the standpoint of providers of capital. Quantity of capital has increased greatly in relation to quantity of labor, and this has tended to depress the price of capital relative to the price of labor. But the great increase in national productivity has prevented the reduction in the relative price of capital from turning into as large a reduction in its absolute price.

This glance at long-term trends over the past eighty years necessarily slurs over developments during shorter periods. It would be wrong to assume that these changes have occurred uniformly in each decade, even apart from cyclical fluctuations. There is some question, for example, how fast real wage rates rose during the decade or two before World War I; Rees is looking into the data for this period. And we know that in recent decades there has been an unusually sharp increase in the rate of return on work and reduction in the rate of return on capital; these, among other things, are reflected in the striking reduction in inequality of the income distribution suggested by Kuznets' calculations of the shares of the upper income groups and Creamer's and Moore's explorations of related developments. But the long-run trend nevertheless provides perspective for an appreciation of the changes over shorter periods of time.

With attention focused on the economy at large, we have also passed over differences among individual industries. Our information enables us to say something about wages. Significant changes have occurred in the industrial structure of wages. In recent decades a narrowing of wage differentials seems in fact to have contributed to the reduction in

¹⁵ In part, the increase in the relative price of work reflects an increase — through education, etc. — in the intangible capital embodied in workers.

¹⁶ We are skirting some difficulties with the statistical information. These arise, first, because the information on property income during the earlier decades is scanty and, second, because proprietors' income includes an element of return on capital. Adjustment for the return on capital would probably cause the workers' share to rise somewhat, for farm capital, the major component of proprietors' capital, has fallen as a fraction of national capital.

inequality of income, and we need to study these changes intensively. Yet the first, the outstanding, impression one gets when examining the charts for individual industries is of similarity of trends in real wages. Wage trends in particular industries have been influenced by many diverse factors, but a strong common factor seems to have been the rise in national efficiency and the general growth of capital per worker. Whether an industry's output and employment have been growing rapidly, growing moderately, or actually falling, whether its productivity has been rising more or less rapidly than the national average, its long-run real wage trend has been upward and usually at a rate not very far from the average. The deviations from the average long-term rate of growth in wages are correlated in only small degree with corresponding deviations from the average in growth of output or productivity.¹⁷ A significantly higher correlation appears between deviations from the average rate of growth in output or productivity and deviations from the average trend of prices: industries with the more rapidly rising outputs or productivities have usually been those with the less rapidly rising (or more rapidly falling) selling prices.¹⁸ And, the fragmentary data suggest, these industries have also usually paid above-average wages and raised employment more rapidly than other industries. Workers have improved their economic position because real wages have been pushed up in each industry and also, in some part, because workers have shifted from low-wage to high-wage industries.

The manner in which the fruits of economic progress have been spread through the economic system is not an historical accident. It is to be expected in an economy in which men try to improve their economic position and are not prevented from doing so by high barriers to industries and occupations. Businessmen seek additional workers and raise wages to get them, or are forced to meet rates offered elsewhere in order to hold those they have; workers move to the more attractive opportunities; businessmen compete in the markets for goods and cut prices when efficiency rises and costs fall. Men distribute themselves

¹⁷ The correlations are small — measured by coefficients of less than .25 in the case of changes in manufacturing industries between 1909 and 1937. Even these may overstate the strength of the true relationships, since there are common factors in the measures of the several variables.

¹⁸ The coefficients of correlation for manufacturing industries, 1909–1937, are $-.66$ between price and quantity, $-.39$ between price and output per man-hour. These correlations are free of a spurious element because the price index is derived from wholesale price data of the Bureau of Labor Statistics, not from the census data on value of product per unit of output.

over industries in a way tending to equalize rates of pay (with appropriate allowance for the various advantages and disadvantages characteristic of each trade or industry); and when national efficiency rises, the trend of real rates of pay tends to be up everywhere in the economy. The kind of wage change of which we find hints in the records of our industries over the past eight decades seems to be as characteristic of a progressive state as the persistent and widespread increase in efficiency and the great variation and retardation in the rates of growth of industries.

Of this we can be sure: workers have benefited greatly from the progressiveness of the American economy: "it is in the progressive state . . . that the condition of the labouring poor, of the great body of the people, seems to be the happiest and the most comfortable," Adam Smith said. "The progressive state is in reality the cheerful and the hearty state to all the different orders of the society. The stationary is dull; the declining melancholy."¹⁹ That too, I think, applies to the United States. None of the orders of our society have found it dull; and, on the whole, few have found it melancholy.

Of course we cannot rest on our laurels. Economic advance brings with it new goals and new responsibilities. We need to meet higher standards of domestic well-being than did our fathers; we are more keenly aware than they of our duty to neighbors in the outside world who have lagged behind us. To discharge these responsibilities we must equip ourselves with the knowledge that is needed to deal effectively with the problems that economic change continuously creates. Basic economic research of the kind the National Bureau undertakes has a vital part to play in this work.

Solomon Fabricant
Director of Research

Part Two

ACTIVITIES DURING 1953

¹⁹Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (Modern Library edition), p. 81.

NEW STUDIES

A study of the structure of world trade and payments, the possibilities of which Herbert B. Woolley explored last year, has been undertaken with the assistance of a grant from the Ford Foundation. The voluminous statistics on trade and payments among the countries of the world must be put together in a systematic fashion if they are to contribute to an understanding of the economic relations among nations. Mr. Woolley and his associates expect to dig deeply into the rapidly accumulating pile of figures and come up with a comprehensive yet simplified account of the main features of trade and payments among some fifteen world regions in recent years. The facts that the commodities that country A exports to country B may not be recorded the same way by both countries, that shipping charges may go to a third country, that settlements are made in different currencies, that many transactions are not recorded in readily available sources, all will make the work time-consuming and tedious. But the interest of several international agencies and of many students of world affairs will spur our efforts.

The National Bureau has long considered the study of wages, employment, and productivity one of its basic fields of investigation and has published numerous works on the subject. This year, with the assistance of a grant from the Alfred P. Sloan Foundation, work was begun on a project that will, when it is finished, render an account of the course of money and "real" wages in the United States from the Civil War to the present day, and of the changes at least since the turn of the century in the relations between the volume of output on the one hand, and the quantities of labor and capital employed in production, on the other. Leo Wolman is in charge of the wage study, and John W. Kendrick is directing the work on productivity. Albert Rees is devoting part of his year as Research Associate to the analysis of wages during 1890-1914, a period of special interest because the most readily available data fail to show any rise in real wages. Under a cooperative arrangement with the National Bureau, the Bureau of Labor Statistics is looking into ways of obtaining information on one of the elements in the wage bill that has been of increasing importance since 1940, the so-called "fringe benefits."

Another new project that is related to our wage, employment, and productivity studies but is concerned more with technical than substantive questions was begun late in the year. It deals with methods of determining the demand for and supply of scientific and technical personnel, and is in George J. Stigler's charge. The project, supported by a grant from the National Science Foundation, will attempt to develop an appropriate theoretical framework to use in the selection and organization of relevant data, test this framework on past data, and suggest ways of securing improved estimates of the current and prospective demand for and supply of personnel in scientific and technical fields.

With the assistance of a substantial grant from the Rockefeller Foundation, the National Bureau has undertaken a review of what is known of the economic growth of Soviet Russia. The project staff, which is being organized by Raymond W. Goldsmith, will direct their attention primarily to the question: What has been the growth of Soviet Russia's output over the past three decades? In order to establish as firmly as possible what can or cannot be determined about Russia's economic growth they will approach this question via several different routes, experiment with alternative calculations and procedures, test and retest the results in various ways, weigh margins of error, and finally present the results and the underlying evidence with fullness and clarity. Throughout the enterprise they hope to secure the critical advice and assistance of the many individuals and institutions that have been concerned with this problem in recent years.

Upon the suggestion of the Council of Economic Advisers, and in view of the widespread interest in the applicability of the National Bureau's business cycle investigations to the problem of forecasting, new studies in this area were begun under the direction of Geoffrey H. Moore. The possibilities and limitations of statistical indicators of cyclical swings, the measurement and interpretation of indexes of the scope or diffusion of business fluctuations throughout the economy, and the usefulness of surveys of businessmen's expectations are all under review. Phillip Cagan, a Research Associate this year, is among those engaged on this project.

At the conclusion of his term as Research Associate, Earl Rolph undertook a brief exploratory study of change in the public debt of various countries since 1914, bringing into consideration related changes in price levels and currency valuation. The project was supported by a grant from the Scherman Foundation. Mr. Rolph has not completed his report on the subject, but the results are likely to contribute to our

understanding of fiscal problems, international economic relations, and governmental economic activity in general.

PUBLICATIONS DURING THE YEAR¹

Seven reports were issued during 1953 and five have been printed to date in 1954:

Arthur F. Burns, *The Frontiers of Economic Knowledge*

Solomon Fabricant, *The Trend of Government Activity in the United States since 1900*

W. Braddock Hickman, *The Volume of Corporate Bond Financing since 1900*

Simon Kuznets, *Shares of Upper Income Groups in Income and Savings Studies in Income and Wealth, Volume Fifteen*

Regularization of Business Investment, Special Conference Series, No. 4

Robert Ferber, *A Study of Aggregate Consumption Functions*, Technical Paper 8

David M. Blank, *The Volume of Residential Construction, 1889-1950*, Technical Paper 9

Leo Grebler, *The Role of Federal Credit Aids in Residential Construction*, Occasional Paper 39

Thor Hultgren, *Transport and the State of Trade in Britain*, Occasional Paper 40

Daniel Creamer, *Capital and Output Trends in Manufacturing Industries, 1880-1948*, Occasional Paper 41

Raymond W. Goldsmith, *The Share of Financial Intermediaries in National Wealth and National Assets, 1900-1949*, Occasional Paper 42

The Frontiers of Economic Knowledge is a collection of essays by Dr. Burns, now Chairman of the President's Council of Economic Advisers. It comprises the annual reports he wrote during 1945-1953 as Director of Research of the National Bureau, together with articles on various subjects related to the work of the National Bureau. The more significant results of the National Bureau's investigations in recent years are covered, including the problem of forecasting business recessions or revivals, the recent extraordinary shifts in the distribution of income, and the alleged danger that the United States may stagnate economically. Among the other matters treated are Keynesian economics, Wesley Mitchell's work on the business cycle, and long cycles in residential construction. The main theme of the volume is the high importance of research into actual economic behavior as revealed by carefully assessed quantitative records.

The books by Fabricant, Hickman, and Kuznets each represent the culmination of a long program of research, and each is already leading to investigations in new directions. Fabricant's book, *The Trend of*

¹ The full list of titles published by the National Bureau since 1920 begins on page 85.

Government Activity in the United States since 1900, reveals that resources consumed in governmental activity rose well over 500 per cent between 1900 and the eve of the Korean War. Enormous expansion came in all types of resources, including manpower, capital assets, and goods and services acquired by government from private industry. The data suggest that although the rise in government activity in the twentieth century was a continuation of a nineteenth-century trend, the trend has been sharply accelerated. Not only federal but state and local government activity has grown, though at a slower and steadier pace. The exploratory study of governmental economic activity in other countries, described below by George J. Stigler (Part Three, section 6), suggests that this trend is a world-wide phenomenon.

The Volume of Corporate Bond Financing since 1900, by W. Brad-dock Hickman, is the first major report on an investigation of the life histories of all corporate bond flotations in this country during the past half-century. Over 28,000 bond issues were examined, and the statistics presented open the way to much-needed new knowledge of the capital market. The stabilizing influence of bond financing on the swings of the business cycle, for example, are revealed in Hickman's analysis. "These findings throw new light," Hickman notes, "upon the familiar theory that 'credit' in a generic sense plays a dominant role in the business cycle, expanding during business expansions and contracting during business contractions. . . . Many types of financing — for example short-term and stock financing — appear to behave in the way theory would indicate; but bond financing runs a contrary course and thus acts, so to speak, as a stabilizing force." Hickman's investigation has pushed farther since the publication of the book, and some of his new results are briefly reported in Part Three, section 4.

Simon Kuznets' volume, *Shares of Upper Income Groups in Income and Savings*, reports the findings of a major investigation into changes in the distribution of income by size in the United States over the past thirty-five years. The work organizes the available basic data on this subject, opening the way for many new studies by others, besides developing an illuminating account of the factors that determine both the distribution of income at any given time and its secular and cyclical changes. What fraction of the total income of the nation goes to the top 1 per cent of the population? Is it larger now than twenty-five years ago? How much is it affected by income taxes? Is it larger at the peak of a business cycle than at the trough, or vice versa? Do the saving and spending of this top group fluctuate more or less than saving and spending of lower-income groups? Questions such as these have

intrigued economists and others for many years, and the answers extracted by Kuznets from the data provide much food for thought.

Studies in Income and Wealth, Volume Fifteen also deals with the size distribution of income. It includes a set of eight papers contributed to a session of the Conference on Research in Income and Wealth. Milton Friedman presents a subtle technique for comparing incomes of families that differ in size and other respects. George Garvy points out, among other things, that the large proportion of the population that work only part time and are not solely dependent on their earnings needs to be taken into account in interpreting global statistics on income distribution. D. Gale Johnson shows that much of the difference between the average level of income in the South and North is ironed out when averages for communities of similar size are compared. Janet A. Fisher considers the differences in income, spending, and savings patterns of families and individuals in different age groups. Dorothy S. Brady presents evidence that families with a given income tend to spend more when they live in communities in which the average level of income is high. Margaret G. Reid explores the influence of different definitions of income on the relationship between income and expenditures of farm families. Mollie Orshansky investigates the possibility of determining equivalent budgets for farm and nonfarm families that would permit measurement of differences in their "cost of living." In a concluding paper, Simon Kuznets points to new avenues of investigation in the field of income distribution.

In the conference proceedings volume, *Regularization of Business Investment*, the question posed is: Can we expect individual firms to regularize their investments and so help to moderate business booms and depressions? Some of the economists whose papers are printed in the volume took an affirmative view and went on to evaluate specific ways in which individual firms can realize the advantages of more stable investment. Others believed that the long-term advantages of investment regularization would not be enough to outweigh the prospects of quick profit on boom-time outlays and the uncertain prospects of depression-timed investment. Some of the divergence of view was clearly due to the variation in the structure of the several industries taken up in the volume and the economic conditions confronting them. The analyses of the position of the large corporation, the policies of financial institutions, inventory policy, and governmental regulatory and tax policy contribute significantly to the well-rounded view of the problem that emerges from the book as a whole. The authors of papers are Millard Hastay, Joel Dean, Melvin G. de Chazeau, Walter E. Hoadley,

Jr., Everett M. Hicks, Richard J. Gonzales, K. T. Healy, Edward W. Morehouse, Moses Abramovitz, Yale Brozen, Emerson P. Schmidt, Neil H. Jacoby and J. Fred Weston, Albert Gailord Hart, and Benjamin Higgins.

Technical Paper 8, *A Study of Aggregate Consumption Functions*, by Robert Ferber, contains results that are of interest to both the general economist and the statistician. For the economist who wants to know how well the consumption functions derived by many of his colleagues from prewar data fared in the postwar period, here is the most complete record available. For the statistician who wants to know how the choice of variables and period of observation influences the validity of his efforts to systematize the wanderings of time series, here are the pertinent results of a large-scale experiment.

Business cycles in Great Britain and in the United States have some important features in common, according to Thor Hultgren's Occasional Paper 40, *Transport and the State of Trade in Britain*. At least, British and American railroads react to prosperity and depression in strikingly similar ways. Labor and other costs per unit of traffic tend to decline when business expands and rise when it contracts. This, together with the high degree of stability of freight and passenger rates in both countries, has meant that a cyclical expansion in traffic has usually been accompanied by a rise not only in aggregate profits but in profits per unit of traffic, while contractions have had reverse effects. Despite lower railroad profits in contraction, however, Hultgren finds that these are the periods when the diversion of freight traffic to other transportation agencies takes place most rapidly, whether because shippers seek lower costs more energetically or because trucking rates and costs are more flexible. These and other similarities in the reactions of two widely separated private enterprise economies are but a part of the fascinating story to be read into the National Bureau's records of business cycle phenomena. For another example, see Ilse Mintz' report in Part Three, section 1.

Leo Grebler's Occasional Paper 39, *The Role of Federal Credit Aids in Residential Construction*, takes up the fact that nearly 4 million of the 10 million dwelling units constructed in the United States between 1935 and 1951 were financed with federal credit aid. Here too, as in many of the National Bureau's recent studies and work in progress, the expanding role of government obtrudes itself in an investigation that has quite a different theme. The paper is a by-product of a broader study of trends in capital formation and financing in residential real estate undertaken by the National Bureau in collaboration with the Insti-

tute for Urban Land Use and Housing Studies at Columbia University.

Another product of this study is Technical Paper 9 by David M. Blank, *The Volume of Residential Construction, 1889-1950*. The new estimates presented in the paper show that the number of new house-keeping dwelling units started annually has undergone a series of long cyclical swings during the last six decades, and that these swings have grown in relative size. Blank also finds that although average construction expenditure per dwelling unit has quadrupled since the 1890's, this rise does not match the rise in construction prices; hence the real expenditure per unit fell about 40 per cent. Smaller sized houses account for much of this decline.

The study of trends in capital formation and financing has borne fruit also in Occasional Papers 41 and 42. Daniel Creamer's *Capital and Output Trends in Manufacturing Industries, 1880-1948*, Occasional Paper 41, discloses that American factories today produce much more output with a given amount of capital than they did in 1919. This generalization holds true not only for manufacturing as a whole but for each of its important branches. But between 1880 and 1919 just the contrary was true: in that forty-year period capital grew more rapidly than output. Much work remains to be done to account for this course of events and to explore its implications for the future.

Occasional Paper 42, *The Share of Financial Intermediaries in National Wealth and National Assets, 1900-1949*, by Raymond W. Goldsmith, shows that banks, insurance companies, and other intermediaries between those who save money and those who use the savings held nearly two-fifths of all intangible assets in the United States in 1949. If holdings of bonds, stocks, and mortgages only are considered, excluding cash and short-term obligations, the financial institutions' share of the total has grown from 31 per cent in 1900 to 59 per cent in 1949, or almost double. An important cause of this remarkable increase in the practice of entrusting savings to institutions is the growth of governmental institutions, such as social security and other retirement funds, and governmental lending agencies.

FORTHCOMING PUBLICATIONS

The following reports are in press:

Daniel Creamer, *Personal Income during Business Cycles*

Waldo E. Fisher and Charles M. James, *Minimum Price Fixing in the Bituminous Coal Industry*

Lawrence A. Jones and David Durand, *Mortgage Lending Experience in Agriculture*

Long-Range Economic Projection, Studies in Income and Wealth, Volume Sixteen

Short-Term Economic Forecasting, Studies in Income and Wealth, Volume Seventeen

Input-Output Analysis: An Appraisal, Studies in Income and Wealth, Volume Eighteen

Business Concentration and Price Policy, Special Conference Series, No. 5

Ruth P. Mack, *Factors Influencing Consumption: An Experimental Analysis of Shoe Buying*, Technical Paper 10

Melville J. Ulmer, *Trends and Cycles in Capital Formation by United States Railroads, 1870-1950*, Occasional Paper 43

Alvin S. Tostlebe, *The Growth of Physical Capital in Agriculture, 1870-1950*, Occasional Paper 44

Israel Borenstein, *Capital and Output Trends in Mining Industries, 1870-1948*, Occasional Paper 45

Simon Kuznets and Ernest Rubín, *Immigration and the Foreign Born*, Occasional Paper 46

George E. Lent, *The Ownership of Tax-Exempt Securities, 1913-1952*, Occasional Paper 47

Additional reports that may be issued in 1954 include, among others, the following:

Harold Barger, "Distribution's Place in the American Economy since 1869"

Bert G. Hickman, "The Korean War and United States Economic Activity, 1950-1952," Proposed Occasional Paper

M. Slade Kendrick, "A Century and a Half of United States Federal Expenditures," Proposed Occasional Paper

Robert Rude, "Assets of Private Nonprofit Institutions in the United States, 1890-1948," Proposed Occasional Paper

In order to meet a continuing demand, reprints of the following volumes will shortly be available:

Wesley C. Mitchell, *Business Cycles: The Problem and Its Setting* (1927)

Simon Kuznets, *National Income and Its Composition, 1919-1938* (1941)

Milton Friedman and Simon Kuznets, *Income from Independent Professional Practice* (1945)

CONFERENCES AND RELATED ACTIVITIES

The work of the National Bureau's advisory committees and conferences have long been an important factor in its activities. Among the committees now functioning are the Universities-National Bureau Committee for Economic Research, the Conference on Research in Income and Wealth, the Committee on Research in Finance, the Committee on Fiscal Research, the Advisory Committee of the American Institute of

Accountants, and the Advisory Committee for the Study of Capital Formation and Financing. The distinguished members of these committees contribute in many different ways to the progress of economic research at the National Bureau. Much of their work, such as the critical review of plans for research and of completed manuscripts, is of a highly skilled and technical nature and cannot be dealt with adequately in this report. Nevertheless, the expert advice and guidance of these committees has had much to do with shaping the character of the National Bureau's program. The more formally organized conferences held during the year and planned for the future are reported below.

Conference on Research in Income and Wealth

The subject of the meeting in New York in October was capital formation. The following papers were submitted:

"Capital Formation in Private Nonfarm Residential Construction," by David M. Blank and Louis Winnick, Columbia University

"Capital Formation in Canada," by K. A. H. Buckley, University of Saskatchewan

"A Review of Existing Estimates of Business Investment in Inventories," by James P. Daly, Department of Commerce

"Financing of Capital Formation," by Daniel H. Brill, Board of Governors of the Federal Reserve System

"Changes in the Accounting Treatment of Capital Items during the Last Fifty Years," by George O. May

"Capital Coefficients as Economic Parameters," by Anne P. Carter, Harvard Economic Research Project.

"Studies of Capital Coefficients in Mineral and Metal Industries," by Frederick T. Moore, Bureau of Mines

"A Report on the Calculation of Capital Coefficients for the Petroleum Industry," by John E. Hodges, The Rice Institute

"Conceptual and Statistical Problems in Estimating Capital Coefficients for Four Metal Fabricating Industries," by Raymond T. Bowman and Almarin Phillips, University of Pennsylvania

"On the Estimation of Future Purchases of Capital Equipment for Replacement," by Robert N. Grosse, Bureau of the Budget, and Edward B. Berman, Bureau of Mines

"Cyclical Variations in Capacity and Capacity Utilization in Selected Industries," by Bert G. Hickman, Northwestern University

"Characteristics of Inventory Investment: The Aggregate and Its Parts," by Ruth P. Mack, National Bureau of Economic Research

"Interview and Other Survey Techniques and the Study of Investment," by Robert Eisner, Northwestern University

It is expected that the conference proceedings will be printed in the

series of Studies in Income and Wealth. Franco Modigliani was in charge of the program and has agreed to serve as editor.

At its meeting in October 1954 the Conference will discuss the comparability of national accounts. The sessions will be devoted to six general topics: the feasibility of a standard comprehensive system of national accounts, the problems of obtaining comparability in the government sector, conceptual and statistical problems in the definition and measurement of capital formation, comparability of international accounts, conversion of national accounts data to real terms, and conceptual problems in the comparability of national accounts. Richard Ruggles is in charge of the program.

Plans are being made for a meeting in 1955 devoted to a review of the existing national income statistics of the United States. The approach being considered is a study of the final products and the income payments estimates, each to be discussed from the conceptual standpoint and from the standpoint of the needs of business analysts and economists.

Two other topics are under consideration for future meetings: regional differences in income and a critical analysis of the income data collected in the 1950 census. Charles F. Schwartz and Selma Goldsmith, respectively, head the committees appointed to investigate the possibility of preparing programs on these subjects.

Long-Range Economic Projection, Volume Sixteen of Studies in Income and Wealth; *Short-Term Economic Forecasting*, Volume Seventeen; and *Input-Output Analysis: An Appraisal*, Volume Eighteen, comprising the papers of general interest presented at the October 1952 meeting, are in press. The specialized papers presented at the October 1952 meeting dealing with the Bureau of Labor Statistics interindustry study are being multilithed and bound in a separate volume, and a limited number will be made available to research workers in the field.

The members of the Executive Committee of the Conference are Raymond W. Goldsmith, *Chairman*, Raymond T. Bowman, Dorothy S. Brady, Martin R. Gainsbrugh, Nathan M. Koffsky, Simon Kuznets, Donald MacGregor, Joseph A. Pechman, and Charles F. Schwartz.

Special Conferences

Two conferences were held under the sponsorship of the Universities-National Bureau Committee for Economic Research in 1953.

The first was a conference on Policies to Combat Depression, held at the Woodrow Wilson School of Public and International Affairs, Princeton University, in October. The conference was organized by

a committee headed by Donald H. Wallace until his untimely death. Herbert Stein is the present chairman, and a conference that will deal further with the same subject is scheduled for May 14 and 15 at Princeton. The following papers were presented at the October conference:

- "Types of Depressions and Programs to Combat Them," by R. A. Clouton, University of California at Berkeley
- "The Stabilizing Effectiveness of Budget Flexibility," by David W. Lusher, Washington, D. C.
- "Importance of Government Offsets to Cyclical Losses in Personal Income," by Daniel Creamer, with the assistance of Martin Bernstein, National Bureau of Economic Research
- "Effect of Built-In Flexibility and Rate and Exemption Changes on the Yield of the Federal Individual Income Tax during a Recession," by Joseph A. Pechman, Massachusetts Institute of Technology
- "Corporate Income Tax in a Depression," by Richard Goode, International Monetary Fund
- "Housing Policies to Combat Depression," by Leo Grebler, Institute for Urban Land Use and Housing Studies, Columbia University
- "Self-Liquidating Public Works to Combat Depression," by Wilfred Owen, Brookings Institution

These papers, together with the ensuing discussion, have been mimeographed and bound for limited circulation pending publication with the papers to be presented in May.

The second conference was on Capital Formation and Economic Growth. It was planned by a committee under the chairmanship of Moses Abramovitz, and the conference was held in November at the Carnegie International Center in New York. The following papers are being prepared for publication, together with comments by the participants:

- "International Differences in Capital Formation and Financing," by Simon Kuznets, National Bureau of Economic Research and University of Pennsylvania
- "Financial Structure and Economic Growth in 'Advanced' Countries," by Raymond W. Goldsmith, National Bureau of Economic Research
- "Some Current Trends in Soviet Capital Formation," by Gregory Grossman, Russian Research Center, Harvard University and University of California
- "Financing Soviet Economic Development," by F. D. Holzman, University of Washington
- "Entrepreneurship and Capital Formation in France and Britain since 1700," by Bert F. Hoselitz, Research Center in Economic Development and Cultural Change, University of Chicago
- "The Entrepreneur in American Capital Formation," by Thomas C. Cochran, University of Pennsylvania

- "Investment Decisions in Underdeveloped Countries," by Henry G. Aubrey, Institute of World Affairs, New School for Social Research
- "Some Social Obstacles to Capital Formation in Underdeveloped Areas," by Marion J. Levy, Jr., Princeton University
- "Technical Change and Capital Formation," by Albert Payson Usher, Harvard University
- "Innovation and Capital Formation in Some American Industries," by W. Rupert MacLaurin, Massachusetts Institute of Technology
- "Structural Analysis of Real Capital Formation," by Adolph J. Lowe, Institute of World Affairs, New School for Social Research
- "Some General Reflections on Capital Formation and Economic Growth," by Walt W. Rostow, Massachusetts Institute of Technology

A conference on Measurement and Behavior of Unemployment is scheduled for September 17-19, 1954. The committee that is planning the conference consists of Clarence D. Long, *Chairman*, A. Ross Eckler, Richard Lester, Lloyd Reynolds, and Charles Stewart. The following papers are expected to be presented:

- "The Meaning and Measurement of Full Employment," by Albert Rees, University of Chicago
- "The Meaning and Measurement of Partial and Disguised Unemployment," by R. C. Wilcock, University of Illinois, and Louis Ducoff and Margaret Hagood, Bureau of Agricultural Economics
- "Current Unemployment Statistics," by Gertrude Bancroft, Bureau of the Census, and Herbert Parnes, Ohio State University
- "Annual Estimates of Aggregate Employment and Unemployment, United States, 1890-1940," by Stanley Lebergott, Bureau of the Budget
- "Unemployment by Industry and Locality," by David Kaplan, Bureau of the Census, and Louis Levine, Bureau of Employment Security
- "Unemployment by Individual Characteristics," by Philip Hauser, University of Chicago, and Elizabeth J. Slotkin, Illinois Department of Labor
- "International Comparison of Unemployment Rates," by Walter Galenson, University of California
- "Cycles in Employment and Unemployment," by Clarence D. Long, Council of Economic Advisers
- "Employment and Unemployment in the Soviet Union," by Warren Eason, Johns Hopkins University and Rand Corporation
- "Summary and Review," by Clark Kerr, University of California

Plans for a conference on consumption economics are being made by a committee under the chairmanship of Ruth P. Mack.

At the meeting of the Universities-National Bureau Committee in November the following executive committee was chosen for the current academic year: George J. Stigler, *Chairman*; G. Heberton Evans,

Jr., *Vice Chairman*; and Raymond T. Bowman, Solomon Fabricant, A. D. H. Kaplan, D. C. MacGregor, and Joseph J. Spengler.

DIRECTORS AND RESEARCH STAFF

Frederick C. Mills, because of illness, resigned as Director by Appointment of the American Statistical Association and as a member of the Research Staff. W. Allen Wallis was elected Director by Appointment of the Association to succeed Mr. Mills. Wallace J. Campbell and Albert J. Hettinger, Jr., were elected Directors at Large. John H. Williams was elected Director by Appointment of the American Economic Association to fill the unexpired term of Donald H. Wallace, who died on September 19, 1953. At the 1954 meeting of the Board, Melvin G. de Chazeau was elected Director by Appointment of Cornell University to succeed Paul M. O'Leary, whose term of office had expired, and Solomon Fabricant was elected Director at Large.

Arthur F. Burns, Director of Research, went on leave of absence on March 19, 1953, to serve as Chairman of President Eisenhower's Council of Economic Advisers. Solomon Fabricant was appointed Acting Director of Research, and on March 1, 1954, Director of Research.

Raymond W. Goldsmith, John W. Kendrick, and Ilse Mintz were elected members of the Research Staff. Albert Rees of the University of Chicago and Phillip Cagan were appointed Research Associates for 1953-1954. Clarence D. Long and R. J. Saulnier were granted part-time leaves of absence to serve on the staff of the Council of Economic Advisers. Daniel Creamer resigned as a member of the Research Staff in order to accept the post of Director of the Falk Project for Economic Research in Israel.

RELOCATION OF NATIONAL BUREAU OFFICES

On May 1, 1954, the National Bureau moved its offices from 1819 Broadway and from "Hillside" to a new building at 261 Madison Avenue, New York City.

The Hillside property was made available to the National Bureau in 1936 through the generosity of its owner, Mrs. William S. Ladd. Members of the Board and staff will long remember with pleasure the beautiful surroundings and quiet atmosphere of Hillside. All the activities of the Financial Research Program have been housed there, it has been the scene of innumerable committee meetings and informal gatherings, and it has provided a place of residence for many visitors from time to time. The decision to return the property to Mrs. Ladd was

taken only after long consideration and careful weighing of the advantages of consolidating operations at the new building.

RESEARCH IN PROCESS

Reports by members of the staff on their research activities during 1953 are presented in Part Three. The findings briefly mentioned there have not yet been subjected to the full critical review accorded the National Bureau's studies and are therefore tentative and provisional.

Part Three STAFF REPORTS

1. BUSINESS CYCLES

STATISTICAL INDICATORS

In last year's *Annual Report*, Arthur F. Burns pointed out that an index of the proportion of individual economic activities undergoing cyclical expansion is an important indicator of changes in business. The cyclical movements of such a diffusion index not only lead those of aggregate activity but also tend to swing lower in the first few months of a contraction that is eventually severe than in a mild contraction. In order to study these findings more fully and to develop currently useful indicators, we have constructed the diffusion indexes listed below. The Bureau of Labor Statistics and the Board of Governors of the Federal Reserve System have aided us generously in carrying out extensive machine calculations and in making data available to us promptly.

Employment

- a. Nonagricultural employment (BLS), based on data for individual states by industry division, 1946 to date
- b. Production-worker employment, average work week, and aggregate man-hours in manufacturing (BLS), based on industry data, 1923-1939 and 1947 to date

Production

Components of FRB Index of Industrial Production, 1923-1939 and 1947 to date

Prices

Components of BLS Wholesale Price Index, 1947 to date

Corporate Profits

Data for 200 large manufacturing corporations (FRB), both before and after taxes, 1947 to date, quarterly

General Business Activity

Indexes based on twenty-one statistical indicators of cyclical revival and recession, 1946 to date

Businessmen's Expectations

Indexes based on actual and expected directions of change in sales, employment, prices, orders, profits, and inventories, reported to Dun & Bradstreet, Inc., by individual firms engaged in manufacturing and wholesale and retail trade, 1947 to date, quarterly

Our diffusion indexes, that is, the proportion of series expanding in a given month or quarter, have usually been computed as the number of series showing rises from the preceding to the given month (or quarter), expressed as a percentage of the total number. The number remaining unchanged is divided equally between the numbers rising and falling. In this connection the following points should be noted:

1. Ideally, the index should be based on seasonally adjusted components, and this was feasible for some of the indexes listed above. For the others we adopted the procedure of working with unadjusted components and then adjusting the percentage expanding. This method was tested with indexes for manufacturing employment and for industrial production, where we found that the seasonally adjusted index based on unadjusted components moved very much like the index based on adjusted components, except for a reduction in amplitude of the former compared with the latter. This confirms the results Thor Hultgren obtained with corporate profit data (Occasional Paper 32). An alternative procedure has been tested, that of using the change in a twelve-month moving total in place of the month-to-month change. This bypasses the seasonal problem and produces a smoother index, but it introduces other difficulties, for the cyclical timing may be distorted and the index, when appropriately centered, may not be sufficiently up to date for current use (see, however, item 5 below).

2. Where the indexes are based on a large number of industrial components, the components have been classified into various subdivisions based on criteria such as durability, consumer vs. producer goods, unfinished vs. finished goods, and agricultural vs. nonagricultural products. Separate diffusion indexes were then constructed for each subdivision. These classification schemes revealed significant differences between many of the groups considered.

3. The major difference between a diffusion index based on a small number of components and one based on a large number seems to be that the amplitude of swing in the index is reduced as the number of components is increased. It may be possible in the future to concentrate our work on indexes based on fewer components than the largest number available. In this connection we are experimenting with an abridgment of the 705-series diffusion index mentioned by Dr. Burns

in last year's *Annual Report*. The abridged index comprises 170 series distributed broadly among the various types of economic processes. The two indexes, when both are based on specific cycles in the individual series, conform well to one another in the interwar period, and we plan to compute the abridged index on a month-to-month basis for the interwar period and to bring it up to date.

4. Investigation of the correlation mentioned above, between the depth reached by a diffusion index early in a contraction and the eventual severity of that contraction, has shown that the relation is not so close for indexes based on components that conform regularly to business cycles as for those based on poorly conforming series. Series that conform irregularly to business cycles may not respond to a mild recession at all; well-conforming series may respond as regularly and as promptly to a mild movement as to an (eventually) severe depression. We expect to explore further the predictive value of these results.

5. From the point of view of diffusion indexes, the quarterly *Survey of Business Men's Expectations* conducted by Dun & Bradstreet, Inc., is of special interest. Each quarter these surveys yield a percentage distribution of business concerns according as they expect various business factors such as sales, profits, and new orders to be higher, lower, or unchanged in a time period two quarters ahead as compared with the corresponding time period a year earlier. It seems reasonable to hope that individual businessmen will be able to provide accurate qualitative forecasts of this sort for their own firms. Moreover, the possibility of testing this hope is provided by Dun & Bradstreet's collection of data on the percentage distribution of directions of change actually experienced by the sampled firms. Thus the Dun & Bradstreet data provide us with a unique opportunity to study the behavior of diffusion indexes based on data for individual firms, and in addition hold out the possibility — should the expected directions of change be well correlated with the actual — of compiling what amounts to a diffusion index of individual-firm experience, smoothed by a four-quarter moving average, yet available without the lag that is the usual price of smoothing. With a similar proviso about the correlation of expectations with subsequent experience, the data offer a possible basis for forecasting many currently compiled time series in manufacturing and in wholesale and retail trade, as much as two quarters ahead.

With the generous assistance of Dun & Bradstreet in making unpublished summaries available to us, we have begun an extensive analysis of these surveys with a view to assessing how far they live up to their promise. Our objectives are to learn what, in fact, businessmen's expect-

tations measure; how well they measure this as yet undetermined factor; and what net contribution they make to our ability to forecast the future of important economic variables. It is too early to report our findings with confidence, but they seem broadly favorable to the use of such data in our diffusion studies and to the forecasting of some, at least, of the variables reported on.

Phillip Cagan
Harry Eisenpress
Millard Hastay
Geoffrey H. Moore

CONSUMPTION AND PRODUCTION OF CONSUMER GOODS

The sixteen chapters of my book on the shoe, leather, hide industry are now in mimeographed form. Since this, then, is the last report that I shall make on the book, I want to suggest a few of the broader implications of the work.

In the shoe, leather, hide industry a sequence of short waves is widely diffused through various aspects of the chain of activities from the raw hide markets to the final consumer. These waves last an average of around sixteen months. This industry is not the only one subject to these short waves; they are found in other major industries and, more interesting, at around the same time. Often, and especially for data representing a wide range of industries, they involve no more than retardations in the course of expansion or contraction rather than actual reversals in direction.

The wide incidence of the "subcyclical" fluctuations can be seen in data on manufacturing employment compiled by the Bureau of Labor Statistics for 90 industries (57 prior to 1931). When the number of series, each in seasonally adjusted form, that rises from one month to the next is taken as a percentage of the total number of series, we find that this percentage undergoes short movements of the same general duration and timing as our shoe, leather, hide subcycles. There were 14 such waves in the period examined, 1923-1939, lasting from 8 to 34 months and averaging 14 months. When these 90 (57) series were grouped in 6 subdivisions — 3 for finished consumer goods (nondurable, semidurable, and durable), 1 for unfinished goods used largely in finished consumer goods, 1 for finished (durable) producer goods, and 1 for unfinished producer goods — 13 to 17 industries fell in each class. With the exception of consumer perishables, most of the subgroups appeared to have minor waves at about the same time. Finished

producer goods were notable in skipping the double bottom in the 1923-1924 decline and the interruption of the long depression in 1930-1931, a fact which in itself has interesting implications. Obviously, all sorts of objective measures of the widespread short waves are required, and I have not studied the matter thoroughly. However, preliminary calculations serve to support the visual impression that I have described and to indicate that these short waves are found in many business processes — in orders, shipments, stocks, and prices — whether at the earliest or latest stage of production or marketing.

With the character and cause of these short fluctuations in business, the shoe, leather, hide study has dealt at length, and the knowledge gained as to what factors under what circumstances are responsible for generating fluctuation can quite feasibly be transposed to other industries. The process whereby a rise or fall cumulates follows lines often described before, though the part that prices and expectations about prices and delivery conditions play has been underscored in this study. Close study of a particular situation reveals the variety of factors that limit change and thus bring about reversals: ordering procedures, the systematic errors that are implicit in ordering procedures because of fluctuations in rates of change in sales, and the corrections that are implicit in the errors are involved; prices and their rates of change are involved in many different ways, including the maintenance of a tolerable relationship between buying and selling prices; and the limits imposed on extension or contraction of the inventory or order position are also involved.

This picture of fluctuation that is bred so intimately within an industry sequence raises the question whether the fluctuation ever gets outside that sequence. Yet, as indicated earlier, there is reason to believe that short movement do tend to occur at about the same time in a wide range of activity. How and why?

Obviously this question cannot be answered without specific study. It appears, however, that subcycles in the shoe, leather, hide industry are tied to the rest of the economy at the point of consumer spending for the final commodity, which echoes the rise and fall and even retardations in consumer income; and they may well be tied at other points. For example, we observe that hide prices move with stubborn similarity, in minor as well as major movements, to certain other raw material prices, and, for that matter, to the price of common stocks.

Subcycles in the shoe, leather, hide industry share the major turns delineated by the National Bureau's business cycle chronology, and we have found little systematic difference between events that surround

these major as contrasted to the minor turns. Consequently, curiosity about how subcycles in the shoe, leather, hide industry relate to those in industry as a whole develops inevitably into curiosity about how subcycles as a whole relate to the longer and stronger fluctuations in business. Two aspects of the relationship are especially provocative. The first concerns how change in the level of output associated with over- and underbuying of stock in trade — the basic phenomenon of the subcycle — relates, via alterations in the level of sales and the short-term prospect of profits, to decisions as to *when* to buy durable capital goods. The second concerns how the concept of endogenous waves of over- and underbuying of stock in trade is itself applicable to the study of fluctuation in the capital goods industries. On the latter score it seems essential to distinguish, for example, between overbuying of plant and equipment that is a function of reduction in the volume of output and overbuying in the sense of buying that could not persist even were the current level of output to be maintained for some time. This is a question on which a study of business expansions of the recent past could throw considerable light.

Ruth P. Mack

COSTS AND PROFITS

We completed our collection of data on ratios of costs and profits to sales, turnover rates, and return on net worth for the business economy as a whole and for major industrial groups, 1919–1952. Separate computations based on profits before taxes and profits after taxes were made. Changes in corporate income and excess profits have become so important that the effect on profits of other factors such as volume or prices can be seen more clearly in the before-tax figures.

To present a view of this material, I began to draft a paper, tentatively called “Business Cycles and Business Accounts.” Among other features such a paper would indicate a consolidated sales, cost, and profit statement for the entire domestic business economy, year by year, along lines developed by the National Income Unit of the Department of Commerce. Such a statement describes the transactions between business and nonbusiness (consumers, governments, foreign economies, etc.) and their outcome. Expense ratios of the business economy generally rise in business contractions, and, less regularly, fall in business expansions. The changes reflect changes in prices received from nonbusiness, changes in unit costs, or both. Preliminary data indicate that both are important and that their relative importance varies a good deal from year to year and cycle to cycle. Business can obtain higher

prices, relative to its costs, from nonbusiness at some times than at others.

Compilation and checking of data on quarterly common stock prices of individual companies, 1920–1938, to be studied in conjunction with previously assembled data on their profits, was completed. I plan to prepare an Occasional Paper on the reflection of differential profit trends in stock prices.

We took steps to bring up to date our figures on the percentage of corporations whose profits are rising at various stages of the business cycle. In this connection, quarterly data on profits before and after taxes in 1951 and 1952 were assembled for some 600 industrial corporations.

In every business expansion some industries have extremely large increases in profit, some have extremely small increases or even declines. In every contraction some have extremely large declines in profit, others have very small declines or even manage to increase their earnings. These differences are the upshot of changes in physical volume, prices received, prices paid, and efficiency of operations, as modified by depreciation practices, interest burdens, and taxation. Theoretically, a mathematically complete analysis of profits can be made in such terms, and much, although by no means all, of the information needed is at hand. I propose, therefore, to interpret as fully as possible the outstanding differences in the profit experience of different industries in each phase of each business cycle since 1919. Such a program suggests many questions. Some industries usually have narrow margins of profit even in prosperity. Are they especially vulnerable in depression? Are industries with heavy fixed charges especially vulnerable? Do the “growth” industries escape? Some of the answers promise to be surprising.

Thor Hultgren

MONEY AND BANKING

Monthly Series on the Money Supply

The various money-supply series which Anna Schwartz has been constructing now stand as follows:

Currency in Public Circulation. A monthly series in seasonally adjusted form was completed for the period 1907 to date. This series is equal to currency outside the Treasury and the Federal Reserve banks minus cash in the vault of other banks. It is an extension and revision of the earlier estimates in Technical Paper 4. The extension consists in adding the decade 1907–1917. The chief revisions are as follows: (1) All reported vault cash figures for nonnational (1907–1922) and nonmember (1919–1944) banks were used. The earlier version used

only the figures for national and member bank call dates in order to eliminate the effect of a marked intraweekly movement in vault cash. In the present version, the same objective was achieved by estimating simultaneously the intraweekly and seasonal movements in vault cash and eliminating them from all observations. This is the reason the final series is in seasonally adjusted form only. (2) A different technique for estimating missing call-date figures was used. This technique involved classifying the states in a number of groups, and within each group estimating the missing figures from the movements of vault cash in the other states by making use of the observed correlations between the movements of vault cash in randomly selected pairs of states from each group. (3) A different method of passing from call-date to monthly figures was used. The present version makes more use than the preceding one of straight-line interpolation between call dates for the part of the series for which direct monthly observations are not available.

The monthly series has been linked with currently reported Federal Reserve data for the period after 1943. No further statistical work on this series is contemplated.

Deposits. A monthly series in seasonally adjusted form was completed for the period 1919 to date for demand and time deposits in all commercial banks. For member banks, Federal Reserve data that required only minor modifications for our purposes are available monthly from April 1923. From 1919 through March 1923, monthly data are available only for weekly reporting banks. Corresponding estimates for nonweekly reporting banks were interpolated between call-date figures on the basis of the contemporaneous movements in deposits in weekly reporting member banks and the observed relation between these and deposits in nonweekly reporting banks from 1923–1928, when both are available monthly.

For nonmember banks, the deposit series are based primarily on call-date figures for a sample of nineteen states and the District of Columbia. Separate estimates were constructed for New York State, a group of nine relatively urbanized states plus the District of Columbia, and thirty-eight rural states. For the first two groups, data are available for all states, though not for all call dates; for the third group, data are available for a sample of nine states. The main problem was constructing estimates for the missing twenty-nine rural states from the nine in our sample. This was done on the basis of the observed relation between movements in member-bank deposits in the two groups of states. From April 1923 on, monthly data were interpolated between

call dates on the basis of the contemporaneous movements in deposits in member banks in so-called “smaller” places. For the period from 1919 to April 1923, monthly data were obtained by straight-line interpolation between call-date figures.

These monthly series have been linked with the currently reported Federal Reserve data for the period after 1943. Corresponding estimates for commercial bank deposits are being developed for 1907–1919, together with similar series on time deposits at mutual savings banks and at the Postal Savings System.

As this account shows, the end of this time-consuming task is now fortunately in sight. A manuscript describing the series and their construction is in preparation.

Money-Supply Series for the Nineteenth Century

David Fand has completed estimates of currency in public circulation and deposits for the period from 1873 to 1896. These estimates are semiannual for part of the period and annual for the rest and are linked in 1896 with the revised Federal Reserve annual series. Fand's estimates for the first time exploit fully the data available prior to 1883 from reports on the federal tax levied on bank deposits. These data, which are broad in coverage but give no detail on the balance sheet, can be combined with those reported by the Comptroller, which are defective in coverage, especially for private banks, but give reasonably detailed balance sheet figures. The resulting estimates for the period prior to 1883 are used to adjust the Comptroller's data from 1883 to 1896.

Workshop in Money and Banking

The estimates by David Fand were prepared in part under the auspices of the Workshop in Money and Banking at the University of Chicago. Although the Workshop has no administrative connection with the National Bureau, its research activities are closely connected with my own research on the National Bureau project. Among the studies already undertaken are not only Fand's estimates but also studies of the demand for money in hyperinflations, by Phillip Cagan, now a Research Associate at the National Bureau; secular and cyclical changes in the velocity of circulation of money, by Richard Selden; inflation in the South during the Civil War, by Eugene Lerner; the behavior of the money supply in Canada, by John Sawyer; and money and price changes in Germany, 1933–1945, by John Klein.

Milton Friedman

Fluctuations in the foreign trade of individual countries are partly determined by events in the outside world. This is quite obvious for exports but true to a lesser extent for imports also. Analysis of foreign trade cycles therefore requires data on economic swings in the world at large. Such data, however, are not available beyond the most recent past. It has not even been established whether the international economy has fluctuated sufficiently in unison over the last seventy years to justify the concept of world cycles.

The first task I undertook, therefore, upon my return to the National Bureau in September was to explore possible ways of ascertaining and dating international cycles. The object was to arrive at a chronology of world business cycles analogous to our national reference dates. The problem is how to find statistics that would reflect such world cycles in view of the paucity of global data and the difficulty of combining national figures with due regard to variations in the size of individual countries and in the amplitudes of their fluctuations.

So far I have studied three quarterly and one annual series in which world cycles ought to be traceable and found that all four show quite unmistakably similar cyclical swings between 1880 and 1938. Before describing these series it should be noted that the term "world" is loosely used above and in the following discussion. More accurately, our series picture business activity in countries outside the United States so that they can be used directly for our most immediate purpose, the analysis of the impact of economic fluctuations abroad on American foreign trade.

The first of the series was devised by Geoffrey H. Moore and used by Oskar Morgenstern in his study of international financial transactions. It is based on Burns's and Mitchell's careful choice of cycle turning points for Great Britain, France, and Germany and is a simple average of these countries' cyclical fluctuations. The procedure is justified by the high degree of parallelism in the swings of the three countries; in 70 per cent of the months from 1879 to 1938 they were in the same cycle phase. The obvious objections to this method are that it ignores the different importance of the three countries, that it disregards all other countries, and that it takes account only of direction of change without paying any attention to amplitude of movement. Despite all this we found that this "three-country series" stands up well when compared to others.

The second series is designed to meet some of the criticisms mentioned above. It is constructed by the same method but with the help of quar-

terly cycle turns for twelve additional countries to be found in Thorp's *Business Annals*. Furthermore, the equal weights of the three-country series are replaced by weights that accord roughly with the countries' role in international trade. We find that the resulting fifteen-country composite, which runs from 1890 to 1931, traces exactly the same cycles as the three-country series and reaches peaks or troughs in the same or adjacent quarters in every instance but one.

Third, we use Folke Hilgerdt's index of world manufacturing production adjusted to exclude the United States. Though this is an annual series which precludes accurate timing comparisons, its generally similar movements support the validity of the three- and fifteen-country series. Minor divergences are explained with one exception by the strong upward trend of industrial production.

Finally, we use the cycle sensitivity of foreign trade for our fourth approach to world cycles. Unfortunately, there exists not even an annual continuous series on world trade prior to 1924 and quarterly data are available only from 1929 on. But since such statistics not only will assist the determination of international reference dates but will be most useful for the analysis of foreign trade in general, it seemed worthwhile to go to some trouble to assemble them. In view of the intended analysis of American exports, I decided to measure total world imports excluding United States imports. By bridging the gaps between existing series I obtained annual data from 1880 to 1929, from which a quarterly series was interpolated.

Comparison of the peaks and troughs in the roughly hewn world-import series with those in the crude composites of national cycles is most reassuring. Imports trace out 9 of the 10 cycles shown by the three-country series between 1880 and 1938.

The most significant fact, however, is the timing of imports in relation to world business cycles as represented by the three-country series. Before 1914 imports kept growing after business had passed its peak and resumed their rise before business reached its trough. The reverse was true in the interwar period; imports now rose later and dropped earlier than domestic business. In other words, before 1914 every divergence between imports and general business movements was due to a rise in imports, and after World War I to a decline. We have found quite similar changes in the timing of British and American imports relative to business cycles in the two countries. That our international imports are related to our international cycles in the same fashion as national imports are to national cycles supports the validity of the new series.

For the interpretation of changes in world imports we need to know how far they represent expansions and contractions in a great number of countries and how far merely movements in a few countries with very large imports. A survey of thirty-four countries reveals considerable agreement in year-to-year movements of their imports. The number of countries with rising imports shows cyclical swings which precede or accompany those in the dollar value of imports. These cycles have large amplitudes; at times 90 per cent or more of the countries registered higher imports than in the preceding year, at other times less than 30 per cent registered increases. Thus, movements in the value of world imports represent economic tides which affect a large number of the countries of the world.

Another finding is also interesting. The shift in the trend of trade is most clearly expressed in the change in the number of countries with expanding imports. Before World War I, 24 of the 34 countries in our sample increased their purchases abroad in an average year; after World War I only 17 did so.

The next step will be to use the findings about world cycles for the analysis of American foreign trade. A first glance has disclosed already that the unruly behavior exhibited by our exports before 1914 when viewed in the framework of United States business cycles gives way to a very orderly pattern within the international cycle chronology. The examination will be extended to major commodity groups and to price and volume indexes¹ and will attempt to disentangle the influence of foreign and of domestic business cycles on American exports.

Ilse Mintz

WAR CYCLES

During the summer I prepared a manuscript for an Occasional Paper on the Korean War, and a revised draft has now been submitted.

The paper analyzes the influence of the Korean War and the associated defense mobilization on aggregate economic activity in the United States. Wherever pertinent, the Korean experience is compared with similar experiences during World War II, in order to illuminate the influence of particular forces at work during the period. It is first noted that the Korean mobilization is roughly comparable in magnitude to the defense mobilization of 1940–1941, rather than to the belligerency mobilization of 1942–1945. When the major economic developments during the two defense mobilizations are compared we find that the

¹ See Robert Lipsey's report in section 6.

reactions of the economy to the disturbances introduced by mobilization differed in important respects in the two periods. Economic developments during 1950–1951, especially, underline the significance of the reactions of consumers and businessmen to the outbreak of war and the prospect of mobilization.

The outbreak of the Korean War in June 1950 was followed by eight months of rapidly advancing prices, as well as rising production and employment. The inflationary pressure of this period developed primarily in the private sector of the economy and was the result of anticipated rather than actual shortages of civilian goods. After the first month or two of 1951, the inflationary pressure subsided, despite the rapid growth of defense and defense-related expenditures. This new development also originated in the private sector of the economy.

The key to an understanding of these events is to be found in the behavior of consumers. The wide variations in consumer spending which occurred during 1950–1951 were largely independent of variations in income and were strongly influenced by short-term expectations. The usual hypothesis that consumer expenditures vary passively in response to changes in income clearly does not hold for this period.

Fluctuations in inventory investment by various business sectors accounted for a large proportion of the fluctuations in private investment, and hence in total private expenditures. The fluctuations in inventory investment were in turn intimately related to the fluctuations in consumer expenditures.

The relaxation of consumer demand in 1951 provided a deflationary influence which offset the inflationary influence of the mobilization program, and the balance between defense and civilian needs that was struck in mid-1951 was maintained through 1952. The share of gross national product devoted to national security expenditures was substantially increased in 1952 without serious inflationary consequences. The process of liquidating the excessive stocks accumulated by distributors during and shortly after the inflationary phase of the expansion was in large part responsible for the ease with which the government share of the national product was increased.

Bert G. Hickman

LONG CYCLES

“Long cycles” in economic activity have been a recurrent theme in the National Bureau's program of research. They figured in Arthur F. Burns's *Production Trends in the United States since 1870*, published by the National Bureau in 1934, and were considered again in rela-

tion to business-cycle methodology in Burns's and Mitchell's *Measuring Business Cycles* (1946). More recently, long swings have appeared in some of the materials on capital formation and financing assembled by Simon Kuznets and his associates. During the year I made some exploratory analyses designed to throw further light on the character and extent of long swings in our economy.

Provisionally, it is convenient to speak of long swings as any residual fluctuation about a smooth trend of growth after allowance is made for the shorter ups and downs that we know as business cycles. That such swings may have been a pervasive feature of economic growth is suggested by the work of Burns mentioned above and by Kuznets' *Secular Movements in Production and Prices* (1930). These studies show this feature most clearly in the spheres of nonagricultural production and prices; but Burns offered evidence that these swings may be diffused fairly generally throughout the economic system, and this suggestion is broadly indicated by Kuznets and his associates for the areas of capital formation and the main components of gross national product.

Questions arise, however, about the nature of these movements. Does the evidence suggest a distinct species of cyclical fluctuation more or less independent of the processes of long-term growth, on the one hand, and of the business cycle, on the other? In particular, is there a single long cycle widely diffused throughout the economic system or are long cycles found only in a limited range of processes and with different timing in different processes? Can these fluctuations, wherever found, be explained as technical consequences of our conception of business cycles as recurrent but not strictly periodic movements of economic activity? As a point of departure, we have sought to test whether averages that cut across the movements associated with business cycles fluctuate in a nonrandom manner about a smooth trend of long-term growth, using a sample of some twenty monthly or quarterly time series covering a considerable range of economic activities. We have also tested the hypothesis that such synchronization as occurs in the "long swings" of various economic activities is due solely to the nation's occasional relapses into exceptionally severe depressions.

So far, the evidence in the first group of tests is broadly consistent with previous findings in *Measuring Business Cycles*. Long swings of a nonrandom character are clearest in railroad stock prices, in railroad bond yields, and in bond sales on the New York Stock Exchange — all series involving financing at long term. They also occur in orders for railroad equipment and, less clearly, in plans filed for new buildings in Manhattan — two series on investment commitments. There is, finally,

evidence of significant long swings in deflated clearings or debits outside New York City and in pig iron production — both series of wide business significance. On the other hand, the available composite indexes of general business activity seem to show only such long swings as might arise from random variations in the character of successive business cycles.

Our second group of tests suggests that the observed synchronization of long swings among economic activities is not due solely to the occurrence of occasional severe depressions. At the same time, there is evidence that the degree of synchronization may be markedly less than that which characterizes business cycles. Both sets of tests, however, require further extension and analysis before the results can be considered firm.

Millard Hastay

OTHER STUDIES

Several manuscripts are undergoing revision: "Consumer Expenditure and Savings Patterns," by Lawrence R. Klein; "International Financial Transactions and Business Cycles," by Oskar Morgenstern; and "Harvest Cycles," by Geoffrey H. Moore.

Three reports are now in press: *Personal Income during Business Cycles*, by Daniel Creamer; *Short-Term Economic Forecasting*, Studies in Income and Wealth, Volume Seventeen; and *Factors Influencing Consumption: An Experimental Analysis of Shoe Buying*, Technical Paper 10, by Ruth P. Mack.

Technical Paper 8, *A Study of Aggregate Consumption Functions*, by Robert Ferber, was published in July, and Occasional Paper 40, *Transport and the State of Trade in Britain*, by Thor Hultgren, appeared in December. The conference proceedings volume, *Regularization of Business Investment*, was issued in March 1954.

The papers presented at the Conference on Policies to Combat Depression held in October have been mimeographed for limited circulation (see Part Two). A second conference on this subject will be held in May, and a Conference on Measurement and Behavior of Unemployment is scheduled for September.

Some of the studies of banking and finance and of fiscal questions, reported in sections 4 and 5, deal with certain aspects of business cycles.

2. NATIONAL INCOME AND CAPITAL FORMATION

CAPITAL FORMATION AND FINANCING IN THE UNITED STATES

This project was initiated in 1950 under a grant from the Life Insurance Association of America. It includes a number of studies for which separate reports will be issued, as well as a final summary volume. One report was published in 1953, *The Role of Federal Credit Aids in Residential Construction*, Occasional Paper 39, by Leo Grebler. These have so far been published in 1954: *The Volume of Residential Construction, 1889-1950*, Technical Paper 9, by David M. Blank; *Capital and Output Trends in Manufacturing Industries, 1880-1948*, Occasional Paper 41, by Daniel Creamer; and *The Share of Financial Intermediaries in National Wealth and National Assets, 1900-1949*, Occasional Paper 42, by Raymond W. Goldsmith. The following are in press:

Melville J. Ulmer, *Trends and Cycles in Capital Formation by United States Railroads, 1870-1950*, Occasional Paper 43

Alvin S. Tostlebe, *The Growth of Physical Capital in Agriculture, 1870-1950*, Occasional Paper 44

Israel Borenstein, *Capital and Output Trends in Mining Industries, 1870-1948*, Occasional Paper 45

A proposed Occasional Paper by Robert Rude, "Assets of Private Nonprofit Institutions in the United States, 1890-1948," is nearing completion. A monograph, "Capital Formation in Residential Real Estate: Trends and Prospects," by Leo Grebler, David M. Blank, and Louis Winnick has recently been approved by the Board. Other reports in preparation are described below. Sergei Dobrovolsky is collaborating with Daniel Creamer and Israel Borenstein in their work on the manufacturing and mining sector, concentrating on the financing of investment.

Agriculture

Work this year centered on the preparation of three chapters for the monograph on the agricultural sector. They deal with (1) growth of financial assets used in farming, (2) capital-product ratios, and (3) sources of capital used in farming.

The first of these chapters is based on estimates of selected financial assets made by the Bureau of Agricultural Economics and by Raymond Goldsmith. We adjusted these estimates slightly and classified them according to whether they were used in farming, represented miscel-

laneous reserves accumulated mainly for purposes unrelated to farming, or consisted of equities in farm cooperatives.

Financial assets used in farming (currency and demand deposits) were found to represent a steadily increasing proportion of total assets so employed, rising quite consistently through good times and bad from 2.4 per cent in 1900 to 6.5 per cent in 1950. The growing importance of cash balances in farming reflected a steady increase in specialization — a growing dependence of farmers on other sectors, and on other units in the farm sector, for intermediate products.

The second chapter analyzes ratios of specific types of farm capital to product, by regions. By relating the major classes of farm assets individually to product we were better able to identify the factors that contributed to the decline in the amount of capital used per unit of product and to appraise their importance. Regional differences in the various capital-product ratios show a marked reduction through time, a development which we hope to examine at greater length in 1954.

In the third chapter we explore the sources of farm capital since 1900. Two findings are of special interest. First, the principal source of farm capital was the savings of farmers themselves. Tentative estimates by five-year periods indicate that except for the decade 1910-1919 creditors at no time supplied as much as 30 per cent of the amount invested to maintain or to increase farm assets.

Second, reliance on external sources to assist in financing farm capital was, in general, relatively large in regions where investment and income per farm and per person engaged in farming were relatively high, and where livestock enterprises were most prominent. This finding applies to 1910 and later and is based on the relation of farm mortgage and institutional non-real estate debt to the value of physical farm assets.

Alvin S. Tostlebe

Mining

In addition to extension and revision of Occasional Paper 45, *Capital and Output Trends in Mining Industries, 1870-1948*, work was centered on gathering data for an analysis of changes in sources of financing the mining industries. In particular, long-term changes in the balance sheet structure of mining corporations were studied, by use of sample data based on annual reports to stockholders for the years 1909, 1919, 1930, 1937, and 1948, as published in *Moody's Manual*. The preliminary results for one industry — bituminous coal mining — are given in the accompanying table.

CONSOLIDATED BALANCE SHEETS OF A SAMPLE OF LARGE
CORPORATIONS ENGAGED IN BITUMINOUS COAL MINING, 1909-1948

| | 1909 | 1919 | 1930 | 1937 | 1948 |
|--|------|------|------|------|------|
| <i>Assets (per cent of total):</i> | | | | | |
| Fixed assets | 79 | 78 | 76 | 77 | 53 |
| Cash, receivables, and inventories | 10 | 12 | 12 | 15 | 37 |
| Investments | 9 | 8 | 9 | 5 | 6 |
| Other assets | 2 | 2 | 3 | 3 | 4 |
| <i>Liabilities (per cent of total):</i> | | | | | |
| Bonds, mortgages, etc. | 28 | 18 | 18 | 17 | 10 |
| Other liabilities | 6 | 5 | 6 | 10 | 18 |
| Capital stock | | | | | |
| (preferred and common) | 57 | 43 | 52 | 51 | 20 |
| Surplus and surplus reserves | 9 | 34 | 24 | 22 | 52 |
| Number of corporations in sample | 21 | 33 | 45 | 45 | 34 |
| Book value of fixed and current assets of corporations included in sample as a percentage of those of all corporations engaged in bituminous coal mining | 31 | 31 | 41 | 43 | 38 |

Source: Based on data published in *Moody's Manual*.

It appears that the ratio of fixed to total assets has declined over time, while that of working capital (cash, receivables, and inventories) has increased, particularly between 1937 and 1948. The relative share of the remaining asset components (investments and miscellaneous) has undergone only minor fluctuations.

The importance of long-term debt (bonds, mortgages, etc.) as a source of capital in bituminous coal mining declined during the period studied, the most marked declines occurring between 1909 and 1919 and between 1937 and 1948. The impact of this decline on the movement of the ratio of net worth to total assets or liabilities was offset, however, by an inverse movement in the relative importance of other indebtedness — primarily current liabilities. Also counteracting were the changes in the relative importance of the two net worth components (capital and surplus). The trend in the ratio of capital stock (preferred and common) to total liabilities was downward and that in the ratio of surplus to total liabilities upward. Here, too, the most considerable changes occurred during the first and the last decades of the period. In 1948 the surplus item accounted for about 50 per cent of total liabilities.

These findings have been checked against aggregate data for corpora-

tions reporting balance sheets for the years 1930, 1937, and 1948 published in the *Source Book* and *Statistics of Income*. The aggregate data, particularly those for 1937 and 1948, are based on unconsolidated returns. Our sample data cover large corporations only and are based on consolidated balance sheets. In spite of these differences, the movements of the various ratios based on the two sources were found to be similar, though there are sizable differences in the level of the ratios in some instances. Such differences in level appear to be due to the consolidation rather than the size factor, judging from ratios based on *Statistics of Income* data for all large corporations (i.e. with assets of \$5 million and over) submitting balance sheets in 1948.

Israel Borenstein

Transportation and Public Utilities

During the year we completed construction and analysis of the statistical record of investment annually from 1870 to 1950 for total utilities and for six components: railroads, electric light and power, telephones, street and electric railways, local bus lines, and all other utilities. In addition we constructed "sources and uses of capital" tables for selected periods for railroads, electric light and power, and the telephone industry.

The monograph, on which we have made a modest start, will consist of three major parts. The first of these will deal with secular trends in capital formation and the factors underlying them. Here we have found a tendency for total utilities and each of its components to follow the same broad secular *pattern*, although of course there is wide variety in the specific stages of development through which each had progressed by 1950. The "least mature" of the industries studied, from the standpoint of its secular pattern, is the telephone industry. Net capital formation by this industry tended to advance by increasing absolute amounts from its inception in the late 1870's throughout the period under review. The "most mature" of the components is street and electric railways; net capital formation by this industry turned down in 1905 and before the end of World War I had become negative. Of course, degree of maturity differs from chronological age: from the latter standpoint, the youngest component we have selected for special study is local bus lines and the oldest, steam railroads.

Among the myriad factors affecting the pace of an industry's investment over the long run, two stand out as of paramount importance: the first is output; the second is technological development, especially as reflected in the long-run trend of the capital-product ratio. In the

- C. Tables on Regional Distribution of Financial Intermediaries
- D. Statistics of Investment Banking Outlets
- E. Tables on National and Local Concentration of Financial Intermediaries
- F. Estimate of Market Value of Corporate Stock
- G. Materials on Gross Flow of Funds

Raymond W. Goldsmith

General Studies

The revision of the estimates of national product and its components back to 1869, described in the last year's *Annual Report*, has been completed, and the resulting estimates are being described in detailed notes on sources and methods. In utilizing the recently published revised estimates of construction, and particularly the new estimates yielded by the several sector studies (residential and related housing, agriculture, manufacturing, and public utilities), we found it necessary to revise the estimates not only of gross construction but also of depreciation. It was also found advisable to link more closely with the current estimates of the Department of Commerce, to permit the use of a series that could henceforward be carried further on the basis of the continuous work of the Department. The estimates will provide annual series on national product and its components since 1919, and five-year moving averages based on preliminary annual series back to 1869. In addition to the components shown heretofore, the new estimates will provide an allocation of total construction among nonfarm residential, government, and all business (including farm residential and nonprofit); and there will be a rough allocation of total business construction and producers' durable equipment by major industrial sectors of use.

A paper bearing upon the analytical problems of the study was prepared for the Universities-National Bureau Conference held in November. It dealt with international difference in levels and trends of the ratio of capital formation to national product for countries dominated by the business system of economic organization. In analyzing the reasons for the limits upon the share of capital formation and for the long-term trends revealed by these shares, hypotheses were advanced (and formulated in simple algebraic terms) concerning the factors that determined the long-term trend in the shares of upper income groups and those that governed the contribution to national savings of the groups below the top whose savings could be taken as designed largely to provide for retirement and contingency needs. I hope that some additional empirical evidence bearing upon these factors can be added in the summary volume on capital formation and financing in the United States.

Now that the revision of the country-wide estimates of national income and its components is completed and the several monographs will be available by the spring of 1954, the preparation of the summary volume can be accelerated. It is hoped that the first draft of the report will be completed by the fall of 1954.

Simon Kuznets

OTHER STUDIES

Simon Kuznets' *Shares of Upper Income Groups in Income and Savings* and the income conference's *Studies in Income and Wealth, Volume Fifteen*, which deals with the size distribution of income, were published. George Garvy of the Research Department of the Federal Reserve Bank of New York is continuing his exploratory study with a view to formulating a research project that will relate the occupational distribution of the labor force to the distribution of income by size.

Millard Hastay's exploratory investigation of long cycles, which bears particularly on the study of capital formation, is reported in section 1. Reports on other studies of income, investment, and financing appear in the sections that follow, especially section 4. The activities of the Conference on Research in Income and Wealth and the special conference on Capital Formation and Economic Growth are described in Part Two.

3. WAGES, EMPLOYMENT, AND PRODUCTIVITY

TRENDS IN WAGES AND PRODUCTIVITY IN THE UNITED STATES

In the fall of 1953 the National Bureau received a two-year grant from the Alfred P. Sloan Foundation to finance a study of the course of wages in the United States since 1860, of trends in productivity for as much of this period as data are, or can be made, available, and of the course of employment. The study of wages is under the general supervision of Leo Wolman; John W. Kendrick is directing the study of productivity.

Wages

In a paper read before a Joint Session of the American Statistical Association and the Industrial Relations Research Association in Washington, D. C., in December, I summarized the course of average annual money and real hourly earnings, 1914-1953, in five industries — manufacturing, railroads, building construction, and bituminous and anthra-

cite coal. The principal finding is the extraordinary rise in both money and real hourly earnings in this period and the persistent advance in real hourly earnings in both good times and bad. It is planned to prepare a monograph on the behavior of wages and employment since 1914, dealing not only with the behavior of general wage and employment levels but also with divergencies among constituent industries.

Albert Rees, a Research Associate this year, is undertaking to reconstruct the wage history of the quarter-century, 1890–1914. This has long been a puzzling period in American wage history. Opinions have differed sharply as to the course that money and real wages pursued in these years. With voluminous materials in the National Bureau's files at his disposal, Mr. Rees is attempting to devise more reliable measures of wage movements and to relate them to changes in wholesale and retail prices.

Gerhard Bry's study of German wages, which includes some comparisons with British and American trends, is reported briefly below.

Leo Wolman

Productivity

Our study of productivity trends will continue and expand upon the study on which Frederick C. Mills was engaged at the time of his retirement from the National Bureau last year. Dr. Mills summarized his initial findings in Occasional Paper 38, *Productivity and Economic Progress*.

The study will present an integrated picture of labor and capital input per unit of output at the national and industry levels. Existing estimates by the National Bureau going back to 1899 and earlier will be brought up to date, and new estimates shown for some of the industries not now covered.

Use will be made of the estimates of capital stocks, now being developed in the study of capital formation and elsewhere, in order to present estimates of composite capital and labor productivity by industry and for the economy as a whole. The evidence thus far assembled reveals that real capital stocks per unit of labor input have changed significantly over time in most sectors of the economy; thus, the movements of composite capital and labor productivity may be expected to diverge from the movements of the conventional "labor productivity" measures.

To provide consistency with measures of resource input, and to yield productivity estimates for individual industries that are additive, we shall attempt to estimate output net of intermediate products con-

sumed, at least for selected years. Or, alternatively, the materials consumed in the production process may be combined with the resource inputs and related to gross output, although this broader industry productivity measure will not be consistent with aggregate productivity based on real gross or net national product.

Finally, we expect to analyze, at least in a preliminary way, inter-relationships between productivity and other significant variables in the process of economic growth.

John W. Kendrick

TRENDS AND CYCLES IN GERMAN WAGES

Our manuscript on "Wages in Germany, 1871–1945" has been reviewed by the staff. In addition to analyzing the long-run trends and cyclical behavior of German wages, we have undertaken to make some comparisons with British and American data. Some of the findings are:

1. There is a fairly close relation between the economic fortunes of a nation and the trend in real wages. This is revealed in comparisons of real national income per capita and real wages in Germany, Great Britain, and the United States, between 1870 and 1945.

2. The wage structure, during the three-quarters of a century under observation, tended toward less inequality in all three countries. In Germany this trend reveals itself in a conspicuous narrowing of skill, age, sex, and regional differentials.

3. The cyclical behavior of wages in the three countries shows important elements of similarity, examples being (a) the cyclical downward rigidity in wage rates, (b) the strong lags in wage rates behind turns in general business conditions, and (c) the shorter lags and larger amplitudes of earnings as compared with rates.

4. A study of wage behavior under extraordinary circumstances, such as war, shows characteristic similarities and differences among the three countries. In all three countries real wages during World War II declined less (or rose more) than during World War I. In both wars Germany shows the most unfavorable and the United States the most favorable real wage behavior. This comparison again shows the strong relationship between real wage development and the political, military, and economic fortunes of the three countries.

Gerhard Bry

EMPLOYMENT TRENDS IN THE SERVICE INDUSTRIES

A draft of the study has been completed; it has still to be revised and brought up to date.

The recent publication of the 1950 census of the labor force permits us to survey the growth of the service industries over a period of eighty years (see the accompanying tables). The total number of persons in the service industries has grown consistently but not steadily: there were decades of slow growth (notable 1910-1920), if we may trust the figures, followed by spurts. Relative to the nonagricultural labor force, the service industries merely held their own from 1870 through 1920 and then increased rapidly to 1940.

When we look at the various categories of service industries, we find that only one has failed to grow relative to the labor force — domestic service. This industry contained 1 of every 14 persons in the labor force

LABOR FORCE AND SERVICE INDUSTRIES, 1870-1950

| YEAR | LABOR FORCE (thousands) | | | LABOR FORCE IN SERVICE INDUSTRIES AS PERCENTAGE OF | |
|------|-------------------------|-----------------------------|---------------------------------|--|------------------------------|
| | Total ^a | Nonagri-cultural Industries | Service Industries ^b | Total Labor Force | Nonagri-cultural Labor Force |
| 1870 | 12,780 | 6,350 | 2,450 | 19.2 | 38.6 |
| 1880 | 17,195 | 8,585 | 3,320 | 19.3 | 38.7 |
| 1890 | 23,570 | 13,580 | 5,200 | 22.1 | 38.3 |
| 1900 | 28,700 | 17,990 | 6,920 | 24.1 | 38.5 |
| 1910 | 36,130 | 24,790 | 9,770 | 27.0 | 39.4 |
| 1920 | 41,230 | 30,110 | 11,360 | 27.6 | 37.7 |
| 1930 | 47,255 | 37,075 | 17,190 | 36.4 | 46.4 |
| 1940 | 49,970 ^c | 40,970 | 20,130 ^c | 40.3 | 49.1 |
| 1950 | 58,460 ^c | 51,445 | 25,460 ^c | 43.7 | 49.7 |

^a Excludes workers with unknown industrial classifications.

^b To facilitate comparison of 1950 figures on the service industries with earlier years, the 1950 census data on these industries have been revised to conform with Fabricant's classification of the labor force in the service industries for 1870-1940. [See Solomon Fabricant, "The Changing Industrial Distribution of Gainful Workers," *Studies in Income and Wealth, Volume Eleven* (National Bureau of Economic Research, 1949), pp. 41-43.]

^c Includes the estimated number of members of the armed forces in continental United States only. The census estimates that about 150,000 members of the armed forces were serving abroad in 1940 (see Census Release P-44, No. 12, p. 2 M). In 1950, according to census estimates, there were 301,595 members of the armed forces stationed outside continental United States (see *General Characteristics, U.S. Summary*, Bureau of the Census Population Report P-B1, 1950, Table 35).

Source: The figures for 1870-1940 are derived from Fabricant's estimates of the industrial distribution of gainful workers, *op. cit.*, Table 2, p. 42. The 1950 data are derived from the *General Characteristics, U.S. Summary*, as cited, Table 50, and *Detailed Characteristics, U.S. Summary*, Bureau of the Census Population Report P-C1, 1950, Table 130.

LABOR FORCE IN SEVEN TYPES OF SERVICE INDUSTRY AS PERCENTAGE OF TOTAL LABOR FORCE, 1870-1950

| Year | Trade | Finance and Real Estate | Educa-tion | Other Professional Services and Amuse-ments | Domestic Service | Personal Service | Govern-ment n.e.c. |
|------|-------|-------------------------|------------|---|------------------|------------------|--------------------|
| 1870 | 6.14 | .34 | 1.49 | 1.10 | 7.36 | 1.96 | .78 |
| 1880 | 6.72 | .37 | 1.92 | 1.10 | 6.28 | 2.09 | .81 |
| 1890 | 7.74 | .69 | 2.16 | 1.48 | 6.45 | 2.72 | .81 |
| 1900 | 8.57 | 1.05 | 2.26 | 1.74 | 6.06 | 3.38 | 1.05 |
| 1910 | 9.33 | 1.44 | 2.49 | 2.13 | 5.95 | 4.21 | 1.49 |
| 1920 | 9.85 | 1.94 | 2.84 | 2.62 | 4.12 | 3.95 | 2.23 |
| 1930 | 13.10 | 3.11 | 3.45 | 3.64 | 5.40 | 5.29 | 2.39 |
| 1940 | 14.37 | 3.10 | 3.36 | 4.64 | 5.22 | 6.20 | 3.38 |
| 1950 | 16.43 | 3.33 | 3.57 | 5.42 | 2.96 | 6.38 | 5.62 |

n.e.c. = not elsewhere classified.

Source: Same as preceding table.

in 1870, but it has lost ground almost continuously; in 1950 only 1 person of every 33 was in domestic service. The labor force grew almost fivefold during this period, however, so that a relative decline in domestic service was compatible with its absolute growth, and only after 1940 did the absolute number of servants fall.

The last two decades in education display the only other instance of even a moderate pause in the relative growth of an "individual" service industry. The share of the labor force in education will soon resume its upward trend, as the population of school age enters on a period of rapid growth and the number of teachers expands. The high level of births in recent years has transformed the age structure of the population: in 1940, the eighteen-year-olds were the most numerous age group (2.6 million); in 1950, it is the three-year-olds (3.6 million).

With this temporary exception of education and the persistent exception of domestic service, the record has been one of substantially unbroken growth relative to the labor force. In general the service industries which were largest in 1870 have grown least rapidly, but even wholesale and retail trade, which had one-sixteenth of the labor force in 1870, has grown to where it now has one-sixth of the labor force. The numbers in trade now exceed those in agriculture and mining combined and are two-thirds of the number in manufacturing.

The study deals with the measurement and explanation of the trend of employment in a variety of the industries that fall in the general

service category. In general, factors like urbanization and family size have been very influential, but of course relative prices (which are seldom available) and consumer income or its distribution have also been found to be important.

George J. Stigler

EMPLOYMENT AND PRODUCTIVITY IN TRADE

A revised version of my monograph, "Distribution's Place in the American Economy since 1869," will shortly be submitted to the Directors. Three of the leading findings are: (1) Between 1930 and 1950 the fraction of the labor force engaged in commodity distribution (i.e. retail and wholesale trade) rose from 1 worker in 8 to 1 worker in 6; between the same dates, persons engaged in commodity production (i.e. agriculture, mining, and manufacturing) declined from 50 per cent of the labor force to 40 per cent. (2) Despite uncertainties about measuring output in trade, we may say that output per man-hour rose by about one-fifth between 1929 and 1949; in agriculture, mining, and manufacturing combined, it rose by two-thirds. (3) Distribution cost, measured as a fraction of the retail sales value of commodities, remained remarkably stable. Since World War I, for all finished goods and construction materials sold at retail, retailers and wholesalers have together obtained with remarkable regularity around 37 cents of each dollar of retail value. Of course there were some variations between branches of trade and some movement from one year to another, but no trend is discernible during the past three decades in the merchant's share of the retail sales dollar.

These three findings rest upon census and similarly solid foundations. What can we discover about similar trends in earlier periods? Making the best use we can of the records available, we conclude that the first and second findings are just as applicable to the period between the Civil War and World War I as they are to the period since World War I. The third finding, by contrast, requires modification. That is to say, the fraction of the labor force engaged in distributing commodities has shown an upward trend, and the fraction engaged in producing commodities a downward trend, ever since the Civil War. Again, output per man-hour has tended to rise, in both distribution and production, throughout the eight decades but has tended to rise much more rapidly in agriculture, mining, and manufacturing than in retail and wholesale trade. Finally, the distributor's share of the retail sales dollar, decidedly stable since World War I, apparently underwent a definite but very slow expansion between the Civil War and World War I.

We believe that, stated thus broadly, our findings for the period prior to World War I cannot well be assailed. However, the individual figures upon which the above broad conclusions are based clearly are much less precise and reliable than those for the period since World War I.

Harold Barger

OTHER STUDIES

Leo Wolman's compilation of statistics of union membership, 1897-1953, in the United States and selected foreign countries is completed, and he expects to finish a monograph on the subject by mid-1954.

Clarence Long has been on leave since October in order to undertake an assignment with the Council of Economic Advisers. He expects, however, to complete his manuscript on the labor force in 1954.

A report on the study of growth in governmental employment in several countries appears in section 6. A new study of the demand for and supply of scientific and technical personnel is described briefly in Part Two. A Conference on Measurement and Behavior of Unemployment, to be held in September 1954, is also described in Part Two.

4. BANKING AND FINANCE

FEDERAL LENDING, LOAN INSURANCE, AND LOAN GUARANTEES

The principal substantive findings of our survey of federal programs of loan insurance, loan guarantees, and direct lending, and of the activities of lending agencies that operate under some special type of federal sponsorship, were summarized in last year's *Annual Report*. Neil H. Jacoby reported his findings on federal programs in the business credit field, Harold G. Halcrow and George K. Brinegar reported on their studies of farm credit programs, and I reported on the activities of the federal government in the urban mortgage field. A draft of a monograph "Federal Programs of Lending, Loan Insurance, and Loan Guarantees," was prepared and circulated during the year; it is expected that a revised draft will be ready for submission to the Board by mid-year.

Perhaps the most important of the findings which this study has produced concern the impact of federal credit programs, considered in the aggregate, on the economy. Each of the programs — more than a hundred were identified in the course of our investigation — has its unique effect, often of some consequence, but surpassing these in im-

portance is the effect on the level of economic activity of the federal government's credit activities as a whole, either through direct lending to ultimate credit users or through the inducement of private lending by the offer of full or partial loan insurance or guarantee. The economist's ability to measure these impacts is far from perfect, but such rough measures as we can give of these matters suggest that, certainly in the 1930's, their impact must have been very substantial. The volume of lending and loan insurance programs is not large when related to gross national product — less than 1 per cent of GNP in every year from 1919 through 1931, 9 per cent in 1934, and subsequently between 2 and 4 per cent — but a quite different picture emerges when we compare the annual volume of federal credit activities with federal budget expenditures. The overwhelming importance of this arm of the federal establishment in the deep depression years of the 1930's is revealed by the fact that our measure of aggregate federal credit activity places it at 54 per cent of federal budget expenditures during 1933 and at 87 per cent during 1934.

One further observation is pertinent. Not only have federal credit activities become a major means through which the government's financial influence makes itself felt in the economy, but our studies show that, considered in the aggregate, federal programs have been far from perfectly coordinated as countercyclical devices. In the main, federal credit activities have moved in direct harmony with general economic currents, increasing in magnitude as private credit has expanded and declining when private credit has been on the wane. Many exceptions to this generalization are unearthed when we look to the detailed facts of individual programs, but the overwhelming lesson that our investigations teach is that we have failed in the past fully to exploit the potentialities of federal credit activities as a stabilizing factor in our economy.

This may be because the programs developed, and obtained their direction, out of very specialized needs not always related to the stabilization problem. Some responsibility may also be attributed to the absence of any explicit means for coordinating these sprawling and diverse functions of government. But whatever the reasons for past performance, we have in those programs an activity of government capable of making contributions of some dimension to the stabilization of the economy, if we can learn to use them to that end.

R. J. Saulnier

CORPORATE BOND RESEARCH

The Volume of Corporate Bond Financing since 1900, the first of a series of studies in corporate bond financing, was published in Septem-

ber 1953. The report presents and analyzes aggregate statistics relating to new offerings, extinguishments, and outstandings of corporate bonds; to corporate bond defaults and settlements; and to various money flows arising from transactions in corporate funded debt. During the past year work has progressed on a second analytical volume pertaining to key groups of quality bonds (such as those on the "legal list" and those judged as high grade by the rating agencies and the market), with particular attention given to the statistical characteristics of various classes of securities and to selected measures of default and yield experience. A draft of this volume is now nearing completion and will shortly be ready for distribution and review by the staff. The program, as presently envisaged, will conclude with a third report, which will present the detailed statistics analyzed in the second volume, together with notes on the derivation of estimates and suggested uses of the data. The tables for the third volume are substantially complete.

Several findings of interest have been turned up by our analysis of investor experience. One, which was mentioned by Arthur Burns in last year's *Annual Report*, was the tendency for the quality of corporate bonds, as measured by subsequent default experience, to deteriorate during the 1920's. This portion of the study has now been extended to cover the entire period 1900–1943. Default rates were very high for bonds offered before 1920, low for offerings in the early 1920's, high in the late 1920's, and extremely low again in the 1930's. As measured by the percentage subsequently going to default, the poorest performance was recorded by bonds floated in years of heavy financing. The possible relationship between bond quality and the volume of financing is particularly suggestive today in view of the postwar run-up in corporate funded debt.

A second finding is the tendency of the market to undervalue the low-quality issues, where quality is measured by agency rating, by legal eligibility for savings bank investment, or by the rating assigned indirectly by the market and reflected in prices and promised yields. Although default rates on corporate bonds rise as quality declines, the realized yields obtained by investors on the poorer grades as a whole were consistently above those on the higher-grade issues. A related finding, which may possibly have important implications for the future, is the tendency of the market to undervalue bonds at default. That is to say, realized yields for almost all industry size groups and periods covered by our investigation were lower for bonds sold at default than for those held until extinguishment. Moreover, realized yields were extremely high to investors who purchased at default or shortly thereafter. The depressed prices of bonds at default are doubtless attributable in large

part to the policy followed by many regulatory authorities of encouraging institutional investors to liquidate their holdings at default. Legal rules also probably explain the higher returns generally obtained on low-grade obligations. The financial institutions, which dominate the market for corporate bonds, are precluded by legal eligibility tests from purchasing low-grade obligations. Investment funds are thus channeled into high grades, and their yields are depressed as compared with other obligations.

A third finding pertains to the perverse relationship that frequently obtains between the ratings assigned by the investment agencies and the tempo of general business activity. The investment ratings are an attempt to rank issues in the order of their "intrinsic" quality, or relative freedom from default, and our studies show that the agencies have been notably successful in this respect. On the other hand, the intrinsic quality of an issue is frequently conceived to be independent of purely short-run movements in general business activity. We find, however, that this interpretation is inconsistent with the observed behavior of agency ratings. Over the business cycle, issues are consistently upgraded by the agencies during business expansion and downgraded during business contraction. Such upgrading and downgrading would be of little practical consequence if it were not for the fact that many investment intermediaries are required by law to carry their low-grade obligations (usually, issues falling below the fourth agency rating grade) at market values. Under such valuation rules, capital values and surplus accounts rise and fall with the business cycle, as issues are first upgraded and then downgraded. The shrinkage in capital values during business contractions may undermine the public's confidence in the soundness of the financial intermediaries at the very time when such confidence is most needed. In most cases the shrinkage is unwarranted, since many of the issues are promptly upgraded by the agencies during the next business expansion.

W. Braddock Hickman

BANK CAPITAL PROBLEMS

This project was initiated last year under a grant from the Association of Reserve City Bankers. In prosecuting the study we have been fortunate to secure the active collaboration, since mid-1953, of the Board of Governors of the Federal Reserve System, particularly with respect to the collection of adequate historical data on the sources of bank capital. Robert Moss of the Board's staff has virtually completed the task of compiling an annual series on total proceeds (including pre-

miums) of new stock offerings of all national banks in thirty-nine reserve cities from 1900 to 1952, and on the basis of these data is engaged in analyzing changes in the financing of the growth of bank capital during the period. Preliminary tabulations indicate that for the period 1900-1929 proceeds of common stock issues provided the national banks in these reserve cities with nearly one and one-half times as much capital as was obtained from retained earnings, whereas during 1935-1952 three times as much capital was obtained from retained earnings as from stock issues. Even during the years 1945-1952, which were the peak years for bank stock offerings in the later period, stock proceeds supplied less than a fourth of the capital accumulated by banks in these cities.

The bank stock price study that I have been conducting is now virtually completed. All the data have been assembled and most of the statistical analyses have been run. The study has unearthed one cardinal finding — namely, the intrinsic heterogeneity of bank stocks. What is true of New York banks and their stocks may not be true of West Coast banks, and what was true of southern banks in 1945 may not be true of the same banks today. Consequently, only a few generalizations can be distilled from the material, and these have to be in broad terms. Thus, the rate earned on capital almost certainly affects both bank stock prices and market discounts from book value, but when we attempt to formulate this relation more precisely — in short, to measure it — we find that the measurements vary significantly from year to year and from one group of banks to another. Or again, it is probably true that the market usually pays a somewhat higher price, other things equal, for stocks with generous pay-out ratios, but enough exceptions can be found to prevent this finding from being accepted as universally true.

David Durand

EXPLORATORY PROJECT ON RESEARCH NEEDS IN THE CAPITAL AND SECURITIES MARKETS

The Central Staff of the Financial Research Program has been engaged during the greater part of the year in taking an inventory of the research that has been done in recent years on the capital and securities markets, and considering the lines of investigation along which it would be most useful to direct research in the years immediately ahead. This work is being done under a grant of funds by the National Association of Securities Dealers and the Investment Bankers Association of America, and with the advice of a Special Exploratory Committee on Research in the Capital and Securities Markets. Willis J. Winn of the University

of Pennsylvania has prepared the research inventory and Raymond W. Goldsmith has been formulating suggestions for future investigations.

This work has offered a welcome opportunity to review the progress of research in the capital and securities markets since the completion of our 1946 survey of research needs in this field. In that year a special National Bureau committee reported on the kinds of research most needed to illuminate problems of the securities markets; since the committee's report was published a very considerable amount of progress has been made along the lines it indicated as likely to be most fruitful. Especially notable are Mr. Goldsmith's studies of savings in the American economy; the National Bureau's investigation of the capital requirements of the American economy, under the direction of Simon Kuznets; the exhaustive survey of the structure, operations, and problems of the over-the-counter securities markets by the Securities Research Unit at the Wharton School of the University of Pennsylvania; the Corporate Bond Research Project at the National Bureau; and a number of investigations of the investment habits and preferences of individuals, represented in studies made at the Harvard Graduate School of Business Administration, at the Survey Research Center at the University of Michigan, and at the National Bureau.

It is too soon yet to indicate the lines along which the present Exploratory Committee will suggest that new research should be directed. At this stage, however, it seems clear that there is need for studies of the following types: an analysis of the flow of funds in the capital and securities markets; studies of the security investment policies and experience of financial institutions; a comprehensive survey of the investment banking business; a study of the relation of the capital and securities markets to economic growth and stability; an appraisal of the effect of federal regulation of the securities markets over the last twenty years; and investigations of the factors affecting the need for, and supply of, equity capital funds. We are also looking into needs for research on factors affecting security valuation, the financing problems of small- and medium-size businesses, and the formulation of decisions by business management on matters of financial policy.

R. J. Saulnier

STUDY OF UNINCORPORATED BUSINESS

The objective of this study, as set forth in last year's *Annual Report*, is the examination of the financial behavior of unincorporated businessmen, primarily by analysis of data obtained from the Survey of Con-

sumer Finances conducted annually by the University of Michigan's Survey Research Center for the Board of Governors of the Federal Reserve System. Research to date has revealed a number of interesting facts, many of which have suggested the direction of research now under way and contemplated for the future.

Perhaps the most interesting of these results pertains to the inter-relationship between the disposable income of the businessman, his retention of earnings in his business, and the magnitude of his "personal" saving (i.e. total saving less retained business earnings). Analysis of business savings revealed a bimodal distribution of business savings at higher levels of business income. A large proportion of businessmen (over 20 per cent in the highest business income groups) indicated that they had reinvested no earnings in the business during the year. The remaining businessmen showed a distribution of retained earnings with a mode which was correlated with the level of business income.

Efforts to identify the members of the nonretaining group revealed that its membership contained a significantly lower proportion of businessmen whose incomes had risen in the previous year and a higher proportion of men over forty-five years of age than the group as a whole. Although there is a strong correlation among age, income change, and income, the separate influences are significant.

However, inasmuch as these influences may apply to total income (as distinguished from business income only) and to total saving of the spending unit, an effort was made to determine whether these groups were distinct in this regard. Investigation of the relationship between total disposable income and total savings showed that, at a given income, those businessmen who made business savings also made on the average much higher total savings than those without business savings. On the other hand, among the zero business savers there was a highly significant correlation between personal saving and total disposable income, whereas among the business savers, the correlation between purely personal saving and disposable income was virtually nonexistent. In order to produce a correlation it was necessary to take account of the amount of business saving.

Interestingly enough, the result showed that business saving may be taken into account simply by subtracting it from total income. Technically, that is, there was no significant difference in the explanation of personal saving obtained by permitting free coefficients for two separate variables (total income and business saving) and by using only the single variable, "personal" disposable income.

Furthermore, the relationship thus obtained between personal disposable income and personal saving is the same for the zero business savers as for those with business saving. In other words, the businessmen who belong to the zero business saving group are not distinguished from the others in the relationship between personal saving and personal income.

It also appears that this personal disposable income–personal savings relationship is unaffected by change in income over the previous year, although this has as yet been subjected to only a gross test. It is clear, however, that the greatest influence of income change is exercised via business savings. The natural hypothesis is then that a substantial component of these business savings is not, so to speak, the result of free “choice” in the usual sense of the term but is rather a necessary concomitant of changes in business activity.

The separate influence of age of businessmen has not as yet been completely examined. Inasmuch as the businessman’s age is associated with the life cycles of both the family and the family business, its influence on business and personal saving may prove revealing. It is likewise intended to investigate a number of other obvious factors influencing the saving-income relation, such as the earnings-equity ratio of the business and the liquid asset holdings of the family.

Daniel B. Suits

OTHER STUDIES

Mortgage Lending Experience in Agriculture, by Lawrence A. Jones of the Department of Agriculture and David Durand, will be published in 1954. Revisions of two other manuscripts in our series of studies in the agricultural credit field have been completed. These are the study of “Agricultural Equipment Financing,” by Howard G. Diesslin of Purdue University and the study of “The Pattern of Farm Financial Structure,” by Donald C. Horton of the Bureau of the Budget. Work has continued during the year on the manuscript “Financing Farmers’ Cooperatives,” by E. Fred Koller of the University of Minnesota, and on the series’ capstone volume — “Agricultural Credit Institutions.”

Three studies under the Urban Real Estate Finance project remain to be completed. J. E. Morton’s study of “Comparative Markets and Experience of Major Mortgage Lenders” will shortly be submitted to the Board; Edward E. Edwards’s manuscript on the mortgage lending activities of the savings and loan associations is being revised; Wolfgang Stolper’s study of “Economic Fluctuations and Urban Real Estate Finance” is in preparation.

Two other monographs are nearing completion: “Fund-Flow Analysis: Industrial Demands upon the Money Market,” by Wilson F. Payne, and “The Pattern of Financial Asset Ownership of Wisconsin Individuals, 1949,” by Thomas R. Atkinson.

For other studies of investment, banking, and finance see Milton Friedman’s report in section 1 and the reports on the study of capital formation and financing in section 2.

5. GOVERNMENT REVENUE, EXPENDITURE, AND DEBT

THE INDIVIDUAL INCOME TAX

In our study of the revenue structure of the personal income tax we have naturally given much attention to the relations between total taxable income and tax revenues, on the one hand, and such variables as total personal income, the level of personal exemptions, the character of allowable deductions, and the rate structure, on the other. But we have also found it rewarding to examine separately the behavior of each of the principal sources of taxable individual incomes and the amounts of tax revenue that might be reasonably imputed to them. Personal interest income is an example.

Although interest has the reputation of being a relatively stable source of income, the total of taxed and untaxed amounts received annually by individuals in the United States has varied substantially in both directions since 1913. It more than tripled between 1918 and 1929, then fell in each of the next fourteen years, and reached a level in 1943 some 42 per cent below that of 1929. It began a vigorous upturn in 1944, but despite a great growth in public and private debt, individuals’ receipts of monetary interest in 1952 were only 21 per cent greater than in 1929. In contrast, wage and salary receipts were 3.6 times as great in 1952 as in 1929; the income of unincorporated business, including rental income received by individuals, 2.6 times; and dividends, 1.6 times.

The long decline and only modest recovery in total individual interest receipts between 1929 and 1952, which occurred in the face of an increase of \$362 billion, or 190 per cent, in the total net public and private debt outstanding, appear to have been due mainly to two factors: the decline in interest rates and the continuing institutionalization of investment. For example, the monthly average yield on Moody’s Aaa corporate bonds fell from 4.73 per cent in 1929 to 2.93 per cent in 1946,

after which an irregular rise brought the figure to 2.96 in 1952. Raymond W. Goldsmith's estimates indicate that the main groups of financial intermediaries, excluding personal trust departments of banks but including government lending institutions and social security systems, raised their share of the total ownership of the principal classes of interest-bearing securities (bonds and mortgages) from 45 per cent in 1929 to 66 per cent in 1949.¹

The annual amounts of interest reported on taxable individual income tax returns reflect the general movements of total personal interest receipts, though they are also importantly influenced by other factors, such as statutory changes in the level of personal exemptions, distribution of income, the relative amounts of taxable and tax-exempt interest, etc. It is nevertheless striking to observe that the high point in the total amount of interest reported on taxable individual returns was reached as long ago as 1924. In that year, when only 4.5 million taxable income tax returns were filed, the amount of interest reported on them was \$1.9 billion. In 1950, when the number of taxable returns was nine times as large and the total amount of income on them seven times as large, the amount of interest they included was only \$1.5 billion or about three-fourths as much as in 1924. And whereas interest constituted about 8.6 per cent of the income of taxable individuals in 1924, its importance had shrunk to 1 per cent by 1943 and has remained at or below that level in every year since.

The substantial reduction in the level of personal exemptions since the 1920's and the pronounced rise in the level of personal incomes, the combination of which produced a ninefold increase in the number of taxable returns, might have been expected to increase the proportion of total personal interest income reported for income tax. But the opposite has occurred. Whereas the annual amounts of interest reported on taxable individual returns in 1918-1929 accounted for an average of about 45 per cent of the total interest income estimated to have been received by individuals in that period, an average of less than one-fourth of the total was reported on taxable returns in 1930-1950.

The explanation of the discrepancy does not appear to lie in tax-exempt securities, for we estimate that individuals' receipts of interest from such securities fell by more than one-half between 1929 and 1950.

A part of the explanation is provided by the rise since 1935, and particularly since the outbreak of World War II, of United States savings

¹ *The Share of Financial Intermediaries in National Wealth and National Assets, 1900-1949*, Occasional Paper 42.

bonds as a popular medium of investment for individuals. The accruing interest on these bonds need not be reported for taxation, if the holder so chooses, unless the bonds are redeemed. It is probable that little of the accruing interest (discount) is reported until redemption and that a substantial fraction is never reported. However, even if we assume that all the unredeemed savings bonds were owned by persons filing taxable returns and that the latter reported none of the current accruals of interest, the addition of these accruals to the amounts of interest included on taxable returns raises the proportion of total personal interest income accounted for only to a level averaging somewhat under 35 per cent in the 1940's.

Some part of the wide gap between total personal interest (exclusive of "implicit" interest) and the amounts reported on taxable returns in recent years is doubtless due to receipts by children, retired persons, and others whose total net incomes are too small to be taxable. Another part can be attributed to nonprofit institutions, whose interest receipts are treated as those of individuals in the national income accounts published by the Department of Commerce. But, on the whole, the figures strongly suggest that a significant fraction of the unreported interest estimated to have been received by individuals represents tax evasion, a conclusion that is supported by the sample study of tax returns for 1948, conducted by the Bureau of Internal Revenue under its Audit Control Program.

Although the annual totals of interest income reported on taxable individual returns in the 1940's averaged about one-third less than in the 1920's, the amount of tax revenue derived from interest income rose sevenfold. We imputed to interest the same fraction of the total tax liability on any group of returns as interest constituted of the total adjusted gross income of these returns. The effects upon the tax revenues of the substantial decline in the absolute amounts of interest income reported were far more than offset by the steep increases in tax rates and reductions in personal exemptions. Whereas the personal income tax absorbed only between 3 and 7 per cent of the annual amounts of interest income reported on taxable individual returns between 1920 and 1940, the proportion rose above 29 per cent in 1944 and 1945 and remained above 20 per cent in all subsequent years for which the figures have become available.

Reflecting the progressive structure of effective income tax rates, inclusive of the personal exemption provisions, the great bulk of the income taxes attributable to interest receipts in all years between 1918 and 1940 was levied on the upper income groups. Taxpayers with incomes of \$10,000 or more in this period, though receiving less than

45 per cent, on the average, of the annual amounts of interest reported on taxable returns, paid, on the average, 90 per cent of the annual amounts of income taxes attributable to interest. Partly because of a change in the distribution of reported interest income in favor of the lower income groups, and partly because of the relatively greater increases of effective tax rates on smaller than on larger incomes, this extreme relationship was moderated after 1940. Between 1941 and 1949, inclusive, taxpayers with incomes of \$10,000 or more reported an annual average of 37 per cent of all the interest on taxable returns and paid an annual average of 67 per cent of the income taxes attributable to interest.

A draft of a proposed Occasional Paper on personal interest income is now being circulated among members of the staff for criticism.

Harry Kahn assisted me during the year by assembling and analyzing materials on entrepreneurial income, rents and royalties, and personal deductions.

Lawrence H. Seltzer

THE TAX TREATMENT OF STOCKHOLDERS

During the year we concentrated on revising and extending the scope of our study. A number of methodological improvements have been made. In particular, we now take account of the wide diversity in the importance of personal income from corporate activity for taxpayers at the same personal income tax level and rearrange taxpayers in the new income classes into which they would fall upon imputation of their pro rata share of corporate earnings. But improvements are not obtained without some cost. In this case, while our findings are now more solid, they cover a shorter span of years, 1940-1941 and 1944-1949. This is not too serious a matter, however, for the period is varied enough to afford a wide range of results.

The manuscript has been improved in another way. Recognizing that there is some diversity of opinion about the incidence of the corporate income tax, we have analyzed the differential tax load on stockholders on the basis of a number of alternative assumptions about where the corporate income tax falls.

The remainder of this report is devoted to one of our findings — the revenue effects of that method which would, in theory (assuming the incidence of the corporate income tax to be on stockholders), bring the tax load on shareholders into equality with that of other taxpayers. Were the corporate income tax abolished and stockholders taxed as partners and called to account currently for their pro rata share of cor-

porate earnings (net of losses), all such earnings would be fully and promptly reached under the personal income tax. (Alternatively, the corporate tax might be retained but stockholders permitted to use their proportionate share of the corporate levy as a credit against their increased personal income tax liability.) Assuming that the practical difficulties of such a scheme could be met, what effect would it have on federal revenues?

For two years, 1947 and 1949, we have estimated the revenue loss that would have accompanied the introduction of the "partnership" method. These are careful estimates, but nothing more. The need to make particular assumptions and the nature of the data preclude precise predictions.

In 1947, a year of high undistributed earnings, heavy personal rates and a low corporate rate (all judged relatively to the other years of the 1940's), introduction of the partnership method of taxing corporate earnings would have meant only a slight change in Treasury tax revenues. Our estimate is that immediately, i.e. in 1947 itself, there would probably have been no revenue drop to speak of, but that over time, because imputation of undistributed earnings would raise the basis at which stockholdings are valued for purposes of computing capital gains, revenue collections would be about \$2 billion lower.

In 1949 corporate tax rates were about the same as in 1947, but undistributed profits were lower and so were effective personal income tax rates. Had the partnership method been introduced in this year, initially, federal revenues would have been lower by about \$2.5 billion. Over time, an additional \$1.5 billion would probably have been lost to the public fisc.

Since 1949, largely because corporate tax rates have been substantially higher, the revenue loss occasioned by the partnership method would have been roughly double that estimated for 1949. In other words, it appears that sizable sums are collected under the present tax system that would not be collected under the existing schedule of personal tax rates if stockholders were required to report as income their pro rata share of corporate earnings and the corporate income tax as such were discontinued. This does not mean, however, that all stockholders are "discriminated" against by the present method of taxing corporate earnings. Although most of the stockholders who paid personal income taxes in recent years would have, under the "partnership" method, a tax bill lower than their present combined corporate and personal income tax liability, stockholders at the highest income levels would be in the opposite position. Moreover, a number of stockholders, such as tax-

exempt institutions and persons with incomes too low to be taxable, who are now subject, indirectly, to the corporate tax, would not be reached by the partnership method. Finally, we must reiterate that these conclusions are derived on the assumption that the incidence of the corporate income tax is on stockholders.

Daniel M. Holland

FEDERAL DEBT MANAGEMENT SINCE 1860

I have been working on a manuscript for a possible Occasional Paper dealing with federal debt management in the Civil War, in World War I, and in World War II. The paper deals especially with changes in interest rates, ownership patterns, and maturity patterns.

One of the lines of inquiry has involved the question of "control of the debt," as this expression is commonly used in describing the consequences of financing a large short-term debt. Control is considered to be lost by the Treasury when it is regularly forced to refund a considerable portion of the debt; any tightness in the money market is immediately felt by the Treasury. But also, of course, any ease in the market can be exploited by the Treasury.

In order to identify more clearly the possible consequences of changes in the distribution of maturities, two maturity schedules have been constructed. The first is a schedule of holders' options, expressing the earliest date on which securities can be presented for payment. The straight maturity distribution of optionless debt is combined with the amounts of obligations bearing options to redeem before maturity; currently these are almost all nonmarketable obligations. The second is a schedule of Treasury options and is obtained by combining the noncallable maturity distribution with a classification of obligations according to earliest call dates.

On the basis of straight maturity distributions short-term (one-year and under) obligations constituted about the same proportion (one-third of the debt in the Civil War and World War II. In World War I about one-sixth of the debt was short-term. However, on the basis of the option classifications, World War II is clearly the most short-term of the wars. The Treasury gave options to the extent that one-half the debt was payable within a year. In World War I holders' options added only 4 per cent to the "under one year class," and in the Civil War the Treasury provided no additional options.

During each of the wars the Treasury increased its control by using the callable feature on some of its securities, but there was considerable variations in the extent to which this feature was used. In the Civil

War, by using the call option, the Treasury pulled more than one-fourth of the debt maturing after ten years down into the "within ten years" class. In World War I almost the same amount was added to the Treasury's "payable within ten years" option. But in World War II, largely because the call feature generally applied only to the last four or five years before maturity, there was only a slight, less than 2 per cent, increase in Treasury options within ten years. The debt managers of World War II, in other words, gave up more time options to holders and retained fewer time options for the Treasury than in either of the other wars.

These different degrees of control suggest that the debt authority has, from time to time, changed its ideas on the relative importance (or dangers) of short-term obligations, presumably in order to meet other policy objectives.

Marshall Robinson

NATIONAL DEBT AND FISCAL OPERATIONS IN FOUR COUNTRIES SINCE 1920

Further additions have been made to the materials required for this comparative study of debt operations in Canada, France, the United Kingdom, and the United States. The series on present (or market) value of the United States government debt is complete for the post-1941 period. Notwithstanding the "pegged market" practices of official agencies, the difference between present and par values of federal securities has fluctuated in the postwar period. This difference (present value minus par value) rose to a peak of approximately \$6.5 billion in March 1946, declined irregularly to about \$.5 billion in December 1947, rose to \$3.5 billion in 1949 (in spite of official attempts to hold down bond prices), fell to zero in March 1951, and has fluctuated at negative magnitudes (below par) to the most recent date of the computation (September 1952). The policy of supporting the market until the time of the Treasury-Federal Reserve "accord" resulted in market values exceeding par values of federal securities. From these data and other information, it appears inaccurate to describe the portion of the federal debt subject to price variation as "near money" in the sense of being riskless assets during the 1945-1949 period.

An attempt has been made to measure indirectly the substitutability of government and private debt instruments. The underlying idea is that if there is a high elasticity of substitution between any two instruments, this should show up in a close similarity of the relative movements of their yields. Therefore, yields on government and private

securities, paired in various combinations, were correlated. To eliminate trends (autocorrelation), first differences instead of the original yield figures were used. In general, correlations of differences between monthly data yield low coefficients except for United States government and corporate (Moody's Aaa) bond yields, for which the correlation coefficients for the periods 1920-1929 and 1930-1939 were +.7 and +.9 respectively. The next highest coefficient, +.6, was found for yields on three- to six-month Treasury notes and certificates and four- to six-month commercial open-market paper. Substituting differences between quarterly yield figures for monthly yield figures led to higher correlations (though at the expense of a smaller number of observations).

Earl R. Rolph

OTHER STUDIES

Occasional Paper 47, *The Ownership of Tax-Exempt Securities, 1913-1952*, by George Lent, is in press. Two other manuscripts are nearing completion, "A Century and a Half of United States Federal Expenditures," by M. Slade Kendrick, and "Corporate Income Taxation, 1909-1950," by Sergei Dobrovolsky.

During the summer Earl R. Rolph began a brief exploratory study of the timing and extent of changes in the public debt in various countries since 1914 and their relation to changes in the level of prices, currency devaluation, etc.

For other studies of governmental activity see the reports by Morris A. Copeland in section 2, by R. J. Saulnier in section 4, and by George J. Stigler in section 6.

6. INTERNATIONAL ECONOMIC RELATIONS AND FOREIGN ECONOMIES

STRUCTURE OF WORLD TRADE AND PAYMENTS

Plans for this study of the flow of goods, services, claims, and money between world areas, made possible by a grant from the Ford Foundation, have been completed, arrangements for staffing the project have proceeded, and some preliminary compilations of data have been made. The objective of the project is to develop a quantitative description, covering several recent years, of transactions between world areas, distinguishing various broad types of transactions and linking up payments

flows to the quantity and value of principal movements of goods around the world. The study will make use in one way or another of substantially all existing data on recent international economic activities. We aim to organize this data systematically and to fit it into a world-wide framework in which the economic interdependence of world areas and of all types of international economic activities can be observed and appreciated.

Our preliminary work during 1953 has developed several findings helpful to an understanding of the structure of world trade and payments. Early in the year a memorandum was addressed to the International Monetary Fund urging the use of a fourteenfold area breakdown in requesting countries to submit regionally elaborated payments accounts. The suggestions were well received by the Fund, and a basis was provided for linking the regional analysis which we are making of accounts in earlier years with reports which countries submit for 1952 and thereafter. Following a Fund Conference on Balance of Payments Presentation in September 1953, we were requested to set down further suggestions on the reporting of regional sectors in payments accounts. Accordingly, we are preparing a paper analyzing the distribution of each country's trade among fifteen world areas and suggesting the areas each country should report in order to minimize the reporting burden, subject to the consideration that reports of all countries taken together would yield a satisfactory portrayal of relationships around the world. In this connection it has been found that in 1951 countries of the world fell into three broad groups as they traded principally with one of three major market areas — the United States, nonsterling European Payments Union countries, or the sterling area. In addition, most countries have a secondary trading concern with one or both of the other two major market areas and frequently have a secondary concern with nearby countries.

From the study thus far it appears feasible to establish reporting criteria within a fifteenfold regional schema which will permit most small countries to specify transactions with no more than four of the regions and yet cover the bulk of transactions among the fifteen world areas. A few of the larger metropolitan countries of the world, however, will need to specify transactions with more than four areas, and the United States and United Kingdom, it is felt, should specify transactions with each of the other fourteen areas.

This analysis of the trading relationships between world areas is based on one of several tabulations which have been run on the IBM punch cards from which the 1951 *Direction of International Trade* is printed

and which the International Monetary Fund has kindly supplied to the National Bureau. Toward the end of 1953 an analysis was under way of a subset of these cards, consisting of those instances of trade between two countries on which both the country of export and the country of import reported, thereby permitting us to establish the extent of divergence between the two "observations." It has been found that the relative divergences were distributed in 1951 according to a bell-shaped distribution considerably less peaked than the normal curve of error, and with a tendency toward positive divergence (i.e. excess of reported import over reported export). The weighted average (weights being value of reported import) for all 2,586 cases was +4.6 per cent excess of reported import over reported export (expressed as a percentage of reported import).

About one-fifth of these cases consist of instances in which the importing country reports imports f.o.b. Since exports are generally reported f.o.b., the distribution of divergences for the f.o.b. subset is of special interest. These 501 cases were found to be more symmetrically distributed, with a more pronounced central tendency closer to zero divergence, than the remaining 2,085 cases (for which the reported import was given c.i.f.). The weighted averages of the two subsets were +2.4 per cent and +5.6 per cent respectively. Further statistical analysis may disclose a pattern in the distributions for countries in different trading circumstances, and we plan to inquire into the differences in definition, coverage, valuation, timing, and direction which may be expected to explain observed differences.

This inquiry into the record of trade between countries is intended to complement an inquiry into the International Monetary Fund record of transactions by countries with world areas. The method employed in the latter inquiry is to construct from country accounts (only some of which are elaborated by region at all) a trial-run matrix of trade transactions showing the record from both sides of the trade. In September a "Trial-Run Matrix of Trade Transactions between NATO-OEEC Countries" was prepared and presented at the Fund Conference on Balance of Payments Presentation. We concluded: (1) that it is possible from existing payments accounts to construct a bivalued matrix of trade, including sets of figures for receipts and payments from trade between areas, in which area totals agree rather closely and (2) that the comparison of two records for any given trade — in the context of the world-wide matrix — suggests promising lines of inquiry which may lead to adjustments bringing country accounts into better agreement.

A further result of our exploratory work is the finding that the com-

modity composition of world trade (in 1951) could be encompassed with a relatively high degree of coverage by considering the trade of a few countries in a small number of commodities. For example, we found that the trade in fifty-two commodities by seventy-one countries would account for 70 per cent of world trade in all commodities. About half the commodities are foodstuffs and raw materials exported by countries outside the United States and Western Europe. The other half are manufactures.

Plans for 1954 would bring the whole project to a point where (1) the basic data on trade between countries and areas and of the carriage of that trade for the five years 1948-1952 will have been put on punch cards; (2) a trial-run matrix of interarea payments for each type of transaction in each of the five years will have been compiled; and (3) the trial-run matrixes of trade, shipping, gold, and other types of transactions for 1951 will have been studied, and a special study of transactions by petroleum companies in 1951 prepared, investigations from which we expect to derive proposals for adjusting 1951 country accounts to eliminate inconsistencies.

From the above materials it should be feasible to construct a tentative adjusted world trade and payments matrix for 1951 bearing a known relationship to (1) the physical flow of goods around the world and (2) the employment of fleets of different registry for the carriage of goods around the world. (It would still be a tentative matrix, since data for one year will not permit an adequate consideration of leads and lags.)

Herbert B. Woolley

INDEXES OF AMERICAN FOREIGN TRADE

Indexes of the volume and price of American exports and imports, 1879-1923, have been partly completed. Quarterly and annual data on exports of some 1,200 commodities have been assembled and classified by commodity groups and by degree of manufacture within commodity groups. Similar compilations will be made for imports. The indexes will be used in studies of trends and cyclical movements in foreign trade.

Robert Lipsey

CANADA'S BALANCE OF PAYMENTS SINCE 1868

A manuscript, "The Canadian Balance of Payments, 1868-1952," has been submitted for staff consideration. It describes the results of the first stage of an investigation into the role of international capital in

Canadian economic development. The paper discusses the techniques we employed to estimate the several items in the current account of the balance of payments before 1900, revisions made in similar estimates already available for later years, and the homogeneity in the entire series from 1868 to the present. For the years before 1900 the net balance on current account is compared with the results of a direct estimate of the inflow of foreign capital to Canada based on contemporary records in primary and secondary sources. The fact that the two independently derived measures of pre-1900 foreign investment in Canada are close to one another indicates that at least errors and omissions in the estimates of the components of the current account are counterbalancing.

In every year from Confederation through 1915 Canada was the recipient of foreign capital. During the last three decades of the nineteenth century the amounts involved, averaging about \$30 million a year, were small compared with the flood of foreign funds invested in Canada between 1900 and 1913. In comparison with the average level of gross national product (about \$700 million) in the pre-1900 years, however, foreign investment was not a negligible force in the functioning of the Canadian economy. The motivation for the inflow of foreign capital in this period lay primarily with the government, dominion and provincial, acting both directly as a borrower in the London money market and indirectly as a guarantor of railroad issues. During World War I the direction of the international capital movement was abruptly reversed. Since then Canada has in general been an exporter of capital, although there have been intervals (for example, 1952-1953) during which Canada was the net recipient of foreign capital.

Penelope Hartland Thunberg

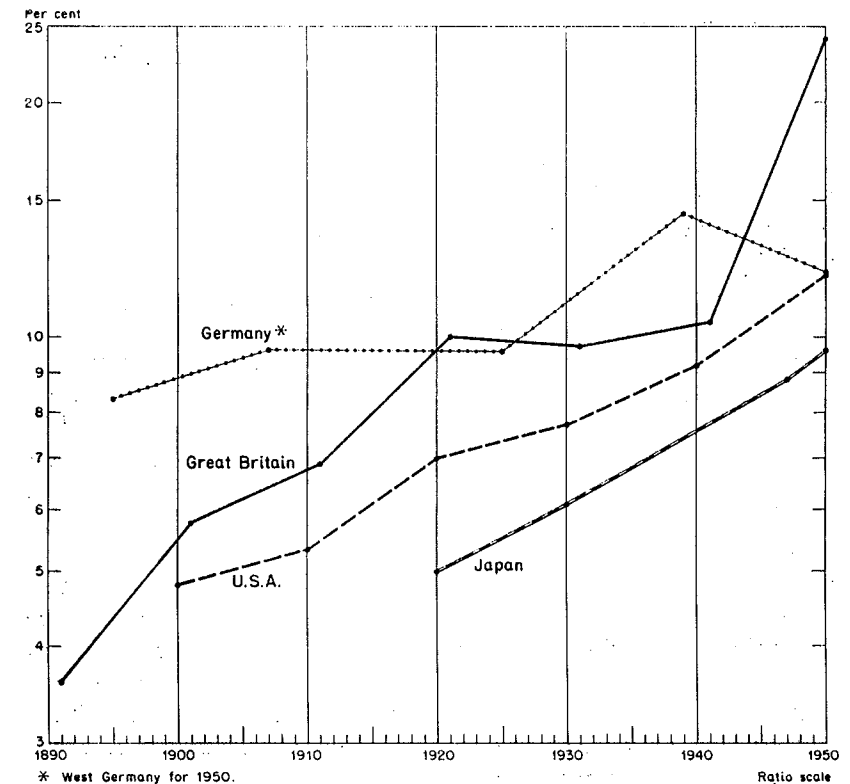
GROWTH OF GOVERNMENTAL ECONOMIC ACTIVITY

Exploratory work in this field was completed with the assistance of a grant from the Ford Foundation. A proposed Occasional Paper, "The Trend of Public Employment in Great Britain and the United States," by Moses Abramovitz, will shortly be submitted. Professor Alan T. Peacock of the London School of Economics and Political Science has undertaken to prepare a paper on the trend of governmental expenditures in the United Kingdom. The growth of governmental activity in a more recently industrialized country, Japan, is being studied by Harry Oshima. Daniel Holland devoted some time to consideration of the materials available to analyze the extent of governmental activity in various countries in a recent year. Vera Eliasberg and I have continued to investigate the role of government in the economy of Germany. Data

have been compiled on the industrial composition of the German labor force, 1882-1939, and on governmental expenditures by function.

The general upward sweep of government employment relative to total employment is evident in all the countries we have studied, as the accompanying chart shows. In 1872, at the threshold of the modern development of Japan, only .1 per cent of its working population was in government — chiefly priests, soldiers and police, and, of course, tax collectors. Between 1872 and 1920, employment in public education rose from nothing to 212,000; postal and telegraph and railway employees rose from 1,200 to 300,000; and the armed forces rose from 30,000 to 280,000.

GOVERNMENT LABOR FORCE AS PERCENTAGE OF LABOR FORCE IN FOUR COUNTRIES



The only decreases in the ratio of governmental to total employment were due to demobilization: after each world war, Germany's armed forces fell virtually to zero, bringing about a decline in total government employment, and the same force was operative in Great Britain from 1921 to 1931. But the large peacetime increases in government employment have not been in the armed forces in any of the four countries. The largest increases have come with the nationalization of industries: 10.2 per cent of Great Britain's labor force in 1950 fell in this category. For the rest, there has been growth relative to the total labor force at every broad level and in every general function of government, although a few specific functions (like the post office) have failed to grow relatively.

We hope that the substantial funds required to pursue this broad investigation of one of the most significant trends of our times will become available.

George J. Stigler

INDUSTRIAL CONCENTRATION IN CANADA

The manuscript on concentration in Canadian manufacturing industries has been rewritten, with numerous changes and the addition of a section on the role and development of manufacturing in the Canadian economy.

One part of the report compares concentration in the manufacturing industries of Canada and the United States. We find that, in nearly all the industries examined, concentration in Canada is higher than in the United States and that the ranking of industries in order of concentration is similar in the two countries, although not by any means identical. In order to account for these results, industry sizes and average firm sizes were examined. Comparable industries are of course much larger in the United States, but the array of industries in order of size is very similar. These findings reflect the much larger over-all size of the United States economy, combined with similarity of consumption patterns and of technical input-output relations. Average firm sizes are about the same in the two countries, and the ranking of industries by average firm size is very similar, both phenomena reflecting the similarity of technology and business practices. As a result United States industries typically have more firms, and again the ranking of industries by number of firms is similar.

The consequent tendency toward lower concentration in the United States and similarity of concentration patterns is weakened, but not

greatly, by the fact that, within an industry, firms tend to be somewhat more unequal in size in the United States.

Gideon Rosenbluth

OTHER STUDIES

Simon Kuznets and Ernest Rubin revised their Occasional Paper 46, *Immigration and the Foreign Born*, in order to take account of newly available materials on population changes prior to 1900, and it is now in press.

A study of cycles in foreign trade is reported by Ilse Mintz in section 1. The growth of output in the Russian Soviet economy is the subject of a new investigation described in Part Two. An exploratory study of the changes in governmental debt in a number of countries is also described in Part Two. Other studies dealing with foreign economies are reported at the end of section 1 and in sections 3 and 5. Capital formation and economic growth in various countries was the subject of a conference held in October, and a conference dealing in part with the measurement of unemployment in different countries is planned for September 1954.

NATIONAL BUREAU PUBLICATIONS
Instructions for ordering publications on page 97.

B O O K S

GENERAL SERIES

- *1 *Income in the United States: Its Amount and Distribution, 1909-1919. I, Summary* (1921) 168 pp.
Wesley C. Mitchell, Willford I. King, Frederick R. Macaulay,
and Oswald W. Knauth
- *2 *Income in the United States: Its Amount and Distribution, 1909-1919. II, Detailed Report* (1922) 454 pp.
Wesley C. Mitchell (ed.), Willford I. King, Frederick R.
Macaulay, and Oswald W. Knauth
- *3 *Distribution of Income by States in 1919* (1922) 2d ed., 36 pp.
Oswald W. Knauth
- *4 *Business Cycles and Unemployment* (1923) 448 pp.
Committee on Unemployment and Business Cycles of the
President's Conference on Unemployment, and a Special
Staff of the National Bureau
- *5 *Employment, Hours and Earnings in Prosperity and Depression, United States, 1920-1922* (1923) 2d ed., 150 pp.
Willford Isbell King
- *6 *The Growth of American Trade Unions, 1880-1923* (1924) 170 pp.
Leo Wolman
- 7 *Income in the Various States: Its Sources and Distribution, 1919, 1920, and 1921* (1925) 306 pp. \$3.50
Maurice Leven
- *8 *Business Annals* (1926) 382 pp.
Willard Long Thorp
- 9 *Migration and Business Cycles* (1926) 258 pp. 2.50
Harry Jerome
- †10 *Business Cycles: The Problem and Its Setting* (1927). Listed
also under Studies in Business Cycles. 514 pp. 5.00
Wesley C. Mitchell
- *11 *The Behavior of Prices* (1927) 598 pp.
Frederick C. Mills
- 12 *Trends in Philanthropy: A Study in a Typical American City* (1928) 78 pp. 1.00
Willford Isbell King
- *13 *Recent Economic Changes in the United States* (1929) 2 vols., 990 pp.
Committee on Recent Economic Changes of the President's
Conference on Unemployment, and a Special Staff of the
National Bureau

*Out of print.

†To be reprinted, 1954.

- *14 *International Migrations. I, Statistics* (1929) 1112 pp. *The Social Sciences and the Unknown Future*, a reprint of the introductory chapter of Mr. Macaulay's volume. .25
Imre Ferenczi. (Compiled on behalf of the International Labour Office.) Walter F. Willcox (ed.)
- *15 *The National Income and Its Purchasing Power* (1930) 394 pp. (1938) 8½ x 12, 518 pp.
Willford Isbell King
Simon Kuznets
- *16 *Corporation Contributions to Organized Community Welfare Services* (1930) 348 pp.
Pierce Williams and Frederick E. Croxton
- *17 *Planning and Control of Public Works* (1930) 292 pp.
Leo Wolman
- *18 *International Migrations. II, Interpretations* (1931) 716 pp.
Walter F. Willcox (ed.)
- *19 *The Smoothing of Time Series* (1931) 174 pp.
Frederick R. Macaulay
- 20 *The Purchase of Medical Care through Fixed Periodic Payment* (1932) 326 pp. 3.00
Pierce Williams
- *21 *Economic Tendencies in the United States: Aspects of Pre-War and Post-War Changes* (1932) 666 pp.
Frederick C. Mills
- 22 *Seasonal Variations in Industry and Trade* (1933) 480 pp. 4.00
Simon Kuznets
- †23 *Production Trends in the United States since 1870* (1934) 396 pp. 4.00
Arthur F. Burns
- †24 *Strategic Factors in Business Cycles* (1934) 256 pp. 2.50
John Maurice Clark
- 25 *German Business Cycles, 1924-1933* (1934) 308 pp. 2.50
Carl T. Schmidt
- 26 *Industrial Profits in the United States* (1934) 692 pp. 5.00
Ralph C. Epstein
- 27 *Mechanization in Industry* (1934) 518 pp. 3.50
Harry Jerome
- 28 *Corporate Profits as Shown by Audit Reports* (1935) 166 pp. 1.25
W. A. Paton
- *29 *Public Works in Prosperity and Depression* (1935) 482 pp.
Arthur D. Gayer
- 30 *Ebb and Flow in Trade Unionism* (1936) 272 pp. 2.50
Leo Wolman
- 31 *Prices in Recession and Recovery: A Survey of Recent Changes* (1936) 602 pp. 4.00
Frederick C. Mills
- *32 *National Income and Capital Formation, 1919-1935* (1937) 8½ x 12, 102 pp.
Simon Kuznets
- 33 *Some Theoretical Problems Suggested by the Movements of Interest Rates, Bond Yields and Stock Prices in the United States since 1856* (1938) 612 pp. 5.00
Frederick R. Macaulay
- *34 *Commodity Flow and Capital Formation, Volume I* (1938) 8½ x 12, 518 pp.
Simon Kuznets
- *35 *Capital Consumption and Adjustment* (1938) 296 pp.
Solomon Fabricant
- *36 *The Structure of Manufacturing Production: A Cross-Section View* (1939) 254 pp.
Charles A. Bliss
- *37 *The International Gold Standard Reinterpreted, 1914-1934* (1940) 2 vols., 1,474 pp.
William Adams Brown, Jr.
- 38 *Residential Real Estate: Its Economic Position as Shown by Values, Rents, Family Incomes, Financing, and Construction, Together with Estimates for All Real Estate* (1941) 8½ x 12, 330 pp. 3.50
David L. Wickens
- *39 *The Output of Manufacturing Industries, 1899-1937* (1940) 710 pp.
Solomon Fabricant
- †40 *National Income and Its Composition, 1919-1938* (1941) 1012 pp. 6.00
Simon Kuznets
- *41 *Employment in Manufacturing, 1899-1939: An Analysis of Its Relation to the Volume of Production* (1942) 382 pp.
Solomon Fabricant
- *42 *American Agriculture, 1899-1939: A Study of Output, Employment and Productivity* (1942) 462 pp.
Harold Barger and Hans H. Landsberg
- *43 *The Mining Industries, 1899-1939: A Study of Output, Employment and Productivity* (1944) 474 pp.
Harold Barger and Sam H. Schurr
- 44 *National Product in Wartime* (1945) 174 pp. 2.00
Simon Kuznets
- †45 *Income from Independent Professional Practice* (1945) 636 pp. 5.50
Milton Friedman and Simon Kuznets
- 46 *National Product since 1869* (1946) 258 pp. 3.00
Simon Kuznets
- 47 *Output and Productivity in the Electric and Gas Utilities, 1899-1942* (1946) 208 pp. 3.00
Jacob Martin Gould
- 48 *Value of Commodity Output since 1869* (1947) 320 pp. 4.00
William Howard Shaw
- 49 *Business Incorporations in the United States, 1800-1943* (1948) 8¾ x 11¼, 192 pp. 6.00
George Heberton Evans, Jr.
- *50 *The Statistical Agencies of the Federal Government: A Report to the Commission on Organization of the Executive Branch of the Government* (1949) 224 pp.
Frederick C. Mills and Clarence D. Long

*Out of print.

†Available from Kelley and Millman, Inc., 80 E. 11th St., New York 3, N. Y.

*Out of print.

†To be reprinted, 1954.

- 51 *The Transportation Industries, 1889-1946: A Study of Output, Employment, and Productivity* (1951) 304 pp. 4.00
Harold Barger
- 52 *Deterioration in the Quality of Foreign Bonds Issued in the United States, 1920-1930* (1951) 112 pp. 2.00
Ilse Mintz
- 53 *Wesley Clair Mitchell: The Economic Scientist* (1952) 398 pp. 4.00
Arthur F. Burns (ed.)
- 54 *A Study of Moneyflows in the United States* (1952) 620 pp. 7.50
Morris A. Copeland
- 55 *Shares of Upper Income Groups in Income and Savings* (1953) 768 pp. 9.00
Simon Kuznets
- 56 *The Trend of Government Activity in the United States since 1900* (1952) 288 pp. 4.00
Solomon Fabricant
- 57 *The Frontiers of Economic Knowledge* (1954) 376 pp. 5.00
Arthur F. Burns

STUDIES IN BUSINESS CYCLES

- †1 *Business Cycles: The Problem and Its Setting* (1927) 514 pp. 5.00
Wesley C. Mitchell
- 2 *Measuring Business Cycles* (1946) 7½ x 12, 592 pp. 5.00
Arthur F. Burns and Wesley C. Mitchell
- 3 *American Transportation in Prosperity and Depression* (1948) 432 pp. 5.00
Thor Hultgren
- 4 *Inventories and Business Cycles, with Special Reference to Manufacturers' Inventories* (1950) 672 pp. 6.00
Moses Abramovitz
- 5 *What Happens during Business Cycles: A Progress Report* (1951) 422 pp. 5.00
Wesley C. Mitchell
- 6 *Personal Income during Business Cycles* (in press) (in press)
Daniel Creamer

TWENTY-FIFTH ANNIVERSARY SERIES

- *1 *National Income: A Summary of Findings* (1946) 160 pp.
Simon Kuznets
- *2 *Price-Quantity Interactions in Business Cycles* (1946) 158 pp.
Frederick C. Mills
- 3 *Economic Research and the Development of Economic Science and Public Policy* (1946) 208 pp. 1.00
Twelve papers presented at the Twenty-Fifth Anniversary Meeting of the National Bureau of Economic Research
- 4 *Trends in Output and Employment* (1947) 78 pp. 1.00
George J. Stigler

FISCAL STUDIES

- *1 *Fiscal Planning for Total War* (1942) 388 pp.
William Leonard Crum, John F. Fennelly, and Lawrence Howard Seltzer

*Out of print.

†To be reprinted, 1954.

- 2 *Taxable and Business Income* (1949) 368 pp. 4.00
Dan Throop Smith and J. Keith Butters
- 3 *The Nature and Tax Treatment of Capital Gains and Losses* (1951) 576 pp. 7.50
Lawrence H. Seltzer
- 4 *Federal Grants and the Business Cycle* (1952) 136 pp. 2.00
James A. Maxwell

FINANCIAL RESEARCH PROGRAM

I A Program of Financial Research

- One: *Report of the Exploratory Committee on Financial Research* (1937) 96 pp. 1.00
Exploratory Committee on Financial Research
- Two: *Inventory of Current Research on Financial Problems* (1937) 264 pp. 1.50
Exploratory Committee of Financial Research
- Research in Securities Markets* (1946) 34 pp. .50
Exploratory Committee on Research in Securities Markets

II Studies in Consumer Instalment Financing

- *1 *Personal Finance Companies and Their Credit Practices* (1940) 192 pp.
Ralph A. Young and Associates
- 2 *Sales Finance Companies and Their Credit Practices* (1940) 324 pp. 3.00
Wilbur C. Plummer and Ralph A. Young
- 3 *Commercial Banks and Consumer Instalment Credit* (1940) 342 pp. 3.00
John M. Chapman and Associates
- 4 *Industrial Banking Companies and Their Credit Practices* (1940) 216 pp. 2.00
Raymond J. Saulnier
- *5 *Government Agencies of Consumer Instalment Credit* (1940) 240 pp.
Joseph D. Coppock
- 6 *The Pattern of Consumer Debt, 1935-36: A Statistical Analysis* (1940) 256 pp. 2.50
Blanche Bernstein
- 7 *The Volume of Consumer Instalment Credit, 1929-38* (1940) 158 pp. 1.50
Duncan McC. Holthausen in collaboration with Malcolm L. Merriam and Rolf Nugent
- 8 *Risk Elements in Consumer Instalment Financing* (1941) 128 pp. 1.50
David Durand Technical ed., 186 pp. 2.00
- *9 *Consumer Instalment Credit and Economic Fluctuations* (1942) 262 pp.
Gottfried Haberler
- 10 *Comparative Operating Experience of Consumer Instalment Financing Agencies and Commercial Banks, 1929-41* (1944) 240 pp. 3.00
Ernst A. Dauer

III Studies in Business Financing

- 1 *Term Lending to Business* (1942) 184 pp. 2.00
Neil H. Jacoby and Raymond J. Saulnier

*Out of print.

- *2 *Financing Small Corporations in Five Manufacturing Industries, 1926-36* (1942) Charles L. Merwin 192 pp.
- 3 *Accounts Receivable Financing* (1943) Raymond J. Saulnier and Neil H. Jacoby 176 pp. 2.00
- *4 *The Financing of Large Corporations, 1920-39* (1943) Albert Ralph Koch 160 pp.
- 5 *Financing Equipment for Commercial and Industrial Enterprise* (1944) Raymond J. Saulnier and Neil H. Jacoby 112 pp. 1.50
- 6 *Financing Inventory on Field Warehouse Receipts* (1944) Neil H. Jacoby and Raymond J. Saulnier 108 pp. 1.50
- *7 *The Pattern of Corporate Financial Structure: A Cross-Section View of Manufacturing, Mining, Trade and Construction, 1937* (1945) Walter A. Chudson 164 pp.
- 8 *Corporate Cash Balances, 1914-43: Manufacturing and Trade* (1945) Friedrich A. Lutz 148 pp. 2.00
- 9 *Business Finance and Banking* (1947) Neil H. Jacoby and Raymond J. Saulnier 262 pp. 3.50
- 10 *Corporate Income Retention, 1915-43* (1951) Sergei P. Dobrovolsky 142 pp. 2.50

IV Studies in Urban Mortgage Financing

- 1 *Urban Mortgage Lending by Life Insurance Companies* (1950) R. J. Saulnier 202 pp. 2.50
- 2 *The Impact of Government on Real Estate Finance in the United States* (1950) Miles L. Colean 190 pp. 2.50
- 3 *Urban Real Estate Markets: Characteristics and Financing* (1951) Ernest M. Fisher 208 pp. 3.00
- 4 *History and Policies of the Home Owners' Loan Corporation* (1951) C. Lowell Harriss 224 pp. 3.00
- 5 *Commercial Bank Activities in Urban Mortgage Financing* (1952) Carl F. Behrens 152 pp. 2.50

V Studies in Corporate Bond Financing

- 1 *The Volume of Corporate Bond Financing since 1900* (1953) W. Braddock Hickman 464 pp. 7.50

VI Studies in Agricultural Financing

- 1 *Mortgage Lending Experience in Agriculture* (in press) Lawrence A. Jones and David Durand

*Out of print.

CONFERENCE ON RESEARCH IN INCOME AND WEALTH

Studies in Income and Wealth

- 1 Eight papers on concepts and measurement of national income (1937) 370 pp. 2.50
- *2 Six papers on wealth measurement, price changes, savings, capital gains, and government product (1938) 358 pp.
- *3 Seven papers on income size distribution, savings, national product, and distribution of income by states (1939) 508 pp.
- *4 *Outlay and Income in the United States, 1921-1938* (1942) Harold Barger 420 pp.
- *5 *Income Size Distributions in the United States, Part I* (1943) 160 pp.
- 6 Seven papers examining income measurement in relation to government product, income parity for agriculture, international transactions, forecasting national income, and income differences among communities, and dealing with the adequacy of income estimates for computing net capital formation (1943) 302 pp. 3.00
- *7 *Changes in Income Distribution during the Great Depression* (1946) Horst Mendershausen 192 pp.
- *8 Eleven papers primarily concerned with estimates of national income of the United States and of foreign countries for use in dealing with war problems and postwar adjustments (1946) 320 pp.
- 9 *Analysis of Wisconsin Income* (1948) Frank A. Hanna, Joseph A. Pechman, Sidney M. Lerner 284 pp. 3.50
- 10 Eight papers on standardizing basic concepts of national book-keeping by American, British, and Canadian statisticians; problems of international comparisons of income and wealth; the nation's economic budget and forecasting gross national product and employment; savings and income distribution, and resource distribution patterns (1947) 352 pp. 4.50
- 11 Six papers on the industrial distribution of manpower, real incomes in dissimilar geographic areas, national income forecasting, and the saving-income ratio (1949) 464 pp. 6.00
- 12 Thirteen papers on national wealth (1950) 608 pp. 6.00
- 13 Ten papers on size distribution of income (1951) 608 pp. 6.00
- 14 Seven papers on wealth (1951) 286 pp. 3.50
- 15 Eight papers on size distribution of income (1952) 240 pp. 3.50
- 16 *Long-Range Economic Projection* (in press)
- 17 *Short-Term Economic Forecasting* (in press)
- 18 *Input-Output Analysis: An Appraisal* (in press)

CONFERENCE ON PRICE RESEARCH

- *1 *Report of the Committee on Prices in the Bituminous Coal Industry* (1938) 168 pp.
- *2 *Textile Markets: Their Structure in Relation to Price Research* (1939) 290 pp.
- *3 *Price Research in the Steel and Petroleum Industries* (1939) 188 pp.

*Out of print.

- 4 *Cost Behavior and Price Policy* (1943) 376 pp. 3.00
Committee on Price Determination
- 5 *Minimum Price Fixing in the Bituminous Coal Industry* (in press)
Waldo E. Fisher and Charles M. James

SPECIAL CONFERENCE SERIES

- Universities-National Bureau Committee for Economic Research
- 1 *Problems in the Study of Economic Growth* (1949) (mimeographed)
- 2 *Conference on Business Cycles* (1951) 448 pp. 6.00
- 3 *Conference on Research in Business Finance* (1952) 360 pp. 5.00
- 4 *Regularization of Business Investment* (1954) 539 pp. 8.00
- 5 *Business Concentration and Price Policy* (in press)

BULLETINS

(Replaced by Occasional Papers, December 1940. Those listed are available;
a complete list is included in the 25th Annual Report.)

- 49 *National Income, 1929-1932* (1934) .25
Simon Kuznets
- 50 *Recent Corporate Profits in the United States* (1934) .25
Solomon Fabricant
- 51 *Recent Changes in Production* (1934) .25
Charles A. Bliss
- 54 *Wages and Hours under the Codes of Fair Competition* (1935) .25
Leo Wolman
- 55 *Profits, Losses and Business Assets, 1929-1934* (1935) .25
Solomon Fabricant
- 56 *Aspects of Manufacturing Operations during Recovery* (1935) .50
Frederick C. Mills
- 59 *Income Originating in Nine Basic Industries, 1919-1934* (1936) .50
Simon Kuznets
- 61 *Production during the American Business Cycle of 1927-1933* (1936) .50
Wesley C. Mitchell and Arthur F. Burns
- 62 *Revaluations of Fixed Assets, 1925-1934* (1936) .25
Solomon Fabricant
- 63 *The Recovery in Wages and Employment* (1936) .25
Leo Wolman
- 67 *Technical Progress and Agricultural Depression* (1937) .50
Eugen Altschul and Frederick Strauss
- 68 *Union Membership in Great Britain and the United States* (1937) .25
Leo Wolman
- 69 *Statistical Indicators of Cyclical Revivals* (1938) .25
Wesley C. Mitchell and Arthur F. Burns
- 70 *Employment Opportunities in Manufacturing Industries of the United States* (1938) .25
Frederick C. Mills
- 71 *Hours of Work in American Industry* (1938) .25
Leo Wolman
- 72-73 *Incomes from Independent Professional Practice, 1929-1936* (1939) .50
Simon Kuznets and Milton Friedman

- 74 *Commodity Flow and Capital Formation in the Recent Recovery and Decline, 1932-1938* (1939) .25
Simon Kuznets
- 76-77 *The Statistical Pattern of Instalment Debt* (1939) .50
R. A. Young and Blanche Bernstein
- 78 *The Composition of Gross Farm Income since the Civil War* (1940) .25
Frederick Strauss
- 79 *The Volume of Consumer Instalment Credit, 1929-1938* (1940) .25
Duncan McC. Holthausen, Malcolm L. Merriam, and Rolf Nugent

OCCASIONAL PAPERS

- *1 *Manufacturing Output, 1929-1937* (1940)
Solomon Fabricant
- *2 *National Income, 1919-1938* (1941)
Simon Kuznets
- 3 *Finished Commodities since 1879: Output and Its Composition* (1941) .25
William H. Shaw
- *4 *The Relation between Factory Employment and Output since 1899* (1941)
Solomon Fabricant
- 5 *Railway Freight Traffic in Prosperity and Depression* (1942) .25
Thor Hultgren
- *6 *Uses of National Income in Peace and War* (1942)
Simon Kuznets
- *7 *Productivity of Labor in Peace and War* (1942)
Solomon Fabricant
- *8 *The Banking System and War Finance* (1943)
Charles R. Whittlesey
- *9 *Wartime 'Prosperity' and the Future* (1943)
Wesley C. Mitchell
- 10 *The Effect of War on Business Financing: Manufacturing and Trade, World War I* (1943) .50
Charles H. Schmidt and Ralph A. Young
- 11 *The Effect of War on Currency and Deposits* (1943) .35
Charles R. Whittlesey
- 12 *Prices in a War Economy: Some Aspects of the Present Price Structure of the United States* (1943) .50
Frederick C. Mills
- 13 *Railroad Travel and the State of Business* (1943) .35
Thor Hultgren
- 14 *The Labor Force in Wartime America* (1944) .50
Clarence D. Long
- 15 *Railway Traffic Expansion and Use of Resources in World War II* (1944) .35
Thor Hultgren
- *16 *British and American Plans for International Currency Stabilization* (1943)
J. H. Riddle
- 17 *National Product, War and Prewar* (1944) .50
Simon Kuznets

*Out of print.

| | | |
|-----|---|------|
| 18 | <i>Production of Industrial Materials in World Wars I and II</i> (1944) | .50 |
| | Geoffrey H. Moore | |
| 19 | <i>Canada's Financial System in War</i> (1944) | .50 |
| | Benjamin H. Higgins | |
| 20 | <i>Nazi War Finance and Banking</i> (1944) | .50 |
| | Otto Nathan | |
| *21 | <i>The Federal Reserve System in Wartime</i> (1945) | |
| | Anna Youngman | |
| 22 | <i>Bank Liquidity and the War</i> (1945) | .50 |
| | Charles R. Whittlesey | |
| 23 | <i>Labor Savings in American Industry, 1899-1939</i> (1945) | .50 |
| | Solomon Fabricant | |
| 24 | <i>Domestic Servants in the United States, 1900-1940</i> (1946) | .50 |
| | George J. Stigler | |
| 25 | <i>Recent Developments in Dominion-Provincial Fiscal Relations in Canada</i> (1948) | .50 |
| | J. A. Maxwell | |
| *26 | <i>The Role of Inventories in Business Cycles</i> (1948) | |
| | Moses Abramovitz | |
| 27 | <i>The Structure of Postwar Prices</i> (1948) | .75 |
| | Frederick C. Mills | |
| 28 | <i>Lombard Street in War and Reconstruction</i> (1949) | 1.00 |
| | Benjamin H. Higgins | |
| 29 | <i>The Rising Trend of Government Employment</i> (1949) | .50 |
| | Solomon Fabricant | |
| 30 | <i>Costs and Returns on Farm Mortgage Lending by Life Insurance Companies, 1945-1947</i> (1949) | 1.00 |
| | R. J. Saulnier | |
| 31 | <i>Statistical Indicators of Cyclical Revivals and Recessions</i> (1950) | 1.50 |
| | Geoffrey H. Moore | |
| 32 | <i>Cyclical Diversities in the Fortunes of Industrial Corporations</i> (1950) | .50 |
| | Thor Hultgren | |
| 33 | <i>Employment and Compensation in Education</i> (1950) | 1.00 |
| | George J. Stigler | |
| 34 | <i>Behavior of Wage Rates during Business Cycles</i> (1950) | 1.00 |
| | Daniel Creamer | |
| 35 | <i>Shares of Upper Income Groups in Income and Savings</i> (1950) | 1.00 |
| | Simon Kuznets | |
| 36 | <i>The Labor Force in War and Transition: Four Countries</i> (1952) | 1.00 |
| | Clarence D. Long | |
| 37 | <i>Trends and Cycles in Corporate Bond Financing</i> (1952) | .75 |
| | W. Braddock Hickman | |
| 38 | <i>Productivity and Economic Progress</i> (1952) | .75 |
| | Frederick C. Mills | |
| 39 | <i>The Role of Federal Credit Aids in Residential Construction</i> (1953) | 1.00 |
| | Leo Grebler | |
| 40 | <i>Transport and the State of Trade in Britain</i> (1953) | 1.50 |
| | Thor Hultgren | |

*Out of print.

| | | |
|----|---|------------|
| 41 | <i>Capital and Output Trends in Manufacturing Industries, 1880-1948</i> (1954) | 1.50 |
| | Daniel Creamer | |
| 42 | <i>The Share of Financial Intermediaries in National Wealth and National Assets, 1900-1949</i> (1954) | 1.50 |
| | Raymond W. Goldsmith | |
| 43 | <i>Trends and Cycles in Capital Formation by United States Railroads, 1870-1950</i> | (in press) |
| | Melville J. Ulmer | |
| 44 | <i>The Growth of Physical Capital in Agriculture, 1870-1950</i> | (in press) |
| | Alvin S. Tostlebe | |
| 45 | <i>Capital and Output Trends in Mining Industries, 1870-1948</i> | (in press) |
| | Israel Borenstein | |
| 46 | <i>Immigration and the Foreign Born</i> | (in press) |
| | Simon Kuznets and Ernest Rubin | |
| 47 | <i>The Ownership of Tax-Exempt Securities, 1913-1952</i> | (in press) |
| | George E. Lent | |

TECHNICAL PAPERS

| | | |
|----|--|------------|
| *1 | <i>A Significance Test for Time Series and Other Ordered Observations</i> (1941) | |
| | W. Allen Wallis and Geoffrey H. Moore | |
| *2 | <i>The Relation of Cost to Output for a Leather Belt Shop</i> (1941) | |
| | Joel Dean | |
| 3 | <i>Basic Yields of Corporate Bonds, 1900-1942</i> (1942) | .50 |
| | David Durand | |
| 4 | <i>Currency Held by the Public, the Banks, and the Treasury, Monthly, December 1917-December 1944</i> (1947) | .75 |
| | Anna Jacobson Schwartz and Elma Oliver | |
| 5 | <i>Concerning a New Federal Financial Statement</i> (1947) | 1.00 |
| | Morris A. Copeland | |
| *6 | <i>Basic Yields of Bonds, 1926-1947: Their Measurement and Pattern</i> (1947) | |
| | David Durand and Willis J. Winn | |
| 7 | <i>Factors Affecting the Demand for Consumer Instalment Sales Credit</i> (1952) | 1.50 |
| | Avram Kesselgoff | |
| 8 | <i>A Study of Aggregate Consumption Functions</i> (1953) | 1.50 |
| | Robert Ferber | |
| 9 | <i>The Volume of Residential Construction, 1889-1950</i> (1954) | 1.50 |
| | David M. Blank | |
| 10 | <i>Factors Influencing Consumption: An Experimental Analysis of Shoe Buying</i> | (in press) |
| | Ruth P. Mack | |

*Out of print.

ANNUAL REPORTS (*gratis*)

By Wesley C. Mitchell

25th *The National Bureau's First Quarter-Century* (May 1945)

By Arthur F. Burns

*26th *Economic Research and the Keynesian Thinking of Our Times* (June 1946)

*27th *Stepping Stones Towards the Future* (March 1947)

28th *The Cumulation of Economic Knowledge* (May 1948)

29th *Wesley Mitchell and the National Bureau* (May 1949)

30th *New Facts on Business Cycles* (May 1950)

31st *Looking Forward* (May 1951)

32nd *The Instability of Consumer Spending* (May 1952)

33rd *Business Cycle Research and the Needs of Our Times* (May 1953)

By Solomon Fabricant

34th *Economic Progress and Economic Change* (May 1954)

HOW TO OBTAIN NATIONAL BUREAU PUBLICATIONS

The National Bureau of Economic Research is a nonprofit membership corporation organized to make impartial studies in economic science.

Its books are published and distributed (since April 1, 1953) by Princeton University Press; its *Occasional Papers* and *Technical Papers* are published and distributed by the National Bureau itself.

Publications may be obtained either on contributing subscriptions or by purchase.

A contributor of \$35 or more a year is entitled to receive a complimentary copy of each current publication — *books*, *Occasional Papers*, *Technical Papers*, and the *Annual Report* — in advance of release to the public. In addition, a contributor is entitled to a one-third discount on all National Bureau publications purchased.

An associate contributor of \$10 a year receives a complimentary copy of each current *Occasional Paper*, *Technical Paper*, and the *Annual Report*, and is entitled to a one-third discount on all publications purchased. Only the following are eligible to become associates: teachers, students, and libraries in recognized educational institutions; members of scientific societies or of private nonprofit research agencies.

A contributor of \$4 receives the next five *Occasional Papers* (or any *Technical Paper* issued during this period may be substituted) and the *Annual Report*.

*Contributions to the National Bureau are deductible
in calculating federal income taxes.*

NONCONTRIBUTORS should order *books* from:

Princeton University Press
Princeton, New Jersey

NONCONTRIBUTORS should
order *Papers* and request the *An-*
nual Report from:

CONTRIBUTORS should order
all *books* and *Papers*, and request
the *Annual Report* from:

*Out of print.