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Activities During the Year

PUBLICATIONS

During 1947 the following books were published by the National Bureau: *Business Finance and Banking*, by N. H. Jacoby and R. J. Saulnier; *Trends in Output and Employment*, by George J. Stigler; *Value of Commodity Output since 1869*, by William H. Shaw; and *Studies in Income and Wealth, Volume Ten*. Also three *Technical Papers* were published: *Currency Held by the Public, the Banks, and the Treasury, Monthly, December 1917-December 1944*, by Anna Jacobson Schwartz and Elma Oliver; *Concerning a New Federal Financial Statement*, by Morris A. Copeland; *Basic Yields of Bonds, 1926-1947: Their Measurement and Pattern*, by David Durand and Willis J. Winn. An *Occasional Paper* by J. A. Maxwell, *Recent Developments in Dominion-Provincial Fiscal Relations in Canada*, bears a 1948 imprint.

In response to a continuing demand three studies were reprinted: *National Income and Its Composition, 1919-1938*, by Simon Kuznets; *Cost Behavior and Price Policy*, by the Committee on Price Determination; and *Measuring Business Cycles*, by Arthur F. Burns and Wesley C. Mitchell.

The following studies are now in press: *Analysis of Wisconsin Income*, by F. A. Hanna, J. A. Pechman, and S. M. Lerner (Studies in Income and Wealth, Vol. Nine); *American Transportation in Prosperity and Depression*, by Thor Hultgren (Studies in Business Cycles, No. 3); *Business Incorporations in the United States, 1800-1943*, by G. Heberton Evans, Jr.

NEW STUDIES

A major consideration in deciding upon a new investigation is whether it is likely to contribute significantly to work already under way, besides making its direct contribution. A study of international economic relations to be conducted by Simon Kuznets meets this test, and has been approved by the Executive Committee. This is the first major venture by the National Bureau in the field of international studies since the publi-

cation of *International Migrations*. It is the outgrowth of a long series of discussions, in which the members of the Board of Directors have taken a highly constructive part, especially Messrs. Brundage, Laidler, Mitchell, Morgan, Noyes, Riefler, Roberts, Scherman, Soule, and Stone.

The study will embrace the international economic relations of the United States since 1870 or earlier. The long-term movements of men, commodities, services, and securities will be dealt with, together with other aspects of the country's relation to the rest of the world—such as colonial expansion, military preparedness, and armed conflicts. The changes in international economic relations will be examined against the background of secular movements in the domestic economy, and so far as feasible related to domestic developments in other countries. Thus immigration and emigration will be analyzed in relation to movements of population, foreign trade in relation to an industrial division of national income, and capital movements in relation to capital formation. The guiding questions will be: What has been the contribution of each strand in international relations to the development of the American economy? What has been its contribution to the development of other countries? What factors in the development of this country contributed to changes in its economic relations with the rest of the world?

For some years the National Bureau has been engaged in a comprehensive investigation of business cycles. One part of this program consists in the preparation of monographs dealing with cyclical fluctuations as they manifest themselves in limited sectors of the economy—agriculture, industrial production, transportation, inventories, commodity prices, and so on. To expedite this program, Daniel Creamer started early in 1947 a study of the cyclical behavior of personal incomes. The scope of this study and some preliminary results are sketched in Section III. Work on another monograph, dealing with the cyclical behavior of the money supply, its rate of turnover, and the condition of banks in different parts of the country as well as in the aggregate, will get actively under way this year. The study will go back to the Civil War, but will give special attention to developments in the sphere of money and banking since 1914 when the Federal Reserve System was instituted. Milton Friedman, Associate Professor of Economics at the University of Chicago, is in charge of the study, which will be conducted by the National Bureau in cooperation with the University of Chicago. Another important step in the business-cycle program is the appointment of Rutledge Vining,

Professor of Economics at the University of Virginia, as Research Associate for the academic year 1948-49, under a grant by the Carnegie Corporation. Vining will carry forward the research on regional variations in business conditions, which he has outlined in several notable articles in *Econometrica*. His central concern will be the transmission of business developments from one part of the country to another. In the degree that these explorations prosper, they will pave the way for a better attack on the problem of international business cycles.

In December 1944 the Executive Committee approved a program of research in Agricultural Finance. Work on this program was accelerated during 1947. In the middle of the year Howard Diesslin began a study of the financing of purchases of machinery and equipment by farmers. Towards the end of the year Lawrence Jones, formerly on the staff of the Bureau of Agricultural Economics, joined David Durand in an appraisal of risk on farm mortgages. Plans for an investigation of agricultural credit institutions were also developed, and work will get under way this year. These several projects are described by F. F. Hill in Section VII. They are being financed by grants from the Rockefeller Foundation, the Association of Reserve City Bankers, the Life Insurance Association, and the American Life Convention.

Since 1938 the National Bureau has been engaged in an historical investigation of production, employment, and productivity in the United States. This program, which has been financed by the Maurice and Laura Falk Foundation, has already borne fruit in five monographs and five *Occasional Papers*, dealing with agriculture, mining, manufacturing, electric utilities, gas utilities, and domestic servants. Currently, the Productivity Unit is devoting itself entirely to the service industries. As the staff reports in Section II indicate, the productivity investigation has reached a point when a volume summarizing and interpreting the extensive new findings can be projected. Frederick C. Mills has drawn up preliminary plans, and expects to get a manuscript started in the near future. It will probably begin with 1870 and carry the story of changes in employment, production, and productivity to the present. The bulk of the volume will be concerned with the period from about 1900 to 1940, for which the fullest materials have been prepared in the basic monographs.

UNIVERSITIES-NATIONAL BUREAU COMMITTEE

In the spring of 1935 the National Bureau invited the departments of eco-

nomics of several universities to explore with it the possibility of making economic research more effective through closer cooperation. As the outcome of discussion a Universities-National Bureau Committee was set up. This Committee developed a cooperative program of research, which now centers around the Conference on Research in Income and Wealth, the Conference on Research in Fiscal Policy, and the Financial Research Program. The Conference on Price Research was a part of the cooperative scheme until July 1947, when it was dissolved by action of its members.

Although the Universities-National Bureau Committee was inactive during the war, most of the university as well as the National Bureau representatives felt that the Committee was worth continuing. Accordingly, a meeting was held November 28-29, 1947, to explore problems of common interest and ways in which the Committee might best proceed. All twelve universities that hold membership on the Committee (California, Chicago, Columbia, Harvard, Michigan, Minnesota, North Carolina, Pennsylvania, Stanford, Texas, Toronto, Wisconsin) sent representatives.

The Committee accepted as a definition of its area of concern the following paragraphs from a Program Memorandum prepared by Simon Kuznets:

The guiding objective is obviously encouragement of economic research, on problems and in fields susceptible of objective treatment; and with preference, although not exclusive insistence, on fields in which quantitative data are available and statistical tools can be used. Since the Committee is a cooperative venture of universities and the National Bureau, the foreground of its concern is with areas and methods in which the research groups, both at the universities and at the National Bureau, can best pool their interests, experience, and resources.

In so far as the area of concern suggested above is limited by the National Bureau's current work or program, the latter is to be understood in a broad sense. There should be no reluctance to suggest research problems that are now outside the National Bureau's program—so long as these problems are susceptible of objective treatment, with emphasis on the quantitative approach; and so long as they are of sufficiently broad scope to merit attention by institutions serving scientific and public interests.

The Committee decided not to recommend, for the time being, the establishment of any new continuing conferences. Instead, it favored a series of 'special conferences' on different topics, designed to summarize the present state of knowledge of the topic and to outline problems that

require further investigation. The aim would be to hold a single conference on each major topic, but the possibility of having one conference lead to others on some regular schedule was not excluded.

The Committee elected an Executive Committee: Simon Kuznets (Chairman), J. Frederic Dewhurst (Secretary), John D. Black, Arthur F. Burns, and I. L. Sharfman. The Executive Committee was instructed to initiate steps towards holding one or more special conferences, to review the present structure of the Universities-National Bureau Committee, and to explore different ways of coordinating research—such as exchange of information on projects in process or contemplated, acceptance by individual institutions of special responsibility for intensive cultivation of particular areas of research, cooperation on joint projects, and cooperation on related projects without any sharing of final responsibility.

RESEARCH ASSOCIATES

In 1930 the National Bureau inaugurated a plan of appointing promising young men or women holding university positions as Research Associates for one year. The plan was in operation from 1930 to 1932 and from 1938 to 1942. No appointments were made between 1932 and 1938 because of financial stringency, and the plan was suspended in 1942 because of the war. The twenty-two Research Associates appointed under the plan came from sixteen American colleges or universities (Amherst, Briarcliff, California, Colorado, Columbia, Harvard, Hopkins, Howard, Indiana, Massachusetts Institute of Technology, Pennsylvania, Princeton, Rutgers, Smith, Stanford, Tufts) and two foreign universities (Kiel and Oxford).

The appointment of university men to the staff of the National Bureau for one year helps to bring the universities and the National Bureau into closer relations. The plan has worked well in the past, and the desirability of resuming the appointment of several Research Associates each year is plain. The universities are still overcrowded with students, and at present cannot easily release faculty members. A new beginning has been made, however, by appointing Rutledge Vining as Research Associate for the academic year 1948-49, and we may be able to make another appointment or two during the year.

THE BOARD OF DIRECTORS AND RESEARCH STAFF

Northwestern University and the University of Toronto have been added to the list of universities represented on the Board of Directors, and the Economic History Association has been added to the organizations repre-

sented. In accordance with these decisions, Corwin D. Edwards of Northwestern, G. A. Elliott of Toronto, and Arthur H. Cole of the Economic History Association became members of the Board.

W. L. Crum, who served as Director by Appointment of Harvard University since 1936, resigned from Harvard and accepted a post at the University of California as of February 1, 1948. Gottfried Haberler of Harvard University was elected to fill Crum's unexpired term.

Wesley Mitchell, who has been a member of the Board of Directors and the Research Staff since 1920 and was Director of Research from 1920 to 1945, was awarded the Francis A. Walker Medal by the American Economic Association at its 60th Annual Meeting, December 1947. Mr. Mitchell is the first recipient of the medal, which is to be awarded not more frequently than once every five years to "that living American who, in the course of his life, has made a contribution of the highest distinction to economics".

Milton Friedman has rejoined the Research Staff, and Harold Barger and Millard Hastay were elected to staff membership.

STAFF REPORTS

The investigators charged with the National Bureau's work report on the progress of their studies in the following pages. The staff reports are grouped roughly into seven major divisions, and cross-referenced to facilitate use. The reported findings well deserve the reader's attention. It should be carefully noted, however, that the reports are informal, that the findings are preliminary, that important explanations or qualifications may have been omitted for the sake of brevity, and that the results in any event have not yet been subjected to full critical review. Before the National Bureau releases a study to the public, it is reviewed by the Director of Research, a committee of the staff, and a committee of the Board of Directors. Frequently, outside experts participate in the appraisal. Responsibility for authorizing publication by the National Bureau rests with its Board of Directors.

I National Income and the Flow of Money

FLOW OF MONEY PAYMENTS

During 1947 *Technical Paper 5*, Concerning a New Federal Financial Statement, was published and most of the first draft of the main report on the exploratory study of money flows was completed.

In the book the annual estimates of money flows and year-end estimated cash and related balances (referred to as 'loan fund balances'), 1936-42, are arranged in two ways: as a set of financial statements, one for each of eleven sectors into which we have divided the economy; and as a set of national accounts, a separate national money flows account for each of fourteen types of transaction (payrolls, interest, taxes, customer money flows, etc.), and three national loan fund balance accounts—one covering cash balances, trade credit, and the monetary gold stock; a second, federal obligations and Treasury currency; a third, nonfederal securities and loans.

The federal financial statement presented in *Technical Paper 5*, one of the eleven sector financial statements, is designed to facilitate tracing the impact of fiscal operations on business conditions. As a summary of federal fiscal operations, it is both simpler and more comprehensive than the official monthly statement issued by the Treasury Department. It covers all federal funds except those regarded as local government funds (such as the funds of the District of Columbia) and those regarded as parts of the banking system (such as the Postal Savings Fund).

Changes in established federal financial statements have been proposed by many people and for a variety of reasons. No one form of statement can be expected to serve all purposes; but it is believed that this new form fills an urgent need. If issued currently, it would be especially useful to those concerned with the relation between fiscal policy and business conditions.

The book will present the estimates of money flows and of loan fund balances and describe the methods of estimate. In addition to the more detailed sector money flows accounts, it will give a set of summary sector money flows accounts. Each summary account consists of four items:

- Expenditures for purchases of gross national product
- Net receipts from other 'commodity flow and distributive share' transactions
- Net transfer payment receipts or expenditures
- Net money obtained through financing or advanced to finance others

Further, the book will attempt to interpret the money flows and loan fund balance estimates, and to indicate their significance for a revision of monetary theory.

A brief report on the project read before the American Economic Association was printed in the *American Economic Review*, May 1947 Supplement, pp. 31-49. It gives preliminary figures for the financial statement

for households. It contrasts year-to-year variations in main circuit money flows (money flows portrayed in the eleven sector financial statements) with year-to-year variations in technical transactions (financial and agency transactions that may be said to wash). It suggests how money flows estimates may help in interpreting business fluctuations. And it relates the total net intersector movement of funds through the money and capital markets with the part for which the banking system serves as an intermediary.

The January 1948 annual session of the Conference on Research in Income and Wealth was concerned with the problem of developing a national balance sheet. Since the loan fund balance estimates made in the money flows study are of substantial significance here, a paper was prepared on these estimates and their possible use in developing a national balance sheet.

Although work on the main report was not completed, the exploratory study formally came to a close on June 30. Beginning July 1 the Federal Reserve System began a project designed to bring some of the money flows and loan fund balance estimates down to date and to put them on a current basis. Balance sheet estimates for the banking system through September 23, 1947 appear in an article in the *Federal Reserve Bulletin* for January 1948, entitled Banking Assets and the Money Supply Since 1929.

Morris A. Copeland

INCOME DISTRIBUTION

Completion of the study, *Some Aspects of the Distribution of Income by Size*, has been delayed by an attempt to extend the estimates, to take into account the revisions of the basic income series of the Department of Commerce, used by us for recent years, and to consider still other variants in the comparison between income reported on federal income tax returns by individuals and total earnings of the country's population. The series now cover 1913-44, use for 1929-44 the revised estimates of the Department of Commerce, in an overlap with our own series for 1929-38, and are compared with the income not only of the total population but also of the nonfarm population.

The basic estimates are virtually assembled, and the description of the procedures should be finished within two months. We have not yet attempted a close analysis of the results and do not know how far to push it. If analysis can be confined to the major, easily established patterns of

behavior, the manuscript should be ready for circulation among the staff and Directors by the end of summer.

Simon Kuznets

CONFERENCE ON RESEARCH IN INCOME AND WEALTH

Studies in Income and Wealth, Volume Nine, presenting an analysis of income data for Wisconsin, is in page proof. Volume Ten, published in December, comprises papers on the tripartite agreement on national income definitions and problems of inclusion and exclusion; on uses of national product figures in economic forecasting; on international comparisons of national income, including a review of estimates for Latin American countries; and on the historical pattern of relations between income and savings.

A meeting devoted exclusively to problems of measuring national wealth, organized by M. A. Copeland, was held in January. Papers on various components of the national balance sheet and on the possibilities of defining and measuring the net aggregate value of all national assets were discussed. Milton Gilbert was elected Chairman of the Executive Committee of the Conference.

On the occasion of the International Statistical Conferences in Washington, D. C., September 1947, the Executive Committee, through a subcommittee (Messrs. Copeland, Gilbert, Jaszi, Kuznets, Stine), helped to found an International Association for Research in Income and Wealth. Delegates from almost all participating countries expressed active interest in forming the new association. A constitution was adopted, and Simon Kuznets was elected Chairman.

At the International Statistical Conferences the subcommittee also organized a joint meeting of the International Statistical Institute and the Econometric Society at which the following topics were discussed: national income and national accounting (J. B. D. Derksen and Jan Tinbergen, Netherlands); national income and industrial structure (Simon Kuznets, United States); national income and government product (Arthur Smithies, United States); national wealth estimates (Findlay Shirras, United Kingdom).

The draft of the chapters by Paul Studenski and Julius Wyler on national income measurements in various foreign countries has been revised on the basis of comments and suggestions made by experts from abroad. In similarly revising the chapter on national income measurements in the

United States, the authors had to wait until the definitional and statistical changes undertaken by the Department of Commerce had been completed. The introductory chapters, devoted to a methodological summary and synopsis, are being revised in the light of suggestions made by the responsible committee of the conference.

Jacob Marschak, *Chairman*
Conference on Research in Income and Wealth

For other reports dealing with special problems in the income field see Stigler in Section II, Creamer and Hultgren in Section III, Wolman in Section V, and Crum and Seltzer in Section VI.

II Employment and Productivity

Trends in Output and Employment by George J. Stigler was published in 1947 as volume four in the Twenty-fifth Anniversary Series. It summarizes some major aspects of the National Bureau's studies of output, employment, and productivity, and discusses the place of the studies in the general scheme of economic research.

The following staff reports describe the current work on the service and transportation industries; other studies of employment are reported on by Creamer in Section III and by Long in Section V.

SURVEY OF SERVICE INDUSTRIES

Though the greater part of my attention during the past year was given to government employment and related trends (see below), work continued on both the statistical and the analytical sections of the survey of employment trends since 1900 in the service industries as a whole. The problems encountered in measuring changes in employment in the medical services illustrate the kind of questions this survey raises.

Does the 15 per cent decline in the number of physicians per 100,000 persons between 1900 and 1940, mentioned in the 27th Annual Report, indicate the relative trend in the volume of employment provided by the 'medical and other health services' industry? The answer depends partly upon the trend in other occupations in this industry. Persons attached to 'medical and other health services' (which do not include drug stores) numbered about a million in 1940, of which only 175,000 were physicians and surgeons. The number of doctors declined, relative to the population,

but the decline was accompanied by (perhaps even caused) a rise in the number employed in related occupations in the industry. Increased specialization in the industry led to a transfer of tasks from the medical practitioner to other professional occupations. For example, the number of dentists per 100,000 persons grew from 39 in 1900 to 54 in 1940; and the number of osteopaths, chiropractors, and other healers, from 17 to 21. Far more important was the increased assistance rendered physicians by nurses, laboratory technicians, and hospital attendants in general. The number of trained and practical nurses (including midwives) per 100,000 persons rose from 159 to 371. Another indication is the rise in the number of beds in hospitals, which appears to have tripled between 1909 and 1940.

A second question bears on the shift of work between the 'health services' industry and other industries. The trend seems to have been away from the industry providing health services. Commercial production of drugs and other preparations, manufacture of professional and hospital equipment, and improved transport and communication devices have been outstanding developments. In important respects the burden of persons engaged in the health service industry proper has been lightened. On the other hand, a contrary trend may be seen in the shift from the family economy: the hospital and the trained nurse have taken on many of the health services formerly rendered by family members to one another.

The changing scope of the family economy tends to qualify inferences from the volume of *gainful* employment in industry, especially service industry, to the *total* volume of services produced. But there are other qualifications. For example, to assess the changing volume of health services rendered the American people, productivity in the health service industry must be considered. Greater density of population arising from urbanization, better professional training, finer division of labor, more and better equipment and materials, specific drugs, improved methods of diagnosis, advanced knowledge of operating procedures, are all relevant. These and other advances—many implied by the very shifts noted in the preceding paragraphs—are among the factors making for more and better services per health service worker, and perhaps also per capita of the population. But determination of the product of this or any other service industry cannot be at all precise.

These questions sample the kind of data and analysis that must be pur-

sued to determine trends in the service industries, and indicate the kinds of factor that must be studied to deepen our understanding of the trends.

While the over-all survey of the service industries is proceeding simultaneously with the more detailed studies of important individual service industries, it must wait upon their final results. Reports on them follow.

Solomon Fabricant

GOVERNMENT

Our work in the field of government was devoted mainly to rounding out the story of the increasing use of resources by government and to factors affecting this trend. Considerable attention was paid to governmental capital, and two or three tentative observations may be ventured.

The 150,000 governmental units in the United States have been and are, relatively to private business, an even greater employer of capital than of labor. About one out of every eleven workers was on a regular government payroll in 1939 or 1940. But government held a substantially larger proportion of the nation's fixed assets (excluding land), even if we omit such enormous items of governmental capital as streets, roads, sewer systems, and military establishments. Indeed, the share of government in capital assets was close to twice its share in the nation's labor resources. Capital per worker has been correspondingly much larger in governmental operations than in the private sphere of economic activity.

Government has taken a large share of the current production of capital goods. The percentage was especially large, of course, in the two world wars, and in the 1930's when private investment fell to extraordinarily low levels. But even in the 1920's, and before World War I, the share was substantial.

Difficult problems of valuation and coverage cloud our view, yet it is already evident that trends have been upward since 1900 in government's share of existing capital assets and of current capital formation, and in capital per government worker.

I hope soon to write an *Occasional Paper* summarizing trends in government employment since 1900, then prepare a short monograph on these and related changes.

Solomon Fabricant

EDUCATION

A draft of my study on employment in elementary and secondary education has been written, and I am going on with higher education. Among

other things, I plan to investigate sources of income of institutions of higher learning. Since 1900 tuition and other compulsory fees have almost quadrupled in selected large private universities, and for nonresidents in public universities have risen more than tenfold. The upward movement has been continuous: apparently tuition fees rise in depression to maintain income and in prosperity to offset higher costs.

	SCHOOL YEAR					
	1899- 1900	1909- 1910	1919- 1920	1929- 1930	1939- 1940	1945- 1946
ANNUAL STUDENT FEES						
Private Universities	\$130	\$133	\$203	\$379	\$412	\$435
Public Universities						
Residents	15	18	33	58	73	85
Nonresidents	22	35	69	126	198	249

Special attention is being paid to professors' salaries—their structure by rank and school type, their trend, and their level and trend in comparison with those in other professions. In New York State colleges and universities the proportion of professors in the total teaching staff declined from 35 per cent in 1905 to 19 per cent in 1940; associate and assistant professors rose from 13 to 27 per cent; and instructors and others remained fairly constant at a little over 50 per cent. Information on the trend of salaries is confined to land grant colleges, and even for this group there are many gaps in the record. The most recent data on average sal-

AVERAGE SALARIES IN LAND GRANT COLLEGES

	1929	1930	1931	1935	1940	1942
Professors	\$4,355	\$4,440	\$4,495	\$3,761	\$4,289	\$4,350
Associate Professors	3,482	3,309	3,326	2,842	3,179	3,234
Assistant Professors	2,747	2,792	2,795	2,383	2,608	2,633
Instructors	1,967	2,030	2,010	1,722	1,875	1,893

aries do not extend into the period of rapid increases in enrollments and moderate increases in salaries, but fragmentary data indicate that relative increases since 1942 have been largest for instructors, and successively less for each higher rank. An attempt will be made to estimate also outside earnings of professors.

George J. Stigler

TRADE AND TRANSPORTATION

During the summer of 1947 I began a survey of retail and wholesale trade with a view to studying output, employment, and productivity in distribution. Measuring the output of distributive services involves certain conceptual difficulties. It has been suggested that the physical volume of goods passing through wholesale and retail channels affords a first ap-

proximation to the required measure. Yet the services performed by wholesalers and retailers as a part of the process of distributing goods have varied widely from time to time and from place to place. Therefore it seems necessary to inquire what was involved in the process as well as what was distributed. A survey of changes in distributive functions therefore seemed indicated. As to measure the volume of goods distributed, especially before World War I, is difficult, I decided to study the history of the gross margin for different types of store. This margin, roughly the ratio of mark-up to selling price (or of 'value added' to 'value of product'), is influenced by many factors, among them the relative productivity of retailing and wholesaling on the one hand and of manufacturing and transportation on the other. Finally, the striking changes in the technology of distribution will be studied.

The various types of data introduce many different viewpoints. It is hoped to reconcile them, and to weave them into a composite picture which may reveal something about the changing function of distribution, and give some indication of productivity trends within the industry.

My manuscript on output and employment in the transportation industries is practically finished. Its main theme is the growth within recent decades of the newer forms of transportation, especially pipelines, highway motor trucking, and commercial airlines.

Harold Barger

III Business Cycles

THE GENERAL PROGRAM

The National Bureau's program of business-cycle studies was briefly outlined in last year's annual report. Its progress was sketched from its initial planning stage in the early 'twenties through the years when most of our effort was devoted to gathering the necessary statistical materials, to devising a practicable method for reducing the myriad data to manageable summaries, to establishing a working chronology of business cycles, and to tackling the difficult task of analysis and interpretation. The results are now beginning to cumulate. *Measuring Business Cycles*, by Burns and Mitchell, published in 1946, is a basic volume, describing our plans and methods and the results of important tests to which our concept of business cycles had been subjected. F. C. Mills' *Price-Quantity Interactions in Business Cycles* was the first of the monographic studies dealing with

cycles in limited sectors of the economy. Mr. Mills is now preparing a more elaborate account of the relations between prices and the physical quantities and money values of commodity output.

The past year's work has brought other parts of the investigation to the point of publication. Thor Hultgren's *American Transportation in Prosperity and Depression* is in press. It describes and analyzes in detail the cyclical behavior of railroad and other forms of traffic; the costs, prices, and profits at which this business was done; the utilization of labor and capital in the railroad industry; and the volume, depreciation, and purchases of railroad equipment. It makes noteworthy contributions to two disputed questions in the theory of business cycles: the bearing of the cyclical behavior of costs on the causes of business downturns, and the relation between investment in equipment and the rate of change in output (in this case, railroad traffic). G. Heberton Evans' *Business Incorporations in the United States*, which deals to some extent with business cycles, is also in press.

Two other investigations are nearing completion: Geoffrey Moore's report on harvest cycles and Moses Abramovitz' study of cycles in manufacturers' stocks. A partial report on the latter was made to the Econometric Society at its 1947 meeting and will be published in May as *Occasional Paper 26*. There is a good prospect that both Moore's and Abramovitz' monographs will go to press this year. Ruth Mack's pioneering case study of the transmission of demand through the various levels of the production and distribution of hides, leather, and shoes, and Oskar Morgenstern's work on international financial movements are also in advanced stages. Unfortunately, Arthur Burns' study of investment cycles has been virtually halted.

Side by side with these more specialized studies, Wesley Mitchell's general account of the nature and causes of business cycles is progressing. He has written half a dozen chapters of this new book, which he calls *What Happens during Business Cycles—A Progress Report*, and hopes to submit the manuscript of a slender volume before the end of the year.

The progress of our older studies causes us to look forward with confidence to those started more recently. Two sections of a comprehensive study of cycles in incomes are now being worked on actively. Thor Hultgren's section considers cycles in business profits in their relation to the output and prices of finished goods, materials, labor, and other input factors. Daniel Creamer's section is personal incomes, with special atten-

tion initially to the incomes of workers. Reports on the first results of these new studies and on the progress of the older ones are presented below in this section and in Sections IV and V; see also Hickman's report in Section VII.

Two other investigations will be begun this year. Milton Friedman has rejoined the staff to work on the cyclical behavior of money and banking, and Rutledge Vining will work on regional aspects of business cycles.

Moses Abramovitz
Director of Business-Cycle Studies

ANALYSIS OF TIME SERIES

The preparation of summary tables for Wesley Mitchell's manuscript and the analysis of time series for Creamer's study of personal incomes absorbed most of the time of the computing staff during the past year. The work on personal incomes has led to a considerable expansion of our collection of series on labor employment and labor earnings. Most of the new series came from the files of the National Industrial Conference Board and a few from state records of employment and earnings in Ohio and Wisconsin. Roughly fifty series have been added to the business cycles collection in this way, of which nearly all have been analyzed by the National Bureau's standard technique.

Other new series constructed for the United States during the year are number and liabilities of suspended banks, quarterly, 1893-1924; number and liabilities of business failures by manufacturing companies with liabilities over \$100,000 and by manufacturing companies with liabilities under \$100,000, monthly, 1893-1947; an index of factory payrolls for building materials manufacture, monthly, 1919-42; total dividend payments to individuals, monthly, 1919-41; and net dividend payments by industrial corporations, monthly, 1919-41.

Millard Hastay

PERSONAL INCOMES

Exploratory work on labor income in the business cycle, as part of a larger project on cycles in personal incomes, has been started. A preliminary survey of statistical materials indicated that any intensive analysis must be restricted to labor income originating in manufacturing and rail transportation and to cycles since 1919. For these industries and this period, reasonably reliable monthly data are available. Many such series have al-

ready been analyzed by the National Bureau and we have added others, as Mr. Hastay notes above.

So far our analysis has been confined to series representing the behavior of wage payments and related factors in all manufacturing and to their timing behavior at the six troughs and five peaks in general business between 1919 and 1938. The data support the following statements:

1) Revival in labor income (payrolls) in manufacturing either coincides with or lags behind revival in general business. In no instance does an increase in labor income in manufacturing precede general business revival.

2) The downturn of labor income in manufacturing either coincides with or, more frequently, lags behind the downturn in general business. Again, in no instance does a decrease in labor income in manufacturing precede a general business recession.

3) At each of the four reference turning points between 1929 and 1938, the turn in payrolls in manufacturing either coincided with or led the corresponding turn in payrolls of all industries (excluding work relief) according to the seasonally-adjusted estimates included in the Department of Commerce estimates of monthly income payments. If the same relationships held in the decade of the 'twenties, statements (1) and (2) lend themselves to broader generalization: At neither revival nor recession in general business is there an instance of a prior upturn or downturn, as the case may be, in total labor income, a category that has accounted, on the average, for 63 per cent of all personal incomes from 1919 to 1938.

4) The number of recipients of labor income originating in manufacturing, that is, the number employed, has thrice revived coincident with general business; twice it led and once it lagged.

5) In only one of five recessions in general business did the number of recipients of labor income from manufacturing decline before general business. Thrice the downturn occurred after the peak of business; once it was coincident with it.

6) Average hours worked per week in all manufacturing led at two-thirds of all reference turns. There was a lag at one trough and one peak and a coincidence at one trough.

7) Average hourly earnings in all manufacturing did not trace out a complete cycle that can be said to correspond with a reference cycle during these twenty years. This series, however, did have three turning points that could be matched with reference-cycle turns. In each case

average hourly earnings lagged behind the corresponding reference turn.

The next steps in the analysis will entail investigating the movement of payrolls, employment, hours, and hourly earnings in several subgroups of manufacturing to determine the degree of dispersion about the movement in all manufacturing. Timing as well as other measurable aspects of cyclical fluctuations will be covered. We may compare also the cyclical movement of production and the flow of commodities at retail with the cyclical movement of labor income.

Daniel Creamer

COSTS AND PROFITS

To help focus the work in this field I prepared a very rough draft outlining some problems concerning the role of profits in the generation of business cycles. Proposals to control cycles through price and wage policies are shown to imply factual assumptions about the relations among costs, profits, and output at various stages. According to one widely entertained view, unit costs, at least in 'real' terms, are inversely related to output more or less at all times; according to another, rises in unit cost and declines in unit profit help to end prosperity, especially by discouraging investment. I spent some time exploring the mathematics of relations between profits and various aggregates for the business economy as a whole, and formulated the conditions under which price changes will permit an over-all rise in unit profit despite an over-all rise in unit cost.

I continued the attempt to exploit *Statistics of Income* data. Although plagued by the incomparabilities in which this material abounds, I felt able to conclude that in all manufacturing and mining combined, 'direct' cost per unit was not consistently related to cycles in production, 1919-38. When I included such overhead costs as depreciation, interest, and taxes, however, I found some evidence of an inverse relation, although not of the simple down-and-up sort.

The possibility that rising cost may check investment lends especial interest to the costs of industries making durable goods. In two, automobiles and steel, the major portion of the output comes from a few great enterprises, most of which publish their earnings. We have gathered virtually all the profit and loss account data available for these corporations, together with whatever we could find about their output, manhours, etc. Some of the steel figures suggest rather strongly that cost per ton of finished products sold does tend to fall in expansion and rise in contrac-

tion. Whether the direction of change reverses itself before the end of a phase I cannot as yet say. Annual data for expansions two or more years long, however, indicate that the fall is concentrated in the first year.

Labor difficulties are one of the factors some writers believe raise costs during or toward the end of a business expansion. If so, they should be reflected in the Bureau of Labor Statistics data on labor turnover. We therefore studied these figures and found that quit, discharge, total separation, and gross accession rates are notably higher near a business peak than near a trough. Restless and unsatisfactory workers are apparently a larger percentage of the forces employed in boom times than in other stages. More personnel work must be done to keep an average of 100 men on the payrolls. Hiring, training, and separation expenses must be larger relatively to the output of goods for sale.

Cyclical rises or falls in profits begin earlier for some enterprises than for others. We endeavored to learn something about the spread of rising or falling profits through the business economy, using data collected by Harold Barger on companies that publish quarterly earnings. Preliminary results for 1921-24, based on 31 or fewer companies, suggest that the ratio of the number of companies with rising profits to all companies studied begins to diminish well in advance of a business peak and to rise well in advance of a trough. Similar computations for later cycles, based on more enterprises, are in progress.

We find that the stage of the business cycle influences the form of published profit and loss accounts. In prosperous stages allowances for as yet unrealized inventory losses appear among the deductions from earnings. In depressed stages 'idle plant expense' may be segregated to improve the showing of operating net. One corporation separated 'cost of rearranging plant due to reduced operations'. In the 1921 depression we note 'cost of cancellation of commitments' and 'provision for refunds due dealers and distributors on account of price reductions'. On the other hand, income tax refunds are likely to minimize the final net deficit figures.

We shall now process and try to interpret the material, especially the quarterly data, on the automobile and steel industries. We may add some other large enterprises. The construction of consecutive quarterly figures on cost and profit per unit of output will be one of our objectives, although lack of data will often prevent our attaining it. Comparison of the turning points in profit samples for individual industries, compiled

by the Federal Reserve Bank of New York, with turning points in the production indexes for the same industries holds some promise. We plan to survey the numerous sample studies of operations by small enterprises, including farms, in the hope of finding material about their costs and profits sufficiently continuous to be of interest in studying business cycles.

Thor Hultgren

INVENTORIES

The past year was devoted mainly to completing the study of the role of manufacturers' inventories in business cycles. A revised draft of the report is now virtually written.

A study of cyclical variations in the rates of growth and decline of manufacturing output was an important part of the year's work. The immediate objective was to obtain some indication of the cyclical behavior of the rate of change in stocks of goods in process. In absolute terms, the rate of change in stocks is, of course, a measure of the rate of inventory investment. No adequate records of goods in process are available. However, since goods in process must move together with, and in rough proportion to, manufacturing output, the latter can be used as an index of the former.

A study of cyclical changes in the rate of growth of output has significance not confined to this immediate purpose. The 'acceleration principle', as applied to investments in inventories and other forms of capital, is an important feature of many theories of business cycles. In its widest application, this theory asserts that aggregate inventory investment by manufacturers, as well as investment in goods in process, is controlled by the rate of change in output. The theory holds the same to be true of expenditures on machinery and other equipment. It is important, therefore, to know the typical behavior of this allegedly crucial determinant of investment. The behavior of the rate of change in output is also interesting in view of the widespread impression that expansions come to an end because the supposedly orderly process of growth with which they start assumes the character of a boom or period of excited activity and speculation, the collapse of which brings on recession.

To see what evidence of such booms can be found in the rate of growth of output towards the end of expansions, we studied the movements of general indexes of production, such as the Federal Reserve Board index of manufacturing production, broad indexes of the output of durable

and nondurable goods and of producer and consumer goods, indexes of output in smaller industry groups, and the movements of a sample of fifty-seven series representing the output of specific industries and commodities. The measure employed was the National Bureau's standard measure of the rate of change per month from stage to stage of business cycles. Though the measure is coarse, certain broad conclusions may be stated.

1) Subject to many exceptions, the maximum rate of decline in output during contractions tends to occur well before the trough of business is reached. There is some indication that it tends to occur about the middle of contractions but in one contraction covered by our records, 1929-32, it occurred near the beginning. Thereafter, the rate of decline diminished steadily. Thus if the rate of change in output was a controlling influence, the rate at which inventories were liquidated should also have begun to decline early in the contraction, and business should have benefited from the stimulus that a decline in inventory liquidation would have provided. Annual estimates of aggregate inventories of manufacturers indicate, however, that the peak rate of liquidation was not reached until 1933, three years after the peak in the rate of decline in output.

2) During expansions it is more difficult to discern a regular pattern in the behavior of the rate of change in output. Some uniformities can be established by considering consumer and producer goods separately. Consumer goods production has usually reached a maximum rate of growth well before the peak of business and has increased at a diminishing rate near the peak. Other than this there seems to be no clear tendency for the rate of growth to be largest at one stage of expansion rather than another.

3) Producer goods output has traced a highly variable pattern from one cycle to the next. According to Leong's index, for example, the rate of growth accelerated near the peak of two expansions (1920 and 1929), decelerated sharply just before two other peaks (1923 and 1937), and was steady at still another (1926). Similar irregularities characterized other stages of expansion.

4) The producer goods category, which includes not only finished capital goods but also unfinished goods of all kinds destined for further fabrication, is far larger than the consumer goods category. Its irregular rate of growth during expansion is, therefore, reflected in that of total manufacturing output.

The patterns, regular and irregular, that characterize the rate of change

in output during expansions and contractions are an essential guide to the cyclical behavior of investments in one category of stocks—goods in process. In addition, they have several other useful implications. (1) Peaks in business investment expenditures, for both aggregate inventories and durable equipment, tend to occur in close proximity to peaks in business. On the other hand, output achieves a maximum rate of growth at widely varying earlier dates. Hence there is a strong suggestion that the rate of growth of output does not exercise the controlling influence over investment the acceleration principle attributes to it. (2) The irregular behavior of the rate of growth of output during expansions indicates that an output boom is not characteristic of the closing stages of expansions. Whether price booms are more characteristic of expansions is, of course, another matter. (3) Finally, the irregularity of the pace of output growth during expansions contrasts with its comparative regularity during contractions. This difference suggests that the mechanism by which an expansion of business develops, culminates, and finally turns into a recession differs in some essential respects from that which controls the course of contractions.

Moses Abramovitz

CONSUMPTION AND PRODUCTION OF CONSUMER GOODS

It seems reasonable to expect that the study of the shoe, leather, and hide industry will be completed this year. After an introductory section, two chapters deal with the cyclical patterns of retail shoe buying and with the causes of systematic variation in consumer purchases of shoes. Chapter 4 examines the relation between fluctuations in sales of shoes at retail and the several stages of production and marketing whereby hides are converted into shoes. We find that hide marketing, leather tanning, shoe production and retailing all seem to reach peaks or troughs more or less together. This is true, moreover, not only of movements associated with business cycles but also of minor movements clearly identifiable in the shoe, leather, and hide industry; these we call subcycles. The absence of any clear temporal sequence in the vertical succession of processes makes it necessary to study each step with great care in order to discover such causal interconnection as may exist. Chapters 5 and 6 tackle this problem for the series of operations beginning with the production of shoes and ending with their sale by retailers. The following chapters take up leather production and marketing, and hide marketing in sequence. Here

I would like to state baldly a few of the conclusions to which the two chapters on shoe production and marketing lead.

The first of the two chapters attempts to establish the cyclical and subcyclical timing and amplitude of fluctuations in a large number of time series on the shoe industry. Wholesale sales of shoes show a lead of about two months over both retail sales and shoe production, the latter two, as said before, being virtually synchronous in their average timing. Stocks lag the procession by several months, but first differences in stocks, that is, inventory investment or disinvestment, turn, on the average, synchronously with production and retail sales. The sales-stock ratio has a positive pattern—stocks turn over faster when business activity is high than when it is low—and leads by about two months. The subcyclical amplitude of shoe production is about twice as large as that of retail sales. In other words, about half the difference in production between subcyclical peaks and troughs represents an increase in the volume of shoes purchased by consumers while the other half represents a change in the rate of inventory accumulation (chiefly by distributors). However, in the major cyclical movements fluctuations in sales are more important relative to stock-change than in the minor movements. No generalization seems warranted concerning the shapes of the major cyclical movements. The subcyclical pattern of shoe sales, on the other hand, seems to be characterized by a rate of growth or decline that reaches its maximum several months before sales begin to decline or rise. First differences in sales, then, may be said to lead retail sales proper.

In Chapter 6 we endeavor to uncover the causal connections that produce this pattern of events. Discussion with many persons in the industry as well as an examination of trade chronicles and relevant time series suggest that orders placed by retailers or wholesalers with shoe manufacturers appear to be the gear connecting retail sales and production. Orders for shoes seem to reach peaks and troughs about two months ahead of sales, and since this is also approximately the period by which orders typically precede production of shoes, synchronous timing of retail sales and production results.

The reasons for the lead in orders cannot be explained in the compass of a short statement. To put the proposition bluntly, the lead seems to be due to the fact that some shoes (perhaps 35 to 65 per cent of the total) must be ordered considerably in advance; these pre-season orders must be based on a guess concerning future sales. Because seasonal variation in

sales is extreme and somewhat erratic, the guess is usually based on a modified projection of the sales for the same period of the preceding year. In any event, it typically takes the form of forecasts of monthly sales for the season that, in hypothetically seasonally-adjusted form, would lie along a straight line. The line is typically horizontal but it may occasionally be slanted, that is, presuppose a given rate of change during the semester. This means that errors of forecast—the difference between actual and predicted sales each month—will be heavily influenced by the *rate of change* in sales. But it is disastrous to let stocks get seriously out of line with whatever objective is set for them. Consequently, errors in forecasts, and therefore in advance preparations, must be corrected by additions to or subtractions from current orders; these corrections tend, therefore, to have the pattern of the rate of change (first difference) in sales which, as stated above, lead actual sales. The pattern of correction is imprinted in diluted form on the pattern of total current orders. Incidentally, institutions such as wholesalers or instock departments of manufacturers, which specialize in rapid deliveries and therefore receive a larger than usual proportion of the order calculated to correct for errors in forecast, show, as we would expect, the tendency to lead more clearly than other suppliers.

The connecting causal mechanism, which in this case explains a synchronous relation between retail sales and production of shoes, could, under conditions appropriate to some other commodity, explain not synchronous timing but a lead of the earlier (production) stage over the later one (retailing); it could also, of course, explain a lag. We would expect the lead of production to be stronger the longer the period by which peaks and troughs in first differences in sales preceded those in sales proper, the larger the proportion of goods that must be ordered in advance, the more rigidly stocks must be kept in line with whatever objective with respect to sales is set for them, and the shorter the production period. The fact that it is possible to state what institutional arrangements would tend to shift the timing in one direction or another provides interesting opportunities for testing our findings in other fields.

Ruth P. Mack

TRANSPORTATION AND COMMUNICATION

As noted above, *American Transportation in Prosperity and Depression* is in press.

A virtually completed first draft on transport in Great Britain contains some observations, not mentioned in previous reviews, about the use of equipment. Passenger train-miles are not much affected by cyclical variations in traffic. The number of passengers in a train is therefore greater when travel in the aggregate is large. The speed of trains also is little affected; passenger-miles per train-hour rise and fall with the cycle. In this respect passenger operations differ from freight operations, where the reduced speed of trains during an expansion nullified, as often as not, the favorable effect of heavier trainloads on the productivity of train labor. Even in freight service, however, a typical unit of equipment accomplished more in prosperity, because it was kept in use a larger percentage of the time. In passenger service, performance of vehicles was high at peaks in traffic both because of more work per hour and of more hours at work.

Data on operations of yards in which goods trains are made up indicate that the number of cars handled per manhour tends to increase in expansions and diminish in contractions of freight traffic. Cost of marshalling yard labor per unit of traffic tends to be inversely related to traffic.

Our computations from the income and capital accounts of British railways confirm the expectation that the rate of return on investment would rise and fall with traffic and business at large.

In 1948 I hope to complete the analysis of the more limited material on French and German transport, and to prepare one or two *Occasional Papers* on transport and the trade cycle in these two countries and Britain. I may include some contrasts and comparisons among the three countries and with the United States. It should also be possible to write up some findings on the communications industries.

Thor Hultgren

INTERNATIONAL FINANCIAL TRANSACTIONS

Most of the statistical work for this study has now been completed, but additional detailed studies will still be necessary in preparing the remainder of the manuscript.

A long chapter dealing with gold movements has been finished. In addition to topics previously mentioned, it includes a study of British gold exports to 'bullion' and 'sovereign' countries. The distinction is of great importance when judging the extent of the control over the gold market exercised by the Bank of England—the Bank being powerless if 'sovereign' countries demanded gold. This significant problem had previ-

ously gone almost unnoticed. Correlations between the price of gold in London, the Bank of England discount rate, the gold premium in Paris, etc., are all very poor. The attempts by the Bank of England to discriminate with respect to gold were studied and the quantitative role of the Bank's operations in the gold market as a whole estimated.

Principal attention was paid to long-term interest rates, one of our most interesting but difficult fields. Added to the trouble of considering long periods is that of dealing with several countries. Complete comparability is probably an unattainable goal and the dearth of investigations similar to that by F. R. Macaulay, a serious obstacle. Long-term interest rates show only indistinct if not artificial specific cycles; on the other hand, there are some very long-range swings. The international relations of long-term rates are as interesting as those of short-term rates, previously studied. It is, however, difficult, in the face of the evidence, to extend the hypotheses that establish limits for short-term differentials between countries to those of long-term rates. But the differences between long- and short-term rates are exceedingly important; they play a great role in business-cycle theories, although they have never been systematically studied. They are intimately related to the flow of investible funds within each country, and they also connect the capital markets of various countries.

The question of the interdependence of short- and long-term rates was studied to some extent. Great differences of interdependence were observed even for the same country; but it became generally clear that short-term rates ceased to influence long-term rates when the first went very high, even in countries where there was some evidence of interdependence between rates for long and short maturities. For some countries, or at least for some periods, no systematic functional relation seems to exist between the two types of money rate.

The connections of these fields with capital issues, security movements, and security prices are obvious. Most of the indexes have been collected and the necessary computations made, but there was no time for deeper analysis and for writing the last chapters.

A method, developed some time ago, which permits the measurement, within knowable limits, of the strain and stress experienced by one money market due to the behavior of other international money markets, was fully applied to our four countries. The periods covered are roughly 1876-1914 and 1925-39. The information the very laborious computations yielded is definitely worth attention. The resulting monthly series may

for many purposes be used in lieu of the missing balance of payments statistics. The periods when stresses developed are clear and many are essentially of an international character, in no way correlated with the domestic business cycles.

Various circumstances prevented further work on the project in the second half of 1947; the manuscript already comprises a thousand pages.

Oskar Morgenstern

STATISTICAL INDICATORS

Early in the year I spent some time revising the manuscript on harvest cycles in response to suggestions of staff members. Since then other work has interfered with its preparation for submission to the staff and Directors. I hope that during the coming year it will progress to that stage and perhaps beyond.

In May I presented an oral report to the Directors on the study by Arthur Burns and myself on Statistical Indicators of Cyclical Revivals and Recessions; work has been going forward rather slowly since then. The main product of the investigation so far is a list of some 800 monthly and quarterly time series for the United States, classified with respect to the regularity with which their movements have paralleled business cycles in the past, and further classified with respect to the consistency of their timing behavior (lead, lag, or rough coincidence) at business-cycle peaks and troughs. This basic classification is of considerable interest in itself, but it must be refined in various ways before a useful list of statistical indicators can be derived from it. For example, since a series had to cover several business cycles before it could be classified by statistical criteria, the classification does not cover series that are available only for recent years. To remedy this we canvassed the field for new series, and recently I drew up a tentative list of 80-odd currently available series, both old and new, that might be expected to be useful indicators on the basis of either their own past behavior or that of other comparable series. But this list, too, needs further study, revision, and documentation.

Our objective is a documented list of perhaps twenty-five or thirty indicators, with charts and tables to show their past, and perhaps current, behavior. A fairly extensive list is essential, first, because different economic activities reach their crests or troughs at different times, and second, because the position of any single indicator in this sequence is subject to considerable variation. The difficulties for forecasting caused by this variation are easily demonstrated, and some illustrative material based

on the list of indicators published by Mitchell and Burns in 1938 (*Bulletin 69*) has been worked out for inclusion in the present study; ways to surmount the difficulties are less easy to devise. However, we expect to achieve a more limited aim: to identify economic activities relevant to the problem of forecasting, to facilitate comparison of their current with their relevant past behavior, and thereby at least help the observer to make more intelligent use of such indicators for the purpose of recognizing and appraising the current state of business and the near-term future possibilities.

One practical obstacle to the current use of an extensive list of series is the necessity of making seasonal adjustments. In relatively few cases do the compilers provide such adjustments. Among the 80-odd series mentioned above, about nine out of ten require seasonal adjustment and six of each nine must be adjusted by the individual user. It is to be hoped that one byproduct of the publication of our study will be to induce compiling or publishing agencies to adjust their series seasonally.

A related study upon which I was engaged in the first half of the year was a compilation of material for a section in the Bureau of the Census source book, *Historical Statistics of the United States*. The National Bureau was requested to prepare a section on Monthly and Quarterly Indicators of Business Conditions, and with the advice and assistance of Arthur Burns, Millard Hastay, and members of our library staff I compiled a document of some 360 typed pages, giving the original and seasonally-adjusted data for 30 long series, together with brief descriptions indicating the source, method of construction, available related series, etc. The source book is now in press and is, I believe, scheduled to appear this year.

Geoffrey H. Moore

IV Commodity Prices

CYCLICAL BEHAVIOR OF PRICES

Work was carried forward in 1947 on the interrelated cyclical movements of unit prices, physical quantities, and monetary values of commodities. A preliminary, partial report on this investigation (*Price-Quantity Interactions in Business Cycles*) will be elaborated in the final volume, and supplemented by studies of the behavior of the prices and values of individual commodities during specific cycles in corresponding physical

quantities, and of the behavior of quantities and values during specific cycles in corresponding price series. In addition, we are studying intensively a broader sample of several hundred commodities for which we have continuous series of price quotations since 1890. It is expected that these price materials will be treated in a short monograph extending the report on cyclical price movements in *The Behavior of Prices*.

The study of related cyclical movements of buyers' outlays, commodity prices, and physical quantities has provided opportunity for comparing cyclical changes in the extent of business buying (i.e., the buying of investment goods and of goods to be processed into consumer goods) and the buying of consumer goods. The records utilized define the percentages of producer goods and of consumer goods for which outlays are increasing, and the percentages for which outlays are decreasing, in each of eight stages of business cycles. The sample studied includes producer goods and consumer goods having in 1937 an aggregate value equal to about one-third of the total value of all agricultural, mineral, and manufactured goods produced in the United States. The sample is not fully representative, but is large enough to give substantive content to the averages derived from it. The records cover 20 business cycles in the United States; data for cycles since 1919 predominate.

RELATIONS BETWEEN CHANGES IN BUYERS' OUTLAYS FOR
PRODUCER GOODS AND CONSUMER GOODS, BY CYCLICAL PERIODS

		PERIODS*							
		E ₁	E ₂	E ₃	E ₄	C ₁	C ₂	C ₃	C ₄
		EXCESS (+) OR DEFECT (—) OF % OF COMMODITIES SHOWING INCREASES IN BUYERS' OUTLAYS OVER				% SHOWING DECREASES			
1	Producer Goods	+88	+38	+84	+72	—76	—80	—80	—26
2	Consumer Goods	+28	+10	+72	+26	—10	—50	—36	+18
3	Net Difference	+60	+28	+12	+46	—66	—30	—44	—44

*The four periods of expansion (E₁ to E₄) cover, respectively, reference-cycle stages I-II, II-III, III-IV, IV-V; the four periods of contraction (C₁ to C₄) cover stages V-VI, VI-VII, VII-VIII, and VIII-IX.

In period E₁ buyers' outlays increase for 94 per cent of all producer goods, decline for 6 per cent. The 'excess' of outlay increases is 88. Among consumer goods the corresponding measurements are 64 and 36, with an excess of 28. Were the two measures of 'excess' the same, it would mean that expansionary activities were equally extensive (i.e., affected the same proportion of commodities) for producer goods and for consumer goods. A larger measure of 'excess' for producer goods than for consumer goods

indicates more extensive expansion (or less extensive contraction) in the markets for goods of the former type. It means that increases in buying for business purposes affect relatively more commodities than do corresponding increases in buying for consumer purposes. (We do not, of course, measure consumer buying directly, since our observations have to do with the buying of consumer goods in wholesale markets.) When the producer goods measure falls short of that for consumer goods the situation is reversed: increases in buying for consumer purposes are more extensive than corresponding increases in buying for business purposes. The entries in line 3, which define the extent and direction of these differences, are useful indexes of the relative scope of changes in buyers' outlays making for expansion or contraction in markets for producer goods and for consumer goods. They are related to (but do not directly measure) alterations in inventory investments.

During the entire expansion the buying of producer goods is more extensive than the concomitant buying of consumer goods. Industrialists are extending their purchases of goods (for capital investment and processing) more widely than are merchants their purchases of goods ready for final consumption. The difference is at its maximum (positively) in period E₁, when the outlook for profits has improved after months of subnormal activity; business buying is then at its height, in the sense that the percentage of producer goods for which buyers' outlays are expanding is greater than at any subsequent period. The excess of net outlay increases for producer goods over net outlay increases for consumer goods, which is 60 in the initial period of expansion, diminishes in period E₂, drops further in E₃, and rises sharply again in E₄.

With the turn of the business tide at stage V producer buying is curtailed far more drastically than consumer buying. The net difference recorded in line 3 is at its maximum, negatively, in period C₁. The indicated reversal of buying movements for producer and consumer goods marks a sharp reduction in the rate of growth of stocks of producer goods. In periods C₂ and C₃ decreases in outlays prevail in markets for both producer and consumer goods, but more markedly in the former. In the final period of business contraction the extent of increases in buyers' outlays for consumer goods is greater than that of decreases, but there is still a net deficiency in markets for producer goods, and the difference (line 3) remains heavily negative. As the low point is rounded at stage IX the tide again turns, the buying of producer goods spurts and the

index of the net difference between producer and consumer goods groups again becomes strongly positive.

The measurements with which we have been dealing are derived from outlay changes in terms of dollars. They reflect the net result of fluctuations in unit prices and in the quantities of goods changing hands. The record of shifts in these components (which will be set forth in the book) indicates that during expansions the cumulated contribution of the quantity factor to the excess of outlay increases for producer goods was more than twice that of the price factor. Quantity-dominated shifts are responsible, notably, for the substantial excess of outlay increases for producer goods in period E₁ and for the subsequent retardation in period E₂. In contractions price declines are more potent in effecting the sharp initial shift to a net deficiency of outlays for producer goods in period C₁; thereafter, physical deflation is far more potent.

Variations in demand in markets where buying is dominated by business considerations and in markets more immediately affected by direct consumer needs and actions play important roles in initiating and developing expansions and contractions in general business. The preliminary results help to define the amplitude and timing of these movements, and the interaction of price and quantity factors in shaping changes in the outlays of buyers. Further exploration of these problems is contemplated.

Frederick C. Mills

CONFERENCE ON PRICE RESEARCH

At the beginning of 1947 the Conference on Price Research contemplated a study of the functioning of prices in a mixed economy. Unfortunately, the National Bureau found it impossible to provide more than a fraction of the funds needed. As exploratory inquiry indicated that there was no immediate prospect of obtaining supplementary financial assistance from a foundation, the Executive Committee of the Conference recommended and the members of the Conference adopted a resolution that the Conference be dissolved. Coupled with this resolution was a request that the 1948 budget of the Conference be expended by a small committee on preparing a pamphlet setting forth the most pressing needs for price research. The National Bureau accepted this recommendation, and the Conference was dissolved in June.

A committee, consisting of Richard Heflebower, Lester Kellogg, Mark Massel, Frederick C. Mills, and Donald Wallace, together with Corwin

Edwards as last Chairman of the Conference, was designated to prepare the pamphlet. A manuscript is expected to be ready in late spring.

Corwin Edwards

V The Labor Market

WAGES AND TRADE UNIONISM

Studies of the postwar labor market show that the rise in wages during World War II and the business expansion following the end of the war continued through 1947 and lasted longer than during and after World War I. Though the hourly wages of different groups of labor have increased at varying rates, the change in the wages of factory labor, the largest single category of employees, is more or less representative of what has been happening. Between August 1939 and the end of December 1947, hourly earnings of factory labor increased from 62 cents to \$1.28, or just more than doubled. This increase thus begins to compare with the rise between 1914 and 1920 from roughly 25 to 61 cents an hour. At the turn of the year factory wages, in common with other wages, were still going up.

Between January 1946 and December 1947 factory wages advanced 27 per cent. The cost of living moved closely with wages, increasing 29 per cent. Whatever the reason, the gains in postwar hourly wages were quickly absorbed by rising prices.

At the end of 1947, compared with August 1939, there was still a margin in favor of wages, for they had more than doubled while living costs had risen something less than 70 per cent. The problems facing labor and industry were whether the prevailing trend in wages would continue, and, if so, how long, and whether it would, as in the past, reach a climax, then reverse itself.

Good progress has been made on the study of union membership. The basic tables are nearly assembled and the manuscript for a small book should be ready in early summer. The new data cover the important years from 1935 through 1947, a period during which the size of American unions was influenced by the founding of the CIO, modifications in national labor policy and legislation, and the economic expansion that has prevailed since 1939. Some notion of the order of magnitude of the change in the size of the American labor movement can be gained from prelim-

inary and tentative figures on union membership, including Canadian

UNION MEMBERSHIP		UNION MEMBERSHIP		UNION MEMBERSHIP	
1935	3,648,100	1939	7,755,100	1943	11,503,700
1936	4,084,100	1940	8,093,600	1944	12,687,600
1937	6,394,600	1941	8,587,300	1945	12,704,421
1938	7,407,200	1942	9,642,400	1946	12,957,000
				1947	14,280,400

members of American unions, 1935-47. In addition to the detailed discussion of this period, the book will present a picture of the changing position of unions in the half century since 1897. It will also compare developments in unions in England and the United States.

Leo Wolman

THE LABOR FORCE

My study of the labor force under changing income and employment will be ready for preliminary circulation in the spring. Its mission and tentative conclusions were summarized in last year's annual report. There it was pointed out that the peacetime labor force, while changing greatly in composition, has been a highly stable over-all proportion of the population through the years. This stability has held in the face of large increases in real income, major shifts in the composition of industry, and wide fluctuations in prices and employment.

Some small changes have occurred. Under high employment conditions in the United States, Germany, Great Britain, and Canada, a large increase in income during each whole period studied seems to co-exist with a very slight increase in the over-all labor force propensity. In the United States, from one decade to another, the rate of income rise apparently influences the proportion; it is 'pulled up' by rapidly rising income and 'let down' by slowly rising income. It tends to fall off slightly in times of great unemployment (contradicting the assumption that there is a net addition to the labor force in depression) and to recover when employment again reaches a high level. It does not seem to enlarge permanently as a result of war (except to the extent postwar armed forces remain above prewar strength and divert some young people from school and marriage).

In composition the labor force has changed greatly with the extensive substitution of women for young people and elderly men; but the inflows and outflows seem to offset each other, and indeed may be inherently compensatory. Examination of the various forces possibly acting on

each component suggests that young people who have left the labor market have left for school in almost all cases; that elderly men have been retired from the labor force more by the 'push' of unfavorable demand conditions than by the 'pull' of pensions and higher incomes of adult children; and that the release of women from housework to gainful work may be accounted for almost entirely by the decline in the number of persons the average wife or grown daughter must cook and keep house for in families of two or more persons. Household labor may have been saved more by the fall in the birth rate than by the advance of technology in household tasks.

Work in 1947 centered on consolidation, refinement, and analysis, so that the conclusions will stand inspection under strong statistical light. One important refinement consisted of estimating the population and labor force separately by detailed age and sex groups in large cities and in urban and rural areas of the United States since 1890. Not heretofore available for the period before 1930, these estimates are valuable on their own account. Moreover, they are an essential factor in standardizing the labor force for demographic changes and institutional differentials, in order to silhouette any variations due to income and employment changes.

Refinement of data and more intensive analysis and internal comparison have shown that the conclusions are largely independent of the methods used in standardization and adjustment.

These studies bring out an interesting fact concerning the labor force proportion in 1947. In current writings the labor force is generally said to be greatly expanded as an aftermath of the war. Comparison with prewar data requires, of course, that the present data be adjusted downward to allow for the effect of the change in 1945 to a more inclusive measurement technique. When the 1947 data are thus adjusted and are standardized, the labor force is shown to have returned to about the same proportion of the working age population as prevailed in earlier periods of fairly high employment: 1930, 1920, or 1900. The labor force now constitutes 1 or 2 per cent more of the population than it did in 1940. The increase seems due, not to the war, but to the small, sympathetic association between the labor force and employment during business cycles.

Clarence D. Long

Readers interested in the labor market are referred also to the studies of employment trends reported in Section II, and to Creamer's study of cycles in employment and earnings reported in Section III.

VI Fiscal Studies

PROGRESS ON UNCOMPLETED WORK

Further progress has been made on the several projects which were at various stages at the close of 1946.

A manuscript, *Taxable Income and Book Profit*, Project A, was submitted by the Conference for consideration by the National Bureau. The authors, Dan T. Smith and J. Keith Butters, are making certain improvements suggested by the staff and outside experts. A revised manuscript will go forward to the Directors shortly.

Project E, *Tax Treatment of Capital Gains and Losses*, was already largely through the mimeographed stage at the end of 1946. Further work on small but important parts of the text has been done, but has been much less rapid than we hoped. We are now confident, however, that a manuscript can soon be submitted to the National Bureau. A report by Lawrence H. Seltzer, chief of the group in charge of the project, is presented below.

Project F, *The Post-War Federal Budget*, was at the close of 1946 in what was then regarded as nearly final manuscript stage. Important developments in national and world conditions during 1947, however, convinced both the author in charge, M. Slade Kendrick, and the Chairman of the Conference that a more realistic presentation having these developments in view was needed. An extensively revised manuscript, upon which James A. Maxwell assisted Mr. Kendrick, has been prepared and will shortly be sent to the National Bureau.

A manuscript produced under Project G, *Recent Developments in Dominion-Provincial Fiscal Relations in Canada*, by James A. Maxwell, has been published as *Occasional Paper 25*.

As fairly detailed summaries of the main findings of the four projects were given in the Twenty-seventh Annual Report of the National Bureau (pp. 63-5 and 66-70), they are not repeated here. In only one, Project F, have fundamental changes become necessary in the findings there reported. The highly important developments of 1947 in political and economic conditions at home and abroad have forced reconsideration of some phases of the projected budget for the first postwar decade. Although the author has already introduced the relevant changes into a revised manuscript, the Conference has not yet completed critical review of the new findings and does not wish at this time to report even a summary.

NEW WORK

The Conference during 1947 started and abandoned operations on one project, plans for which had been largely completed by the end of 1946, and continued the planning of two new projects.

Project C, *The Effect of Taxation on Business*, was laid out before the war by a Conference subcommittee headed by Dan T. Smith. Despite its high importance, it was necessarily shelved during the war, but was given renewed attention late in 1946. As indicated in our report for 1946, a revised plan had been prepared and submitted to the National Bureau for authorization and support. The Bureau's Executive Committee authorized operations and the search for financial support, and an arrangement was made by which the National Bureau and the Harvard Business School would participate jointly in the operations. Subsequent developments have led to arrangements by which operations will be carried forward solely by the School. The Conference is proud to have planned and promoted the project, but has no part in the ensuing operations.

A subcommittee, under Lawrence H. Seltzer, submitted a plan for Project H, *Federal-State Fiscal Relations in the United States*, to the Conference in spring 1947. Partly because the Conference leadership held significant changes to be necessary and partly because the quest for financial support of Project H might interfere with raising funds for Project C, further action on this project was postponed. The plan has been returned to the subcommittee for reconsideration, and a revised plan will probably be submitted to the National Bureau, for authorization and support, by the middle of this year.

Looking forward to the subsequent planning of a project on the fiscal aspects of social security, the Conference employed James A. Maxwell during the summer of 1947 to make a preliminary survey. Maxwell's report is now in the hands of the Chairman, and will probably form the basis for the planning of a project on this important subject during 1948.

ADMINISTRATIVE ORGANIZATION

For some months arrangements have been under consideration for reorganizing the leadership and administrative direction of the Conference, with a view to a closer and more effective contact between the National Bureau staff and the work on fiscal policy. These plans are still in a preliminary stage, but decisions for the shift to a new basis have been precipitated by the departure of the present Chairman from his Harvard post

on February 1, 1948, and his transfer to duties at the University of California. Distance compels him to withdraw at this time from active leadership, and perhaps from all participation, in the work of the Conference. The new organization will undoubtedly be worked out early in 1948, and will be reported in the annual summary for that year.

W. L. Crum, *Chairman*
Conference on Research in Fiscal Policy

TAX TREATMENT OF CAPITAL GAINS AND LOSSES

I expect that a report on the tax treatment of capital gains and losses will be submitted to the Conference on Research in Fiscal Policy and the Directors of the National Bureau this spring. Because radical changes in tax treatment made in the Revenue Act of 1942 have been retained, we have extended the period previously covered by our statistical tables, 1917-41, to include the three years 1942-44. The inquiries already received lead us to believe that our statistical materials and interpretive discussion will be helpful not only to students of taxation but also to persons concerned with defining and measuring gross national product and national income.

Of outstanding interest in the long controversy over the most suitable tax treatment of capital gains and losses have been the opposing contentions respecting the effects upon the conduct of investors of one kind of treatment as against another. Some have argued that tax considerations are negligible; others, that they are crucial. Both groups have been equally able to cite published figures of the Bureau of Internal Revenue in support of their views. One reason is that the figures tabulated directly from income tax returns are not comparable as between periods because of gross differences in the law or in the methods of tabulation. One aim of our study has been to make such adjustments in the published statistics and to fill such gaps in the data as to provide a continuous series of figures possessing a useful degree of homogeneity for the entire period, 1917-44. This, we believe, has been accomplished.

But even our more refined figures tell us directly only *what* individuals did, not *why* they did it. The tax treatment of capital gains and losses is merely one element in a whole complex of forces that operates on the motives and actions of investors, and its influence is often inextricably interwoven with that of the others. Unqualified inferences from our figures can be drawn only occasionally, though the fact that such inferences

cannot always be drawn is no less significant than that a confident interpretation is sometimes possible. The confusing character of the surface indications can be readily illustrated. Thus, though the effective tax rates on long-term capital gains in 1919 and 1920, when capital gains were taxed at regular income tax rates, were the highest in our history, the amounts of net capital gains realized in these years by individuals with net income, reflecting the postwar boom, were larger than in most other years in 1917-44. With substantially the same tax treatment, the net gains reported for 1917, 1918, and 1921, on the other hand, were among the five lowest. Net capital losses realized were similarly irregular. The amounts in 1920 and 1921 were among the nine largest, reflecting the crisis and depression of 1920-21. But in 1918 when net capital losses were just as fully deductible, the amount was among the five lowest.

Similarly illustrating the predominance of nontax forces when these are of pronounced strength was the experience of the late 'twenties and early 'thirties. In response to protests that the taxation of capital gains at ordinary income tax rates was obstructing investment transactions, and that it was unfair to tax such gains as ordinary income, Congress, in the Revenue Act of 1921, placed an upper limit of 12½ per cent on the tax rates applicable to net capital gains from assets held more than two years, a ceiling that remained in force until the end of 1933. The successive reductions in normal and surtax rates during the 1920's lowered also the effective rates on capital gains for taxpayers whose incomes were not large enough to benefit from the ceiling rate. These sharp cuts in the effective tax rates were followed by *both* the fattest and the leanest years of realized capital gains and of the tax revenues derived therefrom in our history.

Tax provisions, on the other hand, wielded a strong influence on other occasions. For example, the unusually high tax rates imposed on medium-term gains of upper bracket incomes in 1934-37, as well as the large discounts in taxes offered in these years for postponing sales, discouraged liquidation. When a maximum tax rate of 15 per cent on gains from assets held more than two years was substituted in 1938 for the rates that had prevailed in the preceding four years, the aggregate net capital gains of individuals with incomes of \$100,000 or more jumped 143 per cent—from \$135 million in 1937 to \$328 million in 1938—even though the net capital gains of all other groups fell \$192 million or 28 per cent. The inference is reasonable that many selling transactions previously postponed because of the substantial tax rates imposed on the gains of upper bracket individuals

were rushed through in 1938 when a ceiling rate of 15 per cent was substituted. This inference is supported by the behavior of net capital gains in the following year, when the amount reported by those with net incomes of \$100,000 or more fell off nearly two-thirds, while the total reported by all other taxpayers increased.

Lawrence H. Seltzer

Readers interested in problems of fiscal policy may wish to consult Copeland's report in Section I, which describes briefly the new federal financial statement, published as *Technical Paper 5*.

VII Banking and Finance

THE GENERAL PROGRAM

An understanding of the basic objectives of the Financial Research Program is so essential to a review and appraisal of its current activities that we preface this report with a brief restatement of original aims. In *A Program of Financial Research*, Volume I (1937) proposals were made for (1) a comprehensive survey of the financial structure; (2) studies of the effects of legislation and of public supervision on the evolution of the financial structure; (3) analyses of credit standards in the fields of consumer, real estate, and investment credit; and (4) an analysis of the composition, flow, and behavior of bank deposits.

Considerable progress has been made towards the achievement of these original objectives, but much remains to be done. A good deal of our work has been organized along project lines, that is, we examine one segment of the financial system intensively in a set of closely related studies. Projects of this type so far completed have covered Consumer Instalment Credit and Business Finance; those still in progress deal with Urban Real Estate Finance and Agricultural Finance. Each project has included a survey of financial agencies operating in the field, and analyses of their credit standards and experience and of the effect of legal institutions on their growth. Work of this type should be started soon on foreign trade financing, and to round out our program we should supplement our current investigation of corporate bond experience with studies of capital market institutions. Studies under (4) above have not yet been undertaken, but it becomes increasingly clear that the most promising approach is not by studying deposit behavior *per se* but by developing and

applying a sources and uses of funds technique to the flow of funds through financial institutions. We are now doing exploratory work in this field.

Naturally, as time passes and new conditions emerge, our ideas concerning the importance of different types of work change a good bit. During the war, for example, we undertook a series of projects on the effect of war on the institutions of money and credit; and since the inception of the Business Financing Project our interest in empirical investigations of corporate financial practices has grown considerably. In the near future we shall finish with the 'war-effect' studies, but our investigations of corporate financial processes should expand as opportunities present themselves. By pushing unfinished tasks on these several fronts, we shall realize the rounded program that was the goal of the original Exploratory Committee. Against this background, staff members responsible for the several divisions of our work report below on activities during 1947.

Raymond J. Saulnier, *Director*
Financial Research Program

URBAN REAL ESTATE FINANCE

As the basic investigation in this area we are examining the characteristics of real estate itself, in order to see how the subject of the financing conditions the lending process. This study is being prepared by E. M. Fisher of Columbia University, who reports:

"During 1947 the study was outlined, materials from a wide variety of sources were collected and analyzed, and a considerable portion of the manuscript written in first draft. Since August I have had the able assistance of Chester Rapkin.

Section I defines the economic concepts essential to an analysis of real estate market behavior, discusses their legal basis, and describes the more common legal instruments and practices of conveying rights in real estate. It has become apparent that instead of being a unified and single market, the 'real estate market' consists of a congeries of related markets in which rights of different kinds are sold, purchased, and exchanged under conditions and subject to forces unique for each type of right involved.

Section II will be based primarily upon series reflecting markets for specified kinds of rights regardless of the kinds of land and improvements covered. A series on the number of deeds recorded, reflecting transfers of

fees to land and improvements of all types, and a series on mortgages recorded, together with data on subdividing, will be analyzed.

Section III deals first with the markets for homes in fee and for residential rental property. An attempt is made to describe the behavior of the particular market, the forces operating to change it from a sellers' to a buyers' market, and vice versa, the behavior of prices, and the relations between the market for homes in fee and residential leaseholds and between rents and prices.

The entire study is expected to be in draft form by summer."

Part II deals with the policies of the principal urban mortgage lending agencies. Carl F. Behrens, whose services have been made available to the National Bureau by the Federal Deposit Insurance Corporation, is preparing a manuscript on commercial banks. He reports:

"Thirty-two banks reported mortgage portfolio costs, and information on nearly 6,000 mortgage loans has been provided by 150 of the 495 banks included in our original sample. Cost materials are being examined and efforts were made, with the help of the Federal Reserve Banks, to increase the number of banks reporting their mortgage loan experience. The data may fall short of what is necessary for an adequate study of loan experience, but they will give us materials for describing this segment of the mortgage market such as have not heretofore been available. A preliminary draft of the monograph should be ready by summer or early autumn."

Edward E. Edwards of Indiana University is surveying the activities of savings and loan associations:

"Materials for the study of mortgage lending experience have been collected from about 200 of the 500 savings and loan associations from which cooperation was requested. Lack of personnel and the unavailability or inadequacy of old records reduced the expected response, and had it not been for the active cooperation of the presidents of the Federal Home Loan Banks, the returns might have been negligible.

The mortgage loan histories, of which over 5,000 are now in hand, are being coded for card-punching. Tabulations will be made concurrently with those for life insurance companies and commercial banks. Because of the high percentage of nonresponse, the analysis of mortgage experience will be subject to serious limitations; data will be adequate, however, for analyzing current portfolios and current lending practices."

The assembling and analysis of materials on life insurance company

urban mortgage lending activities has proceeded mainly in the direction of more intensive analyses of mortgage lending costs and loan experience. The distinct decline in net income during 1947 can be attributed largely to increases in costs associated with the acquisition of loans. The range of operating results for companies with loan portfolios of less than \$20 million is wide, and income net of operating expenses tends to rise with portfolio size after the \$20 million point has been passed. For life companies with the largest portfolios our measure of net income (after operating costs but before any allowance for the 'costs of money' or for potential loss through loan foreclosures) ranged from 3.4 to 3.75 per cent on the average amount invested during 1946. As these calculations are made on a cash or current accounting basis, they give full weight to the heavy 1946 expenditures for acquiring a rapidly expanding volume of new loans. This is not regarded as a serious defect since loan acquisitions have been heavy for several years and loan portfolios were, according to our calculations, turning over during 1946 at the rate of once every 3½ to 5 years. Under these conditions net income calculated on a cash basis would not differ greatly from that calculated on an accrual basis. However, net income would have to be placed at a lower level were account taken of the costs of money and of potential loss. If 0.5 per cent is allowed for these two costs, we could say that most life insurance company urban mortgage loan portfolios were earning a net income in 1946 of between 2.9 and 3.25 per cent, which is about equal to returns on corporate bonds and preferred stocks.

Preliminary findings from the mortgage loan experience study, for which we have data on 10,000 loans from 23 companies, emphasize the importance in determining loan quality of the phase of the construction cycle in which the loan is made. A report on the entire insurance company study should be completed this year.

Among the institutional studies in urban real estate finance is one covering the activities of the Home Owners Loan Corporation. C. Lowell Harriss of Columbia University reports:

"Early in 1947 the National Bureau received assurance that the Home Owners Loan Corporation would cooperate fully, and I began an intensive analysis of its operations. Far more data may be had on operations and experience than we shall need, but certain special tabulations should be of unusual interest. The first are data, prepared especially for us from cards punched for another purpose, revealing characteristics of the nearly

200,000 houses foreclosed by HOLC; the second consists of data on some 20,000 houses sold or refinanced between 1944 and 1947. From data we have transcribed on 5,000 of the latter cases we can compare recent sale prices with earlier depression valuations, and trace changes in mortgage lending terms during the last few years.

The case files on almost all the million-odd HOLC properties turned out to be intact, and rich with information about the borrower, the property, and the loan. Since they had been little used for analytical purposes, a sample of about 4,000 cases was selected, and data on borrower, property, loan, and HOLC experience were transcribed. Coding, punching, and tabulating should be finished by late spring, and a draft of most of the study ready for criticism by summer."

Rounding out the institutional monographs, Donald T. Wood of Dartmouth College is studying government agencies in the real estate finance field. His work is complete except for the section on the Federal Housing Administration.

Two additional investigations round out the urban real estate finance project. One brings together and supplements material in the several institutional analyses for a comparative description of the markets served by the principal lending agencies and an analysis of comparative risk experience. J. E. Morton of Cornell University, who has carried out the sampling of loan files for each of the experience studies, will prepare this manuscript. The other is the study, now in second draft, by Miles L. Colean on *The Influence of Government on Urban Real Estate Finance*. Not until we review the many-sided and often conflicting facets of government's influence on the realty market and its financing processes, as in this study, can we appraise the general direction of the legislative process and place specific proposals in proper perspective.

R. J. Saulnier

AGRICULTURAL FINANCE

Characteristics of Agriculture in Relation to Its Financing

Donald C. Horton has analyzed 1940 data for a sample of 108 counties to show the financial and organizational characteristics of farming, and written a summary and interpretation of his findings.

Tentative statements of findings may be ventured: (1) although geographical differences in the financial organization of farms are fairly evi-

dent, they conform sufficiently with regional differences in the farm economy to permit studies of the general relationships between the type of farming and its financial organization without specific reference to geography; (2) the heavy reliance of certain types of agriculture on a limited capital market can be explained in terms of certain fundamental economic characteristics; (3) agricultural enterprises that get a large proportion of their 'outside' capital from landlord investment are generally of a type subject to relatively heavy uncertainties concerning yield and product price; (4) agricultural enterprises that get a large proportion of their 'outside' capital on credit exhibit characteristics associated more with differences in the quality of management of individual farms; (5) farms that had had an unfavorable financial experience in the 1930's generally showed a high ratio of real estate debt to real estate assets in 1940; however, real estate debt tends, in any case, to be high when average capital requirements per farm are moderately high and when the type of farming is unsuited to absentee owner investment; and (6) the interrelations among different sources of farm capital underline the desirability of broadening the traditional approach to agricultural finance to cover equity as well as debt financing.

Costs, Risks, and Returns in Agricultural Finance

His second *Technical Paper* on the Basic Yields of Bonds published, David Durand is devoting full time to a monograph on risks in agricultural lending. Early in December, Lawrence Jones, formerly with the Bureau of Agricultural Economics, joined the staff to work on a specific phase, farm foreclosures. At present, he and Durand are proceeding along two broad lines: an analysis of the history of farm foreclosures in the United States, their geographical distribution, and the more general economic forces affecting them; and an analysis, based on farm management and farm mortgage foreclosure studies, of the financial and other characteristics of individual farms that affect the incidence of foreclosure.

From cost schedules distributed to the majority of legal reserve life insurance companies in the United States, R. J. Saulnier has made preliminary reports on farm mortgage lending costs of life insurance companies in 1945 and 1946. Data for both years cover companies holding well over half of all insurance company farm mortgages. For three-quarters of the cooperating companies, gross income per \$100 of average farm mortgage loan investment was between 4 and 5 per cent. Gross in-

come ratios for companies with small mortgage loan portfolios tended to be scattered over a wider range than for companies with large portfolios.

As for lending costs, companies with loan portfolios of \$5 million or more had operating costs in 1946 ranging from 0.9 to 1.2 per cent of their average loan investment; most of the reporting companies with portfolios of \$5 million or less had operating costs between 0.2 and 0.7 per cent of their average loan investment.

In general, net income ratios for companies with small portfolios (i.e., ratios to average loan investment of gross income after costs of loan administration) are scattered over a wider range than for companies with large portfolios. For most of the former the net income ratio is 3.5 per cent or more (without adjustment for risk), while for the latter it is between 3.0 and 3.5 per cent. The lower net return of companies with large portfolios is due, in general, to lower gross returns and somewhat higher operating costs.

Agricultural Credit Institutions

During the past year efforts have been made to define the scope of this project more precisely. We expect to begin work this year along the following lines:

Part I would draw heavily upon Horton's study, *Characteristics of Agriculture in Relation to Its Financing*; Part II would compare different financial institutions with respect to the markets they serve in supplying long- and short-term agricultural credit; and Part III, while not attempting to describe lending policies and practices in detail, would point out significant differences among lender groups.

The effects of the great scientific and technological advances in agriculture since 1910 on the capital requirements of agriculture would be analyzed in Part IV. Part V would attempt to bring together, on the one hand, the characteristics of agriculture affecting its capital requirements and capital structure and, on the other, the characteristics of important groups of lending agencies affecting their ability to provide capital for agriculture on terms and in amounts suited to its needs.

Selected Problems in Agricultural Finance

E. Fred Koller, University of Minnesota, continued work on the cross-section analysis of the financial structure of farmers' cooperatives. The accounting statements of a carefully selected sample of 1,037 cooperatives were transcribed from records in the Cooperative Research and Service

Division of the Farm Credit Administration, Washington, D. C. Variations in financial structure are being analyzed on the basis of amount of assets, type of agricultural commodities handled, major geographic divisions of the United States, period in which the cooperatives were organized, volume of sales, and other variables. Changes in financial structure, including both the operating and fixed capital requirements as well as the sources from which capital was obtained, are being analyzed by comparing the statements of an identical group of cooperatives for 1936 and 1945. Considerable attention will be given to the composition, sources, and relative importance of various types of equity capital used by cooperatives and to the frequency of use of short- and long-term credit of various types.

Factual findings are still somewhat limited since only a few of the basic tabulations have been compiled. As soon as all data have been processed and statistical summaries made, a manuscript will be prepared.

Howard Diesslin began in July 1947 a research project on how farm machinery and equipment is financed by farmers. The objectives are to determine the economic basis of equipment financing, the amount of equipment credit outstanding now and over a period of years, the history of equipment financing, the credit practices and standards used, and loss experience in equipment financing.

Secondary source materials were surveyed during the summer and first steps were taken in early autumn towards assembling primary materials. The cooperation of the major farm implement producing companies was enlisted; arrangements were made for mailing questionnaires to the secretary-treasurers of Production Credit Associations and to farm equipment dealers; and special tabulations have been run by the Board of Governors of the Federal Reserve System covering loans by commercial banks for the purpose of acquiring farm machinery and livestock.

Under the direction of John D. Black, James McNulty, Jr. has completed his study of credit in relation to land tenure. The manuscript is being revised preparatory to circulation and review by other research workers in the field.

F. F. Hill

CORPORATE BOND RESEARCH

The corporate Bond Research Project continued its tabulations from the National Bureau's machine-card records of corporate bond experience, drawing up basic tables on bond experience and planning analytical studies.

The tables already prepared or planned may be grouped under four headings:

I Characteristics of Corporate Bonds Outstanding, 1900-1944

Quadrennial (in some cases, annual) estimates have been made of the number and par amount of bonds outstanding, classified by such characteristics as industry group, agency rating, market rating, legal status, size of issue, size of obligor, default and extinguishment status, price, marketability, and term to maturity. Some of the more important cross-classifications have been tabulated.

II The Experience Record of Corporate Bonds Outstanding during Selected Periods, 1900-1944

Tables already prepared contain the following statistics summarizing the experience records of various groups of bonds during twenty selected periods: default rates, weighted and unweighted averages of market yields, realized yields, annual loss rates, and the variances around the unweighted averages.

The bonds are grouped according to the classifications mentioned in I, above. From such materials, the significance of differences in the performance of groups of bonds can be tested and the covariation between market yields, realized yields, and loss rates within the various groups analyzed.

III Characteristics of Corporate Bonds at Dates of Offering, Extinguishment, and Default, 1900-1944

In these tables, the number and par amount of corporate bonds offered, extinguished, or going to default are classified by the variables mentioned in I, above, and are further classified by such variables as type of security, sinking fund provisions, method of extinguishment, method and purpose of issue, earnings provisions, call provisions, and conversion provisions.

The dates of offering, extinguishment, and default are noted on the tabulating cards. Annual (and in some cases, monthly) totals have been tabulated for 1900-38. These tables must be extended from 1938 to 1944 from tabulating cards already prepared for this purpose, the totals taken

for economically significant periods, and certain pertinent cross-classifications made.

IV The Experience Record of Corporate Bonds between Dates of Offering and Extinguishment, Offering and Default, and Default and Extinguishment, 1900-1944

No tables have as yet been set up. The statistics to be computed and tabulated will be of the types mentioned in II, above, and the bonds will be grouped according to the classifications mentioned in I and III.

Plans have been made for three analytical studies to be based on these tables:

I Characteristics and Experience Records of Selected Groups of Bonds Meeting Various Criteria of Quality

For purposes of this analysis, bonds will be grouped according to legal status, agency rating, and market rating.

II The Level, Structure, and Stability of Rates of Return on Corporate Bonds

From this analysis, which will provide measures of investment experience on bonds classified into significant groups (i.e., industry of obligor, size, term to maturity, agency rating, market rating, eligibility under legal lists), contrasts can be drawn between the various classifications of bonds in respect of the yields expected at the time the bonds were offered and the yields actually realized. Such a factual background is essential to establish security valuation procedures and investment loss reserves for bonds of various types.

III Fluctuations in Security Flotations and Investment Values

Studies are planned of changes in the value of security flotations, in investment values, and in investor experience during cyclical expansions and contractions and longer periods.

In the course of the tabulations, interesting bodies of information have been turned up, particularly on the volume and characteristics of bonds outstanding and the performance of quality bonds during selected periods. For example, the volume of corporate bonds outstanding has declined precipitately in recent years—from \$28.9 billion in 1932 to \$22.6 billion in 1944, approximately the amount outstanding two decades earlier. The decline in the volume of high-grade bonds was even more rapid: during the two decades ending in 1944, the volume of bonds rated by the agencies in

the four highest quality grades declined from 83 per cent of the total volume of all rated bonds to 65 per cent.

The behavior pattern of high-grade bonds is in marked contrast to that of low-grade, whether the quality ranking depends on agency rating, market rating, or on eligibility for savings bank and trust fund investment. High-grade bonds sell on a lower market yield basis and at higher market prices than low-grade bonds, the prices and yields varying monotonically with the quality ranking. In addition, high-grade bonds are more marketable in the sense of being more frequently traded on an organized securities exchange, their prices and yields are more stable over the cycle, and their default rates are lower in periods of stress. Have investors in high-grade bonds paid too much for the lower default rates and the greater price and yield stability? Comparison of the average realized rates of return on high- and low-grade bonds (computed to give effect to price change and default loss) reveals that for all periods examined except 1928-32 and 1928-40 average returns on low-grade bonds exceeded those on high-grade bonds. On the other hand, a wider scattering of rates around the low-grade averages was noted, indicating that larger capital losses (and larger capital gains) were more frequent on low-grade bonds.

A word of caution is in order in interpreting these results. Only seven of the twenty periods of investor experience covered by our records have been examined. The final studies will be based on an analysis of the records for all twenty periods.

W. Braddock Hickman

CARRY-OVER ACTIVITIES

In *Basic Yields of Bonds: Their Measurement and Pattern*, David Durand and Willis J. Winn bring up to date and supplement the former's *Technical Paper 3*. The last in a series of studies on the effect of war on the monetary and credit institutions of major foreign economies, B. H. Higgin's *Lombard Street in War and Reconstruction* is being reviewed by specialists in the field.

As an extension of our interest in business financing, Wilson F. Payne continues his study of the flow of funds through corporate enterprise. The first part deals with the financial experience of corporations during the war, emphasizing especially property expenditures, sales, and tax payments. The second part concerns the possibility of measuring by a com-

mon technique such divergent objects as national income, investment, and the flow of short-term funds in financial transactions.

Continuing our work in consumer instalment credit, Avram Kisselgoff is analyzing factors influencing demand in this field. The predominant cyclical variable affecting the demand for instalment sales credit is consumer income, changes in which are associated with more than proportionate changes in instalment sales credit. This relation, after changes in the cost of living have been allowed for, represents the combined influence of changes in the level and distribution of income, and in the direction of changes in income. Another relatively important influence during the 'thirties consisted of long-run factors associated with consumer acceptance of the deferred payment plan of purchase and the availability of credit facilities.

Finally, Robert V. Rosa, Federal Reserve Bank of New York, and Malcolm C. Urquhart, Queen's University, Canada, are writing on loan applicants under the industrial advances program of the Federal Reserve Bank of New York; Willis J. Winn, University of Pennsylvania, on the changing ownership of government bonds during and after World War II; and Sergei Dobrovolsky, Swarthmore College, on the retention of earnings by manufacturing and trade corporations.

This is a broad range of studies, but we see them as steps towards filling out an integrated program of financial research.

R. J. Saulnier

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