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## Business Cycles

### METHODS OF MEASURING CYCLICAL BEHAVIOR

EIGHT CHAPTERS in the monograph on technique have been revised; and the basic work for a revision of the other four is largely completed. The remaining chapters are brief, and only one, that on reference dates, is likely to prove troublesome.

ARTHUR F. BURNS

### SEASONAL FLUCTUATIONS

A report dealing with mechanical methods of measuring and eliminating seasonal fluctuations has been written. A second describes a generalized causal method that utilizes regression equations fitted to the original values and the corresponding cyclical-secular values for each month. This part of the work has proved fruitful. Among other things, a new multiplicative index, quicker to compute than the monthly means index, has been derived as a special case of the generalized method.

Regression equations, a useful measure of the relations between seasonal and cyclical-secular movements, have been used in a third report which treats the relations between seasonal and cyclical movements. Several other methods of studying these relations have been developed and applied to a single long series, London bank clearings. It is hoped that these methods, now being applied to several strategic series, may reveal important seasonal-cyclical relations.

JULIUS SHISKIN

### AMERICAN REFERENCE DATES

*To 1890*

The Thorp materials, on the basis of which reference dates for the second half of the nineteenth century were originally chosen, have been examined. Thorp's method seems to have been to use a large and variable number of time series as well as descriptive materials in order to define a point that might

be regarded as indicating a consensus of upturns and downturns. The greater availability of financial series and the tendency of contemporary commentators to describe the 'state of trade' in terms of prices, interest rates, and banking data strongly conditioned the results. This bias, as well as other questions concerning the consistency of the meaning of reference dates chosen on the foregoing basis, suggest the desirability of experimenting with other approaches.

The possibility of using some single magnitude of a non-pecuniary nature to demarcate peaks and troughs in 'business' was explored. Two were considered: man-hours of employment and total physical output. Though conceptually the more desirable, employment was ruled out for lack of data. The production series for 1860-88 in the National Bureau files, the Thorp collection, as well as others assembled by Mr. Burns for *Production Trends in the United States since 1870* have been examined and are being extended backward when possible. Materials are being gathered, largely from the censuses, to serve as the basis for weighting the series in an index of total industrial output. None of the existing production indexes for 1860-88 is considered adequate for the reference date problem.

The Civil War reference dates have been studied by both the magnitude and the 'congeries' methods. Preliminary results indicate that the National Bureau's present dates for the period will probably have to be changed.

ISAIAH FRANK

CARNEGIE ASSOCIATE, 1941-42

*Since 1890*

From October to January I went over the materials and procedures used by the National Bureau in selecting the English reference dates after 1900, and studied the possibilities of using other procedures to select reference dates.

Since January I have been studying the turning points in American business cycles after 1890. In the next few weeks I hope to finish ordering evidence relevant for choosing peaks and troughs in the four cycles from 1894 to 1908, and to make my choices for this period.

To test the homogeneity of the reference dates I am trying at least four criteria for choosing turning points in 'general business': (1) concentrations of peaks and troughs in numerous time series, (2) concentrations of rises and falls, (3) partition values of the sort used by Mr. Burns in dating trend cycles, (4) peaks and troughs in production or employment taken as a standard magnitude. Besides examining the divergence or coincidence in result of these different methods, it would be important to discover the effect on each of the heterogeneity of the material available in different periods and countries. This is necessary if we are to be sure that the various reference dates measure the same phenomenon.

ALBERT WOHLSTETTER  
CARNEGIE ASSOCIATE, 1941-42

#### PRODUCTION

##### *Industrial*

I returned to the National Bureau from Stanford University for the second half of 1941 to continue work on the cyclical behavior of production. The basic materials for drafting a preliminary chapter on the iron and steel industry in the United States are completed. Such features as the timing, amplitude, and cyclical pattern for iron ore, pig iron, steel ingots, steel sheets, and tin and terne plate have been studied in detail, and cyclical variations in seasonal amplitude have been analyzed. Further exploitation of the materials will probably be more profitable after other industries have been studied.

During the spring I wrote up some material on compounding probabilities from independent significance tests I had

discovered while working on the test of significance for reference cycle patterns that G. H. Moore and I devised. Our monograph on 'A Significance Test for Time Series and Other Ordered Observations' appeared in October as *Technical Paper 1* (a summary was published in the September issue of the *Journal of the American Statistical Association*). We presented a short paper on 'Five Time-Series Significance Tests' at the December meeting of the Econometric Society.

W. ALLEN WALLIS

CARNEGIE ASSOCIATE, 1939-40

### *Agricultural*

The sample of crops whose cyclical behavior is under investigation has been extended to include vegetable crops, primarily because of the interesting behavior of vegetable crops grown for canning. Whereas cycles in acreage for most staple crops and vegetable crops destined for fresh consumption have a smaller amplitude than cycles in yield per acre, the reverse is true of canning crops. Moreover, the influence of business cycles upon acreage seems to be greater for canning crops than for most other crops.

The difference in cyclical behavior seems to be due largely to conditions of supply. Probably the most important factor is that canning crops are largely produced on contracts with canneries. Control over acreage planted is thus centered in the hands of a relatively small number of business firms rather than a large number of farmers, and the farmers have a definite price to react to in advance of planting. The storage of canned goods from season to season and the relatively extensive rather than intensive character of farm production of canning crops are other factors. If this analysis is correct, the case has considerable significance with respect to the effect of economic organization upon the cyclical behavior of crop production.

A systematic statement of theories of agricultural cycles and agricultural theories of business cycles has been prepared. In addition, some observations have been made on the validity of theories suggesting that a periodic weather cycle causes a similar cycle in crop yields. One approach is to consider their consistency with theories describing general crop-weather relationships, with the result that several strong reasons for doubting any simple periodic theory appear. Another approach is to analyze the supporting data. Analysis of some of the data supporting H. L. Moore's theory of an eight-year cycle in rainfall and crop yields indicates that the eight-year cycle accounted for but a small proportion of the movements in the series from which it was derived and was of no significance whatever in the period following that used in the original investigation.

A study of the accuracy of agricultural production estimates, which promises to provide quantitative estimates of error, is under way.

GEOFFREY H. MOORE  
CARNEGIE ASSOCIATE, 1939-40

#### TRANSPORTATION AND COMMUNICATION

With the publication of 'Railway Freight Traffic in Prosperity and Depression' (*Occasional Paper 5*, Feb. 1942) and the completion of a manuscript on railroad passenger traffic in the United States, we can concentrate upon transport and industry in Great Britain as background for a study of traffic cycles. Among other things we are studying the relation between traffic and the supply of commodities to determine whether in Britain, as here, there are cyclical changes in the relative attractiveness of the railroads on the one hand and other forms of transport and local utilization on the other. Rail travel and freight traffic in Britain have been positively and closely related to the state of business. Preliminary conclusions indicate that the amplitude of cyclical changes in freight traffic is less than that in the

production of durable commodities. Changes in travel have a more moderate amplitude than those in freight. Cyclical fluctuations in the number of rides on the London underground railways are still milder.

As soon as the report on British rail traffic has been written we shall turn to cycles in French and German rail traffic, then non-rail traffic in the United States and elsewhere and the communications industry.

THOR HULTGREN

### STOCKS

The major objective of last year's work was to base our notions concerning the relation between inventories and business activity in manufacturing and mining as solidly as possible. These groups hold stocks that account for well over half of all commercial inventories.

Indexes of output by major manufacturing groups comparable with *Statistics of Income* categories, for which we have inventory figures in constant prices, were constructed from Federal Reserve Board data. Production and shipments data comparable with manufacturers' and miners' stocks of individual commodities were gathered whenever this had not already been done.

Total stocks of all manufacturers and of most major industry groups as judged by annual data seem to conform positively to fluctuations in production. Stocks, however, seem to lag considerably, probably from six to twelve months.

Goods in process, concerning the behavior of which we have little direct empirical evidence, necessarily conform positively to production and probably with no substantial lead or lag. We have no way of telling the exact size of this category of stocks, but in 1937 raw materials together with goods in process accounted for about one-half of total stocks held by manufacturers.

The raw materials held by manufacturers seem to move positively but with a small lag. Exceptions reflect inability in certain instances to get additional deliveries or to reduce the flow of materials quickly enough. Newsprint held by publishers lags behind the consumption of newsprint, probably because it is bought on long-term contracts. Stocks of iron ore at furnaces are large in winters of poor business, small in winters of good business, reflecting the inability of iron ore consumers to replenish their stocks when the Great Lakes are closed to navigation.

Finished goods in the hands of their producers respond inversely to a change in activity (shipments, primarily). But if a phase continues long, the movement of stocks tends to reverse itself. This was especially notable in the long contraction of 1929-32 during which there was an uninterrupted decline in the production of most commodities. Stocks of finished goods began by rising rapidly, but after twelve or eighteen months, the rise ceased and in many cases a decline commenced, which sometimes became so rapid as to bring stocks in 1932 to a level below that of 1929. Again, there are exceptions. Stocks of goods produced to order (for example, steel sheets) move positively and virtually synchronously with shipments. No doubt substantial parts of manufacturers' holdings of finished goods represent goods produced to order but we have only this one clear example in our list.

MOSES ABRAMOVITZ

#### PRICES

Our materials on prices in business cycles are being fitted into four general divisions:

1 Structural and cyclical movements in commodity prices in the United States since 1890. To provide a central body of organized materials and standards of reference for use in studying other countries and periods, we study changes in the structure of prices (i.e., with non-recurring shifts in

price relations), general aspects of cycles in commodity prices, and the differential behavior of elements of the price system in business cycles.

2 The relation of cyclical price movements to other economic factors and processes. Our concern here is with the interrelations among prices, production, consumption, inventories, wages, employment, and profits in American business cycles since 1890.

3 Temporal and spatial comparisons.

Here we broaden the study to include cycles in prices and in related economic elements in the United States before 1890, and in the United Kingdom, France, and Germany. We may test, modify, or elaborate results obtained in the intensive study of the last half century of American experience.

4 Summary: cycles in prices and their role in the cyclical fluctuations of general business.

In the actual analysis of materials and presentation of results we do not expect to follow, in order or detail, the framework for preliminary organization set forth above. A considerable part of our work during the year dealt with a phase of the second general topic. A report on this phase will probably be completed before the materials under the first topic are treated fully.

The study immediately in hand is concerned with the related movements, in business cycles, of prices and of physical quantities of goods, and with the role of prices as a major factor affecting the fluctuating volume of monetary payments.

Perhaps the most distinctive feature of business expansions and recessions is the alternately swelling and contracting stream of payments that is the monetary counterpart of the stream of physical goods and services flowing into consumption and into the creation and maintenance of the capital equipment of the economy. These fluctuations in aggregate values reflect, in part, fluctuations in the number of physical units produced and distributed; in part they are due to alterations in the unit prices at which goods change hands. We must define precisely the role played by prices in fluctuating aggregate values, de-

scribing it in some detail for the various elements of the value stream. National income data compiled by the National Bureau and the Department of Commerce, Census materials, Department of Commerce series relating to new industrial plant and equipment, payroll compilations of the Bureau of Labor Statistics, data on new construction, a series of comparable index numbers of production and prices, and other materials are now being studied for light on the role of prices in the expansions and contractions of the volume of payments.

The techniques devised by the business-cycle unit to define the movements of economic series in specific and reference cycles are well adapted for the study of price-quantity changes during business cycles. The individual elements of total monetary payments are the values of individual commodities and services. These, in turn, are determined by unit prices and quantities of individual commodities entering into exchange. The supply and demand functions of economic theory are concerned with just this price-quantity mechanism, but they relate to static conditions. Our interest is in the mutual adjustments of output, consumption, and prices that are effected as the economic system passes through successive phases of business cycles.

The price-quantity mechanism, as it operates for individual commodities, and the role of price and quantity factors in cyclical fluctuations of the aggregate values that make up the stream of monetary payments, will be treated together, in a monograph on commodity prices, quantities, and values during business cycles. Meanwhile, a considerable body of materials on structural and cyclical movements in commodity prices in the United States since 1890 (the first topic in the outline above) has been assembled. Important records of price history since 1890 are being checked in a federal Price Studies Project with which we are connected in an advisory capacity. A file of

these records, with corrected price series, index numbers, and charts, is being made available to the National Bureau, as the Project progresses. Many corrected series, already turned over to us, have been analyzed by our own staff.

FREDERICK C. MILLS

#### COMPETITION

The broad purpose of my study is to assemble evidence on variations in the form and intensity of competition through the course of a business cycle. While at the National Bureau in 1941 I obtained a considerable quantity of data with which the cyclical behavior of national advertising since 1929 could be analyzed. Since returning to teaching at Stanford University these have been supplemented by secondary data.

ROY W. JASTRAM

CARNEGIE ASSOCIATE, 1940-41

#### LABOR

The voluminous material we have been collecting on American wage rates is still defective in many respects. But, supplemented by nonstatistical material of various sorts, it may be used to yield an informative picture of the course of wage rates in this country from the beginning of the Civil War to the outbreak of the second World War in 1939. While the relation between changes in wages and in business activity will be emphasized, the secular movements of wage rates and changes in wage differentials among industries, occupations, and regions will also be discussed. Other National Bureau studies make possible, at least for the years since 1914, comparisons between the behavior of wage rates in the United States, England, Germany, and France.

During 1941 work was begun on related series of employment and payrolls, or wage disbursements, and some progress was made in testing the adequacy of monthly series, in pushing

some back several years, and in studying sources from which only annual data can be obtained. It is hoped to complete the survey of employment and payroll data this year and to begin analysis and interpretation. Later we shall try to compare the movements of wage rates with payrolls and employment.

Since the publication in 1936 of *Ebb and Flow in Trade Unionism*, which carried the story through the depression of 1930 and the first years of business recovery, developments have been of unusual interest and lend themselves to treatment in an *Occasional Paper*.

LEO WOLMAN

### *Wages and Earnings in Great Britain*

A monthly index of wage rates for Great Britain, from December 1920, the date on which wages attained the highest level in the post-1918 period, to July 1941, has been computed. Wages rose to about 20 per cent above the 1939 level but were still considerably below the December 1920 level. Wages in 69 industries, including agriculture, coal mining, iron and steel, engineering, cotton and woollens, clothing, the food industries, building, transportation, and public utilities, are covered. Excluded are the wages of employees in trade, finance, governmental services, and some miscellaneous fields.

The relative stability of the index between 1922 and 1939 fails to disclose substantial changes in wage rates in some industries. Earnings, as distinguished from wage rates, show considerably greater fluctuations for those industries for which comparisons can be made. Unfortunately, we do not have earnings for all the industries for which wage rates have been calculated. However, for industries employing about one-third of the workers for whom wage rates are known, we have also information on a regular basis concerning earnings; and for nearly all 69 industries, information on earnings on specified dates. Most of the material on earnings refers to earnings per week. For a few industries hours worked per week and hourly

earnings have been calculated. Some information on labor costs has been collected.

Some steps have been taken to organize for eventual presentation the material bearing on methods of wage rate determination in British industries. The increase since September 1939 in the frequency with which wage rates are adjusted in accordance with changes in the cost of living is noticeable. The movement of earnings and wage rates during business cycles and the consequences of wage fluctuations upon labor cost, labor's share in the national income, and the real wage must be analyzed.

LORIE TARSHIS

CARNEGIE ASSOCIATE, 1940-41

#### THE INCORPORATION OF BUSINESS ENTERPRISES

Toward the end of last summer, work on the study of business incorporations reached the point where a preliminary statement of findings could be published. A paper, 'Business Incorporations: Their Nature and Significance,' presented at the Princeton meeting of the Economic History Association, was published in the supplemental issue of the Association's journal in December 1941. Series representing the charters granted to business units by twelve states have now been compiled and given preliminary examination. Reflecting entrepreneurial decisions with respect to the organization, consolidation, and reorganization of incorporated business enterprises, they cover—as a group—the period since 1846. Classification of these incorporations according to the size of the projected enterprise and the purpose of chartering, together with the movements over time of total incorporations and the parts of this total, will furnish new information on the attitudes of business men. The work that remains to be done is to compile incorporation series for more states, compare the data for the United States with the foreign materials, and explore further the nature and significance of the incorporation of a business enterprise through

more extensive study of the pre-incorporation status and the condition shortly after chartering.

GEORGE HEBERTON EVANS, JR.

CARNEGIE ASSOCIATE, 1939-40

#### MONEY AND BANKING

We have studied the banking data for several states from the 1830's to the start of the national banking system in 1863. Large quantities of data are accessible, but usually in such shape that we must begin with the reports of each individual bank. Because of the great amount of work required to cover all states, we have confined attention chiefly to two, New York and Pennsylvania, constituting roughly one-third to two-fifths of the American banking universe in this period. For these two states we have nearly completed the compilation and aggregation of quarterly figures for the period, for all important balance-sheet items and on a reasonably comparable basis. These are data not previously collected, and should make it possible to open a new chapter in the history of both banking and business cycles in this country.

To get an over-all picture of the main dimensions, the geographical and structural shifts, and the broad asset characteristics of the different parts of the national banking system, we began in the winter of 1940-41 to compile and study certain important items (number, total assets, loans and discounts, individual deposits) for national banks after 1863, on a detailed regional basis (New York City, central reserve, reserve city, and country banks by states).

Intensive study of the gross and net reserve positions of national banks, by classes (all, New York City, central reserve, reserve city, and country) for the sample period, 1903-10, has entailed copying or compiling data for each class of bank on lawful money held, other currency held, balances due to and

from national and other banks, and on the 'net liquidity position' (currency held plus net balances due from other banks). The preliminary results from a study of the *corresponding* charts of these items seem to cast a great deal of new light on the cyclical pattern of the movements of funds among different classes of banks and different parts of the country, and between the banks and their depositors; and seem likely to give the key to the often crucial role played by the monetary and banking mechanism in pre-1914 business cycles in this country. Their apparent cyclical patterns and general implications seem to be considerably at variance with those that can be derived from the study of any one reserve item taken alone (such as lawful money); and hence seem likely to be at variance in certain important respects with the conclusions reached by earlier students in this field, who usually considered only one or two reserve items. At least for the pre-1914 period, this will probably prove to be our most significant line of study in the whole money and banking area.

JAMES W. ANGELL

#### FOREIGN TRADE

We have surveyed the theoretical and statistical problems of analyzing the 'importance' of foreign trade in the four national economies, and have studied certain relationships between each nation's income and its international transactions. Series showing the apparent value of total imports and exports of 'outlandia', the region of the world outside our four countries, have been calculated. These, by serving as a rough index of this region's economic activity, aid us in discerning the influence of the latter on the trade of our four countries—an influence we are attempting to treat, so far as possible, as a cyclical rather than random phenomenon. We have collected much of the background information needed to interpret our series on trade in individual commodities, including certain

annual data on the source and destination of imports and exports, tariff information, distribution of consumption by type of use, and descriptions of market organization and controls.

Numerous monthly trade series, not individually important enough to be worth complete analysis, have led us to consider various short-cut methods. Tests have shown that simple moving averages are of some use in comparing related series with respect to the timing of their cyclical turns. A relatively intensive study of the cyclical behavior of trade in iron and steel products has been begun, and most of the laborious and difficult task of obtaining continuous and comparable data completed.

I hope that this section of the business cycles project will contribute something to the understanding of the process by which national business cycles interact or are propagated internationally. A better understanding of the various aspects of international economic interdependence will be urgently needed in the effort to solve postwar problems of economic reconstruction and political reconstitution.

ROLLIN F. BENNETT

#### INTERNATIONAL FINANCIAL TRANSACTIONS

We have tried to establish and to extend such comparable series as are available for the United States, Great Britain, Germany, and France, still concentrating primarily on the financial: long and short term interest rates, exchange rates, monetary circulation, clearings, security market activity, savings, capital flotations, capital movements, etc. A special effort has been made also to collect 'international' series, reflecting more directly world economic conditions. Series on ocean shipping rates were found to be an interesting and sensitive barometer of international cyclical fluctuations. Several international freight rate series for important commodities have been collected, partly for about 50 years, and are ready for analysis.

Careful study of the institutional background of every series

used for international comparison is a prerequisite of our work. Attention has been focused on the pre-1914 period. It was felt that at the present stage of the study it was preferable to dig deeper in a more homogeneous period than to face the additional and often quite different problems of the years between the two world wars.

We have started to supplement our four country set by data from other countries relevant for international financial transactions or commodity movements. A manuscript for an *Occasional Paper* will be completed as soon as some further series are collected and added to our numerous charts. During the writing of the preliminary manuscript new wants cropped up which it seemed advisable to fill since the additional material would have to be assembled in any event. We shall show in detail the very great differences produced by the first World War in the relationships among cycles in the four countries. Everything points to much greater incoherence than existed before 1914.

It is hoped that the study will be useful for the postwar period and for the planning of a future world economic organization, especially if control of cycles should be one of the guiding aims.

OSKAR MORGENSTERN

#### TESTING BUSINESS-CYCLE THEORIES

The collection of problems for statistical research continues to grow with such reading of business cycle literature as I am able to do currently. For the immediate future I am less interested in enlarging the scope than in showing the relation between the detailed problems on my list and the chief types of analysis found in the literature. This task involves primarily the construction of a set of bibliographical references the purpose of which is not simply to document these problems, which have been lifted substantially unchanged from the literature, but

rather to indicate the sections of the literature in which the various classes of problems play their most important role.

The problem of 'testing' various cycle theories as such is one that probably offers insurmountable difficulties in most cases. There is some value, however, in pointing out the exact empirical issues raised by each leading type of analysis.

E. E. LEWIS

CARNEGIE ASSOCIATE, 1940-41

## Income and Capital Formation

Experimental calculations on factors that determine changes over time in the distribution of aggregate payments among various types (wages and salaries, entrepreneurial withdrawals, dividends, interest, etc.) seem to justify continuing the analysis. It will be based largely upon the estimates in *National Income and Its Composition, 1919-1938*.

The manuscript of *Income from Independent Professional Practice* was sent to the Directors late in 1941. Milton Friedman's revision has been retarded by pressure of obligations at the Treasury Department.

After attempting to push further the analysis of the statistical results in Volume One of *Commodity Flow and Capital Formation, Bulletin 74*, and Solomon Fabricant's *Capital Consumption and Adjustment*, we concluded that Volume Two could make a significant contribution only by extension of coverage and refinement of the estimates. We must utilize estimates of finished commodities since 1929, now being prepared in the Department of Commerce under the direction of William H. Shaw; effect a better reconciliation of capital consumption estimates with those of gross capital formation, and of commodity flow and capital formation estimates with those of national income by industrial source and type of income; make a finer industrial distribution of both capital formation and capital

consumption, i.e., a distribution by industrial destination of both gross and net capital formation; and examine wealth and assets data in order to obtain an estimate of wealth to which gross and net capital formation can properly be related.

In view of the possible value of further work in these directions and the scarcity of skilled personnel, we have decided to postpone the work planned on national income by industrial source and type of payment for years preceding 1919, and to concentrate on commodity flow and capital formation since 1919.

SIMON KUZNETS

#### COMMODITY FLOW AND CAPITAL FORMATION

Estimates of the output of finished commodities at producers' prices were described and analyzed in *Occasional Paper 3, Finished Commodities since 1879* (Aug. 1941). By the middle of 1942 I hope to submit a comprehensive report on the output of finished commodities and construction materials since 1869. This volume will contain the detailed evidence in support of the estimates.

While on loan half-time during the first six months of 1941 to the Department of Commerce I was able to continue work on other aspects of the commodity flow study. On July 1 I began to work full-time at the Department. Consequently collection of basic materials on inventories, corporate fixed assets, the volume of construction, etc., prerequisite to the preparation of a final report, proceeded at a slower pace than originally anticipated.

WILLIAM H. SHAW

### Production and Productivity

#### *Productivity in Manufacturing*

A preview of some findings in the study of factory productivity appeared in *Occasional Paper 4* (Dec. 1941). I am now revis-

ing and polishing the larger manuscript, extending the detailed measures of employment, output, and productivity through the Census year 1939 (thereby supplementing also the indexes of production published in *The Output of Manufacturing Industries, 1899-1937*), and amplifying the textual discussion accordingly.

The final manuscript, to be submitted to the staff committee and the Director of Research this spring, will present, for the period since 1899, indices of workers, output, and productivity as well as changes in hours of labor per week and in the relation of manhours to product. It will spell out the story they tell for major groups of industries and those individual industries, numbering over 100, for which data are available, and for the aggregate of all manufacturing industries combined. One section will trace the course of employment during the various stages of development of individual industries, so far as revealed by data for the last four decades, and concomitant changes in output and productivity. There will be a statement, finally, of what can be learned from our survey of the period since 1899 about the position of manufacturing during and following the present war.

SOLOMON FABRICANT

### *Productivity in Extractive Industries and Public Utilities*

The study of productivity in nonmanufacturing industries falls into three parts: agriculture, mining and quarrying, and transportation and other public utilities. It is planned to issue a volume dealing with output and employment since 1899 in each of these three broad fields. The first, dealing with agriculture, is in manuscript and contains new indices of output, employment, and output per worker for forty years. Besides discussing the data and the changes they reveal, it considers factors influencing agricultural output, the nation's food, and agricultural technology.

The study on mining and quarrying will be complementary to the National Bureau studies of manufacturing output and productivity, and similar in scope. That on transportation and other public utilities will provide indices of output and productivity in the construction of which particular attention will be paid to the problems of measuring physical output under monopoly pricing. In the transportation section the relations between carriage by road, rail, and water, and in the public utilities section, the impact of water power, will be specially considered. Each volume will conclude with a survey of the prospects of the industries in the postwar world.

HAROLD BARGER

### Conference on Research in Income and Wealth

At the annual meeting of the Conference, May 23-24, 1941, reports were presented on uses of income estimates by business and by various arms of the federal government, and on relationships between war preparedness and national income.

Arrangements have been made with A. G. Hart to prepare a guide to the literature and a summary (1) of the present state of thought on income and wealth concepts, recognizing but not stressing disagreements, (2) of results of statistical analysis, of the major problems of income and wealth, including distributions and cross-distributions by final product, economic factors, industries, and size of income and wealth, (3) of 'uses' of such measures. The Conference has provided Professor Hart with a research assistant.

Harold Barger's *Income and Outlay, 1921-1938*, constituting Volume Four of *Studies in Income and Wealth*, is in press. The survey of data on distributions of income by size in this country, prepared under the editorship of C. Lowell Harriss, will be submitted to the National Bureau Directors

with the request that it be published as Volume Five in this series. A major part of Paul Studenski's National Income in Various Countries is in the hands of a review committee. Horst Mendershausen, a 1940-41 Carnegie Associate attached to the Income Conference and now teaching at Bennington College, is completing his analysis of changes in the distribution of family income by size from a year of prosperity (1929) to a year of depression (1933).

A small volume incorporating selected tabulations of the 1936, 1937, and 1938 Delaware income tax returns is in press. Identical returns from 1925 through 1936 are now being analyzed.

The studies of the Wisconsin Income Project dealing with Income Received in Wisconsin in 1936, Relation between Distribution by Size and by Type of Income Payment (pattern of income), Geographic Distribution of Income, and Relation of the Accounting Period to the Distribution of Income by Size (income histories) should be completed by April 1.

Data derived from a field study, income tax returns, and unemployment compensation records have been tabulated by the Minnesota Project and progress has been made on analysis. Funds for two years have been granted by the Rockefeller Foundation.

Results of the Treasury Income Tax Study, which the Conference assisted by lending the services of a full-time adviser and the occasional counsel of some of its members, have been published in four volumes.

The Income Conference has been keeping in touch with the Bureau of the Census, where tabulation of income data from the population schedule is, unfortunately, likely to be greatly impeded by shortage of funds.

Several members of the Conference attended the annual Southern Social Science Research Conference (Chattanooga,

March 6-8, 1941) and led discussions on national income studies.

Plans for the next annual meeting of the Conference include a critique of the Wisconsin Project and reports on forecasting national income, measurement of the net value of product of government, measurement of parity income, war effort and national income, depreciation and depletion in national income.

The Conference has been limited to forty-five members, the selection following a procedure determined by the Executive Committee.

M. A. COPELAND

CHAIRMAN

### Conference on Price Research

The five papers discussed at the annual meeting in April 1941 were joined with eight other papers, prepared for the meeting but not discussed, to form a mimeographed volume entitled *Price Problems in a Defense Economy*. It was circulated rather widely in Washington and placed in several university libraries.

The report on cost behavior and price policy in individual firms, made by the Committee on Price Determination, has been approved by the Executive Committee of the Conference and is now undergoing editorial revision. The Committee, reconstituted under the chairmanship of T. O. Yntema and Joel Dean of the University of Chicago, is making case studies of small and medium-size firms in the Chicago area by intensive questioning of the executives concerning the considerations that determine price and related policies. Material on some 80 firms has been assembled and analyzed.

The Committee on Government Price Regulation, under the chairmanship of Waldo Fisher of the University of Pennsylvania, is preparing a report on price control in the bituminous coal industry, including an analysis of the impact of the prices

of other sources of energy upon coal, as well as of the current experiment to establish minimum prices of bituminous coal.

The committee formed a year ago to study the consequences of private business price policies on the functioning of the economy, has postponed work until its chairmen, D. H. Wallace of Williams College and M. G. de Chazeau of the University of Virginia, return from government service.

Three years of experience with the standing committee procedure puts the Conference in a position to evaluate the strength and weakness of this method of research. The bringing together of people of diverse experience and viewpoints from business, government, and the universities assures wider consideration of a problem than is ordinarily possible by a lone student. On the other hand, the actual work can only be done by one or two people who make themselves responsible for the completion of the job. The more active the Committee the broader—and more eclectic—is the product likely to be. It is probably too much to expect strikingly original or profound reports, which come ordinarily from a man with an idea who takes full responsibility—and deserves sole credit—for his work. What a committee can do is to conduct a broad survey of a field, evaluate what has been accomplished, point out fruitful methods of research, and suggest tasks still to be done. Perhaps this is, in itself, sufficient justification of the committee procedure.

Victor Heller has conducted several studies, financed by a special grant from the Rockefeller Foundation, under the auspices of the Conference on Price Research. Two, of particular interest to the Office of Price Administration, have been mimeographed and circulated among officials in Washington and elsewhere: Government Price Fixing and Rationing in Austria during the 1914-18 War and Government Protection of the Consumer in Austria, 1914-18. Mr. Heller is now en-

gaged on a third study having to do with the influence of Government Price Fixing on the Distribution of National Income.

EDWARD S. MASON

CHAIRMAN

## Financial Research Program

The Committee on Research in Finance has decided that activities under the Financial Research Program during the war should be largely confined to the intensive study of those areas of finance in which war and postwar strains are likely to be most acute and to those aspects of financial activity most likely to play a strategic part in meeting war and postwar demands for capital and credit. Of the six approved by the Committee, two have been chosen for immediate study: the impact of the war on bank lending activities and on the financial structure of business enterprise.

### *Business-Financing Project*

#### Part I: Changes in the Financing of American Business Enterprise, 1900-1940

Our first task was to build up a group of basic tabulations of corporate financial data covering a long period and to test the accounting and statistical consistency of existing compilations. With the cooperation of several public and private agencies, samples of business financial data were developed from state tax report files, federal corporate income tax returns, industrial loan files of the Federal Reserve Banks of New York and Philadelphia, the investment manuals, Dun and Bradstreet reports, bank credit files, and other sources.

On the basis of these data two general studies are in preparation: Changes in the Financial Structure of Corporate Enterprise, 1900-40, by Sidney S. Alexander; Corporate Financial Behavior, 1900-40, by Albert R. Koch.

In addition, six technical studies are being built around bodies of financial data that have been analyzed. The Capital and Credit Structure of American Corporations, 1937, by Walter A. Chudnowsky; The Financial Requirements of Large Corporations, 1920-39, by Albert R. Koch; The Financing of Small Manufacturing Corporations in Five Industries, 1926-36, by C. L. Merwin, Jr.; and The Financial Characteristics of Federal Reserve Industrial Loan Applicants, 1926-36, by C. L. Merwin, Jr. and C. H. Schmidt, are in manuscript. Sidney S. Alexander is working on The Financial Behavior of Small and Medium-Size Wisconsin Corporations, 1916-40, and C. H. Schmidt on The Financial Behavior of Small and Medium-Size Printing Concerns, 1920-40.

## Part II: Contemporary Relations between Business Enterprise and Financial Institutions

Neil H. Jacoby and Raymond J. Saulnier, who are collaborating in the conduct of this part of the project, decided that since so much specialized information of a basic character was required, the most productive procedure would be to separate it into five segments. The first is a cross-section analysis of the structure of demand for short- and medium-term credit by incorporated and unincorporated business in about 60 industries, including manufacturing, trade, and service. Tabulation and analysis have been supervised by Carl Kaysen, who is collaborating with Messrs. Jacoby and Saulnier in preparing a manuscript.

The other segments deal with contemporary adaptations in business financing methods and institutional arrangements: Term Lending to Business, Accounts Receivable Financing, Field Warehousing and Its Relation to Business Financing, Instalment Financing of Commercial and Industrial Equipment.

Each has a common pattern of treatment: (a) development of the financing technique; (b) size and organization of the

market; (c) characteristics of the credit services; (d) methods of credit extension; (e) income, costs, and profitability. Their preparation has required extensive use of questionnaires to assemble materials, and a great deal of field work.

These studies are indicating important and far-reaching changes in the methods that banks and other financial institutions have adopted to meet changed demands for business credit. The collaborators are therefore planning to prepare a summary that will integrate findings and relate them to changes in the short-term financing of business enterprise as a whole for a long period, as indicated by the findings of the studies under Part I.

### *Corporate Bond Project*

The Corporate Bond Project ended on November 30, 1941 and all records and files have been transferred to our 'Hillside' office. A minimum staff has been retained to complete certain tabulations, put the files in order for future use, and assist research workers who are currently using the data. The supervisory staff have prepared memoranda describing the methods used in the project.

The records fall into two major groups each with three subdivisions:

	<i>Approximate Number of Bonds Covered</i>
1) Records by functional dates in the life of each bond	
a) Record of Offerings	26,000
b) Record of Issue and Extinction Characteristics	4,500
c) Default Record	1,000
2) Records by calendar dates (the 'time series' records)	
d) Periodic Record (quadrennial)	4,500
e) Annual Record	2,500
f) Monthly Record	300

The demand of many interested persons and agencies for a more complete description of the character of the data has prompted us to prepare a mimeographed booklet, *The Cor-*

porate Bond Project—A History and Description, which describes the project in detail and presents photo-offset copies of original transcription forms and computation sheets for one sample bond, as well as samples of the punch cards to which the data on the transcription schedules have been transferred.

For the Record of Offerings, the Record of Issue and Extinguishment Characteristics, and the Default Record, three loose-leaf volumes of primary and summary tabulations have been prepared by the National Bureau and the WPA under the general title, Corporate Bond Statistics, 1900-1938.

In cooperation with the agencies that participated in the project, several steps have been taken toward developing analytical studies from these materials. The Central Research Staff plans a new series, Studies in Investment Credit. David Durand and W. Braddock Hickman, former staff members, are working at the Institute for Advanced Study. A manuscript summarizing Mr. Durand's findings on the measurement of basic yields on highest grade corporate bonds by maturities, 1900-42, is in circulation for criticism. Mr. Hickman is studying the problems of investment policies during periods of changing interest levels and exploring possibilities of other investigations. The Research Division of the Federal Deposit Insurance Corporation is planning an analysis of the corporate bond data with reference to specific problems of bank supervision, such as portfolio risk and valuation policy with respect to bank investments.

#### *Consumer Instalment Financing Project*

Nathan Isaacs' work on *The Legal Framework of Consumer Instalment Financing* was interrupted by illness and his untimely death in December made it necessary to suspend the completion of this study.

Ernst A. Dauer of the research staff of the Federal Deposit Insurance Corporation has made considerable progress during

the year on his study: Comparative Operating Experience of Consumer Instalment Financing Agencies and of Commercial Banks, 1929-40. His original plans called for an analysis of a sample of the major types of instalment financing companies (sales finance, personal finance, and industrial banking) for 1929, 1933, and 1936. Various questions unanswered by the data with which he was then working led him to develop supplementary tabulations on credit unions and to cover the complete decade of the 1930's rather than three single years.

My summary, *The Business of Consumer Instalment Financing*, is being revised for submission to the Directors.

RALPH A. YOUNG

### Conference on Research in Fiscal Policy

The project comparing definitions of business income for tax and for other business purposes has been impeded by withdrawals, temporary or otherwise, of personnel, mainly in response to calls for public service. The most recent withdrawal was that of Randolph Paul, a member of the Directing Committee, to join the Treasury Department. The manuscript reporting the findings is well along, and completion this spring, through the efforts of the other members, Bishop Hunt and Dan T. Smith, of the Directing Committee, and of Keith Butters, their principal staff assistant, is expected. Draft reports of certain portions of the investigation have been supplied to the Treasury and the Securities and Exchange Commission, because of their active interest and helpful cooperation.

In connection with its continuing interest in the relation of federal financial transactions to the flow of incomes in the private sector of the economy, the Conference held a meeting on May 30-31. Specialists read papers dealing with several aspects of the subject and those present examined the pro-

cedures for further research in this area. Publication of the proceedings is postponed because one of the principal participants has not been able to revise his paper. The sense of the meeting was that any further significant research in this field would need be very detailed and time-consuming, and probably could not be given attention while matters of fiscal policy more closely related to war are pressing.

All the Conference work now in progress bears upon the war effort and upon post-war economic problems. The study of the Definition of Income looks more to the future than to the present and the days immediately ahead; nevertheless, especially as wartime financial needs for revenue become more insistent, greater understanding of taxable business income will be an important guide to fiscal planning in the war effort. The study of Defense and War Financing looks more to the immediate future than to the period after the war; yet here also, for any adequate analysis of wartime financial needs and methods, the Conference realizes that careful attention must be given to remote effects of the policies currently adopted and considered. Both these large scale investigations impress those in contact with the work being done upon them with the basic fact that fiscal policy is not only a subject of very wide reach at any one time but also one that stretches across long—in some aspects, very long—intervals.

W. L. CRUM

CHAIRMAN

### Carnegie Associates

The Carnegie Corporation granted us stipends for three Research Associates. One, Walt W. Rostow, left after a few months to enter government service, as noted in Part One. The reports of the other two, Isaiah Frank and Albert Wohlstetter, appear in the Business Cycles section of Part Two.

## Publications

The National Bureau is happy that one of its books, Volume Three of *Studies in Income and Wealth*, was chosen for 'Las artes del libro en los Estados Unidos: 1931-1941', an exhibition prepared by the American Institute of Graphic Arts with the approval of the Coordinator of Inter-American affairs, and circulated by the Division of Intellectual Cooperation of the Pan American Union. The two hundred books were selected by Henry Watson Kent, Secretary Emeritus of the Metropolitan Museum of Art; Bruce Rogers, designer and typographer; and Monroe Wheeler, Director of Exhibitions and Publications of the Museum of Modern Art and Chairman of the Publications Program of the Coordinator of Inter-American Affairs.

After a showing at the Pan American Union in Washington, D. C., in February, the exhibit will tour Latin American countries for two years and be permanently housed in one of the Pan American capitals.

This National Bureau volume was also among the Sixty Textbooks of 1940, an annual exhibition by the Textbook Clinic of the American Institute of Graphic Arts.

### *Occasional and Technical Papers*

Since the annual report for 1940 was issued, four *Occasional Papers* have been published: *Number 3*, Finished Commodities since 1879, by W. H. Shaw; *Number 4*, The Relation between Factory Employment and Output since 1899, by Solomon Fabricant; *Number 5*, Railway Freight Traffic in Prosperity and Depression, by Thor Hultgren; *Number 6*, Uses of National Income in Peace and War, by Simon Kuznets. Tentative titles for the next issues are: A Typical Business Cycle; Cyclical Fluctuations in Manufacturers' Inventories; Basic Factors in the International Comparison of Business

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