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Part Two

Reports by Research Staff

I National Income and the Flow of Money

During the past year two volumes by Simon Kuznets were published: *National Product since 1869* and *National Income: A Summary of Findings*. Other publications in the income program include Mendershausen's *Changes in Income Distribution during the Great Depression* and *Studies in Income and Wealth, Vol. Eight*, both of which were sponsored by the Conference on Research in Income and Wealth. Shaw's monograph on *Value of Commodity Output since 1869* is in press. Besides the studies reported in this section, the reader is referred to the income studies listed in Sections III and VI.

INCOME DISTRIBUTION

The only study now in process—Some Aspects of the Distribution of Income by Size—has made slow progress. The delay has been due largely to further attempts to adjust the federal income tax returns data for the effect of the inclusion of items that do not belong in economic income and of the exclusion of items that do. We hope that the basic estimates, showing the income shares of the top income groups, together with a detailed explanation of their derivation, will be ready for circulation among the staff and Directors by late summer. The estimates will constitute annual series for 1919-43, and might form the main contents of a short monograph. Whether the quality of the series will warrant further analysis, and whether such analysis will represent better use of our resources than alternative programs of study in the field now under discussion, will have to be decided later.

Simon Kuznets

THE INCOME CONFERENCE

The papers presented at the November 1945 meeting of the

Conference on Research in Income and Wealth are being circulated among the Directors with a view to publication as a volume in *Studies in Income and Wealth.* Analytical papers, based upon Wisconsin income data, and prepared by F. A. Hanna, J. A. Pechman, and S. M. Lerner, constitute another volume in preparation for review by the Directors.

The Conference met in November 1946 to discuss the magnitude of the labor force as determined by economic factors, cost of living comparisons between rural and urban areas in the United States, and among consuming bodies in different countries; reasons for the success or failure of short-term projections of gross national product and its components for the reconversion period; needs for and prospects of a comprehensive estimate of wealth. No decision has as yet been reached concerning these papers, but they will probably be edited and submitted for publication as one or two volumes in *Studies in Income and Wealth.*

The Compendium of National Income in Various Countries, by Paul Studenski and Julius Wyler, should be ready for circulation among the Conference members and the staff and Directors of the National Bureau by summer.

Some attention has been given in 1946 to the possible usefulness of an International Income Conference. This project is still being explored, and there is a definite prospect of action in 1947, possibly following discussion planned to take place concurrently with the meetings of the International Statistical Institute in Washington in September.

JACOB MARSCHAK, *Chairman*
Conference on Research in Income and Wealth

FLOW OF MONEY PAYMENTS

It is expected that the exploratory study of the Flow of Money Payments will be completed during 1947. The plan calls for the development of approximate annual measurements of money flows for 1936-42. The project has been confined to these seven years because of the greater difficulty in handling data for earlier years and because important data for 1943 are not yet available.

The basic underlying idea is that money flows register themselves in the accounts of business enterprises, governments, and various other transactors in the economy, and that consequently we should be able to construct a picture of money flows from accounting reports.

Accordingly, the economy has been divided into several sectors, and approximate financial statements developed, one statement for each sector for each year 1936 through 1942. The form of financial statement is specially designed to reveal money flows; it is called a statement of payments and balances.

The ten sectors into which the economy has been divided represent groupings of transactors, as follows:

1 Households
2 Non-financial Corporations
3 Farms
4 Other Non-financial Private Enterprises
5 The Federal Government
6 State and Local Governments
7 The Banking System
8 Stock and Mutual Life Insurance Companies
9 Other Private Insurance Carriers
10 Miscellaneous Financial Enterprises

In addition to the financial statements for these ten sectors there is one for the Rest of the World; it is a modification of the balance of international payments statement.

Broadly it may be said that these eleven statements of payments and balances tell who has paid and who has received how much on account of various types of transaction or objects of payment. Eleven objects of payment are distinguished, as follows:

1 Payrolls
2 Interest
3 Cash Dividends
4 Rents
5 Entrepreneurial Withdrawals
6 Taxes
7 Contract Construction

8 Sales of Commodities and Business Services
9 Insurance Benefits
10 Insurance Premiums
11 Grants, Subsidies, and Contributions

Receipts and expenditures on account of these eleven objects are referred to as *general receipts* and *general expenditures.*

The statements of payments and balances also present a partial balance sheet, covering items that represent claims by one transactor on another. For example, they show who owned and who owed how much on account of (a) currency and deposits, (b) book-credit, and (c) bonds, notes, and debentures. Corporate stock is treated as an asset of stockholders; corporate paid-in capital as a form of corporate debt. The monetary gold stock appears as an asset of the Banking System; cumulated gold imports as a liability of the Rest of the World.

Taken together the statements for the various transactor groups constitute a set of approximate measurements that enable us to trace money flows through the economy.

In designing the scheme of money flow measurements an important purpose has been to tie together what we know on the one hand about gross national product and on the other about cash balances, government debt, consumer and farm credit, bank and insurance company portfolios, and the financial sources and uses of funds of industrial corporations. In other words, the aim has been to develop a set of measurements that will be sufficiently comprehensive to include all the statistical series necessary to supply an empirical basis for an aggregative approach to general equilibrium theory.

An important by-product has been the development of a comprehensive federal financial statement pertinent to fiscal policy. It covers the operations of government public service enterprises, credit agencies, and insurance funds as well as general governmental functions. Revealing dealings with the public, not inter-agency transactions, it highlights the impact of fiscal policy on business conditions. It shows the amount of cash on hand and in banks, the amount of credit extended to the public, and the amount of direct and agency debt held by the public, as well as all general transactions with the public, i.e., all *general receipts* and all *general expenditures*. Inclusive totals for cash, for credit, and for *general receipts* and *expenditures* have not hitherto been available. Although this statement treats the federal government as a single transactor in that transactions between governmental funds are excluded, it is supported by five subsidiary statements that reveal such inter-fund transactions. A paper describing this federal financial statement is now being circulated for criticism.

MORRIS A. COPELAND

II EMPLOYMENT AND PRODUCTIVITY

During 1946 the National Bureau published *Output and Productivity in the Electric and Gas Utilities, 1899-1942*, by J. M. Gould; and Domestic Servants in the United States, 1900-1940, *Occasional Paper 24*, by George J. Stigler. Mr. Stigler's anniversary essay summarizing and appraising the National Bureau's studies of output, employment, and productivity has been read by the Directors and is now undergoing its final revision.

Current work on the service and transportation industries is described in the following staff reports. The reader may also wish to consult the report on employment studies in Section V.

SURVEY OF SERVICE INDUSTRIES

The decline in farm employment during the 1920's and 1930's together with the failure of factory employment to rise drew attention to the growing importance of other sectors of our economy, especially service, as sources of employment. During the twenty years after 1920 the service industries—broadly defined to include trade, finance and real estate, professional and personal service, and public service—pushed up their employment substantially. While especially pronounced during recent decades, this trend is not entirely new. In a technical report prepared in the course of this study (The Changing Industrial Distribution of Gainful Workers, submitted to the Conference on Research in Income and Wealth in November 1946), the trend is traced back as far as the records go. In 1860, for example, the service industries accounted for less than 15 per cent of all workers; in 1880, for 20 per cent; in 1900, for 25 per cent; in 1920, for 28 per cent; and in 1940, for 40 per cent. (These percentages were computed after dividing proportionately between service and other industries workers who failed to specify their industrial attachment.)

The past year has been devoted to a critical review of the statistical data (reported, in part, in the Income Conference paper mentioned) and to a preliminary examination of the general factors related to the trends revealed by these data.

Because of the heterogeneity and broad scope of the group of industries of which an over-all view is being taken, the over-all view is supplemented by more detailed investigations of certain important, more homogeneous, branches: domestic service (on which, as indicated, work has been completed), education, trade, and government employment.

GOVERNMENT EMPLOYMENT

Our work with the statistics on government employment has progressed sufficiently to enable us to sketch in broad outline some of the developments in this important area of employment since 1900: (1) The number of public servants—not including men in military service or persons employed on WPA and other public emergency work—rose from a little over one million in 1900 to just over four million in 1940, with a further rise to almost six million in July 1946. Inclusion of the armed forces would raise the 1900 figure 100 thousand and the 1940 some 500 thousand; in 1946 the corresponding figure was of course far greater, over 2.5 million in July. In 1940 there were, in addition, some 3 million persons on public emergency payrolls; no such class of employees existed in the other two years. (2) Even exclusive of military and emergency personnel, public employment mounted about twice as rapidly, 1900-40, as total civilian employment in the United States. Public employees constituted 4.5 per cent of all workers in 1900 and 9 per cent in 1940. By July of 1946 one out of every ten employed civilians was on a government payroll. (3) When we distinguish among the broader functional groups of government employees, we find considerably less rapid increases than the total in the postal service, education, and 'general' government functions, and more rapid increases in groups performing other functions, such as those related to health and public welfare. For example, early in the century the post office absorbed something like two-thirds of all federal civilian employees, but less than a third by the opening of World War II; and educational personnel constituted over one-half of all state and local government employees in 1900 and less than two-fifths in 1940.

Our further work in the study of governmental employment will consist of the necessary refinement of these rough estimates, the pursuit of important details not noted above, and a continuation of our examination of the factors underlying changes in the number and functions of public servants.

The period since 1900 has been marked by a considerable rise in per capita national income, a continued shift of people from rural to urban areas, the appearance of the motor car and with it a great road building and maintenance program, the beginning of real and effective interest in the conservation of our natural and human resources, and such striking episodes as the two great wars and a very serious depression. These have influenced demand for and ability to support governmental services to consumers and industry. Directly affecting the number of persons required to man the governmental agencies providing these services have been intensified efforts at improved efficiency in government operations. Especially noteworthy is the widespread introduction of the merit system. Also relevant, of course, is the reduction in the working hours of government employees, a trend paralleling changes elsewhere. Attention is being paid to these as well as other factors bearing on changes in government employment. A detailed analysis of employment in education, covering private as well as public schools, is being conducted by George Stigler, who describes it below.

SOLOMON FABRICANT

EDUCATION

During the past year I continued work on the study of employment in education. A draft of the section on elementary and secondary education will soon be completed.

The number of public school teachers (and principals and supervisors) increased from 443 thousand in 1900 to 896 thousand in 1930, then to 917 thousand in 1940. The causes of this doubling are infinitely diverse, but we may say proximately that 40 per cent can be attributed to the growth of population, perhaps 30 per cent to smaller classes (due chiefly to the relative growth of high school enrollments), and 30 per cent to higher rates of school attendance of children over 12 years of age. Each of these sources of growth has diminished in importance or actually disappeared in recent decades: there were 1.8 million fewer children of school age in 1940 than in 1930; by 1940, 86 per cent of children 14-17 inclusive were attending school—a percentage that cannot rise much in the future; and the size of the average class has been stable for twenty years.

The average salary of these teachers, principals, and supervisors rose from \$310 in 1900 to \$1,440 in 1940; the corresponding figures were \$210 and \$960 for rural teachers and \$640 and \$1,960 for urban teachers. By omitting widespread employer contributions to pensions in the later period these figures understate the increase; they overstate it because the school year lengthened by a fifth. In the light of the great current interest in teachers' salaries it is worth noticing that two-thirds of the increase in urban teachers' salaries came between 1918 and 1924, when their average salaries were \$910 and \$1,710 respectively.

GEORGE STIGLER

TRANSPORTATION

Since my release from wartime service I have resumed work upon the manuscript dealing with output and employment in the transportation industries. Its main theme is the growth within recent decades of the newer forms of transportation, especially pipelines, highway motor trucking, and commercial airlines. My intention is to incorporate the results of wartime and other recent surveys in order to offer as comprehensive a view as possible of present day transportation by land, water, and air. It is hoped the manuscript will be ready for submission to the Directors before the end of 1947.

HAROLD BARGER

III BUSINESS CYCLES

THE GENERAL PROGRAM

The program of business-cycle research represents the gradual development of an investigation that had its inception in the first years of the National Bureau's life. Two early publications laid the basis for much future work. Wesley C. Mitchell surveyed the literature of business cycles, the leading statistical indicators, and the technical problems of time-series analysis, and concluded this first investigation with a working definition of a business cycle. His results were published in *Business Cycles: The Problem and Its Setting* (1927). A little earlier, W. L. Thorp had compiled the material for *Business Annals* (1926), which furnished a systematic record of the state of business in many countries for a long period and laid the basis for the business-cycle chronology that has been the National Bureau's most constant and useful tool.

These studies were preceded and followed by intensive efforts to assemble the many statistical series needed to give our studies an adequate empirical foundation. At the same time the National Bureau's cyclical measures were designed and the arduous task of testing and applying them begun, first under the direction of Simon Kuznets, then of Arthur F. Burns.

These methods of measurement have now been described in detail in *Measuring Business Cycles*, by Arthur F. Burns and Wesley C. Mitchell, published last year. This study is, of course, far more than a description of method. It reports the searching tests that have been made of the reliability of the results the measures yield, and goes on to consider certain fundamental questions, such as whether business cycles have been subject to substantial and persistent secular, structural, or rhythmic changes. This methodological treatise, besides contributing to an understanding of the National Bureau's substantive work, should be of immediate interest to students for the light it throws on the techniques of business-cycle measurement and on the nature of cyclical phenomena.

As the statistical materials began to accumulate, Mr. Mitchell began the systematic description of the cyclical behavior of leading economic processes, which the National Bureau thinks of as the second stage of its work. These studies revealed the need for more specialized work, and in the years immediately preceding the war a series of monographic studies was initiated, which is still the principal part of the National Bureau's business-cycle program. This work was interrupted in some cases and retarded in others by the demands of the war; but one study, Frederick C. Mills' *Price-Quantity Interactions in Business Cycles* (1946), has been published, and several others are nearing completion. Thor Hultgren's comprehensive report on *American Transportation in Prosperity and Depression* has been reviewed by a staff committee and is now being mimeographed for the Directors. G. Heberton Evans is putting the finishing touches on his pioneer work, *Business Incorporations in the United States, 1800-1943*, which will soon be mimeographed for submission to the Directors. Geoffrey Moore's work on cycles in agriculture and mine on manufacturers' inventories were interrupted by other activities during the war, but both are now nearing completion and reports should be ready this year. Ruth P. Mack has been continuing her study of consumers' expenditures and the transmission of consumer demand to wholesale trade and manufacturing. Her report on one segment of the investigation dealing with the production and distribution of shoes, leather, and hides is in an advanced stage. Oskar Morgenstern reports similar progress on his study of international financial transactions. Carel Smit is writing a manuscript intended as an *Occasional Paper* on the international gold standard. Our work in money and banking during 1946 was confined to preparatory operations, but a notable set of estimates of currency in public circulation and in bank vaults was prepared by Anna Jacobson Schwartz and Elma Oliver under the title: "Currency Held by the Public, the Banks and the Treasury: Monthly, December 1917-December 1944", and published as *Technical Paper 4*. Leo Wolman's work on wages is discussed in Section V.

The program for 1947 is concentrated on various aspects of the role of income, investment, and consumption in business cycles. Daniel Creamer recently joined the staff and initiated a general study of cycles in the incomes of individuals. Thor Hultgren has started a companion study of business profits and their relation to business receipts and outlays. The Creamer and Hultgren studies, together with related work by Long on employment and by Wolman and Bry on wage rates, will constitute a general survey of the fluctuations of incomes during business cycles and of their proximate causes. On the side of consumption, Mrs. Mack continues her work on expenditures and their transmission through the channels of trade. Mr. Burns is charged with our work on investment. He plans to complete a brief report on construction and business cycles during 1947, then turn to a general study of the relation between investment and business cycles. Together with Mr. Moore, he is now preparing a report on Statistical Indicators of Cyclical Revivals and Recessions.

While these varied lines of work on the second stage of our program go forward, work on the third stage is starting. Mr. Mitchell is preparing a summary which will bear the title *What*

Happens During Business Cycles: A Progress Report. While he would have preferred to wait until the monographic studies were further advanced, the war-induced delays in our program have persuaded him to undertake this preliminary volume. It will provide the best summary the National Bureau can now prepare of the typical course business cycles take, and furnish a basis and guide for additional statistical and theoretical work.

Reports by the collaborators on the business-cycle program are presented in Sections IV and V, as well as in the pages that immediately follow.

MOSES ABRAMOVITZ
Director of Business-Cycle Studies

ANALYSIS OF TIME SERIES

During the year the list of time series used in the National Bureau's business-cycle studies was completely revised. Among the new series are yields of British Consols, monthly, 1840-1938; and savings of life insurance policy-holders, United States, annual, 1866-1944.

In all, 67 additional series were analyzed by the National Bureau's standard technique. A good part of the time of the computing staff was devoted to the preparation of summary tables for Mr. Mitchell's manuscript, and for the study of Statistical Indicators of Cyclical Revivals and Recessions.

MILLARD HASTAY

AGRICULTURE

A draft of a manuscript on harvest cycles has been written. It presents first a general description of the behavior of crop production data for the United States, Great Britain, France, and Germany in terms of our standard cyclical analyses. The other three sections are concerned with the nature and causes of fluctuations in crop harvests, and examine in turn three questions: Do business cycles influence harvest cycles? Are harvest series periodic? Are harvest series random? While this manuscript is something of a unit and can be put into finished form within the next few months, it does not deal explicitly with the problem of the influence of crops on business cycles, with livestock production cycles, or, except incidentally, with aspects of agriculture other than physical output. I expect to work in these directions during the coming year.

Business cycles have ordinarily not been important relative to other factors causing crop output to change from year to year, and have probably not been important relative even to other *economic* factors. Not only is the average conformity of output to business cycles low in all four countries, but so is the business-cycle conformity of acreage cropped, over which farmers exercise more complete control. This is not surprising when one considers the low average conformity of crop prices to business cycles.

However, all business expansions and contractions are not of the same degree of severity or duration. In vigorous and long expansions and in severe and long contractions in the United States there is a high degree of positive conformity in crop prices, but little or no conformity in production or acreage. In mild and brief business-cycle phases, on the other hand, there is a tendency, of a more dubious sort, toward inverted conformity of prices and production. We take these results to mean that the demand for crops varies with general business conditions, at least in long and severe cycles, but that such variations have little effect on either farmers' intentions or realizations with respect to output. The data are consistent also with the hypothesis that autonomous expansions in the output of or the demand for crops have a tendency to reduce the severity and duration of business contractions and to increase the duration and vigor of business expansions, while autonomous contractions have opposite effects. But this hypothesis must be tested further.

Theories concerning the periodicity of weather and crop cycles have had a long and episodic history, but since typically they have not taken into account the complexity of the relations between weather and crops, they rest on an insecure technical foundation. Also, statistical examination of one of the more famous of these theories, that of Henry L. Moore, indicates serious inadequacies, with respect to both the analyses published in support of the theory and its consistency with the data now available. For example, an extrapolation of the eight-year cycle in Ohio rainfall beyond the period Moore analyzed (1839-1910) leads one to reject not only the possibility of the continued existence of the cycle but also the physical cause adduced for it. Of course, these considerations do not dispose of other periodic theories of crop cycles, especially the more complex, but they suggest requirements that have not ordinarily been assumed by proponents of such theories. Our experiments with the decomposition of crop production series suggest still further requirements.

Like other economic time series, crop production series exhibit elements of trend, cyclical, and random movements. In the yields per acre of the major crops in the United States the random element seems to exercise a dominant influence in the short run. At least, the durations of the short-run movements have been very close to what one would expect in a set of random numbers. The like is true of annual weather data. Acreage series, on the other hand, have been dominated by trend and oscillatory movements of rather long duration. Since the output of a given crop is the product of the yield per acre and the acreage, its behavior is in a sense determined by the relative amplitude and intercorrelation of the diverse movements in yield and acreage. We find that the short-run 'random' movements in yields are positively correlated with those in acreage harvested, probably because bad weather causes acreage to be diverted to other crops or left unharvested and at the same time reduces the yield on the acreage that is harvested. As the short-run fluctuations in yields are typically of wider amplitude, the short-run movements of output are more closely related to yields than to acreage. The long-run oscillations in acreage, on the other hand, have inverse but milder counterparts in yields; hence in production there are long-run oscillations, which A. F. Burns called trend-cycles, correlated with those in acreage. Burns suspected that the inverse correlation and narrower amplitude in yields is probably generated by a tendency for the land that is shifted into or out of a crop to have lower than average yields. Thus the long- and short-run relations of yields and acreage are reversed; in the one case the elimination of poorer land causes opposite but smaller changes in average yields; in the other, it merely reflects a factor producing similar but larger changes in yields.

Further contrasts in behavior are to be seen in the historic growth of acreage in the United States, which, because it was not matched by similar rates of growth in yields, dominated the trend in output. Since the growth in acreage of the major crops was subject to retardation as the country became settled, its dominating influence over output has gradually disappeared. Another contrast lies in the relations among the fluctuations of the different crops. No general tendency toward intercorrelation is evident in the long-run oscillations of acreage or production of different crops. But the short-run fluctuations in yields tend to be positively correlated, because the changes in weather are correlated over fairly wide areas and the effects on many crops are roughly similar. To a lesser extent the same is true of short-run fluctuations in acreage, and therefore in production. However, this intercorrelation is in general far less than that which characterizes the short-run (business-cycle) movements in the production of different industrial commodities.

The results of our decomposition of crop production series are thus consistent with, and perhaps account for, the rather negative conclusions of our analyses of periodicity and of the influence of business cycles. If the short-run fluctuations in yields of major crops are essentially random they cannot contain important periodic elements of any simple sort, nor does it seem unreasonable that they should have escaped the pervasive influence of business cycles. If the systematic elements in acreage are trends and long-run oscillations of variable duration both in time and among crops, these again cannot exhibit to a marked degree the influence either of simple periodic elements or business cycles. And if the long-run trends and oscillations in acreage and the short-run fluctuations in yields account in large part for the movements of similar duration in production, it is a corollary that periodicity and business cycles play a relatively minor role.

GEOFFREY H. MOORE

TRANSPORTATION AND COMMUNICATION

During 1946 the manuscript of *American Transportation in Prosperity and Depression* was completed. Revised in the light of staff criticism, it will soon be submitted to the Directors. The conclusions have been outlined in preceding annual reports.

The first two sections of a contemplated briefer manuscript on British transport were written. They deal with freight and passenger traffic, both of which conformed in their fluctuations to the British business-cycle chronology. The freight section reports, among other matters, the result of a comparison between production and imports on the one hand and rail tonnage on the other, for 13 groups of commodities. The railways lost traffic of this kind to their competitors more rapidly in the contractions of 1929-32 and 1937-38 than in the expansions of 1928-29 and 1932-37. This conclusion, however, does not apply to the highly important traffic composed of coal and its products.

Ton-miles did not, in any expansion after 1920, recover their previous peak level. At their peak in 1937, however, they were only 1.4 per cent below their 1929 peak; for the United States, the corresponding figure is 12.6 per cent.

In Britain as here, durable goods provide a larger percentage of railway tonnage in prosperity than in depression.

The use the British make of their tram lines is only mildly affected by business conditions. This is also true of their railway travel. Sales of railway season tickets are especially stable.

Our collection of data on British railway operating conditions and our computations from them, nearly completed, show that the average railway wagon-load, the number of wagons in a train, and consequently the average train-load, tend to rise when aggregate freight traffic expands and to fall when it contracts. Expansion delays the movement of goods trains, however, while contraction accelerates it. Consumption of coal by freight locomotives does not rise and fall as much as traffic; high volume means lower fuel consumption per ton-mile.

During the year we began to enlarge and scrutinize our material on communications, including the telephone business, an example of a dynamic new industry. Plotting figures for telephone calls with those for national income in constant prices, we find that the number of calls corresponding to any specified income is much higher than it used to be. In 1932 the national income was 2 per cent smaller than in 1921, but people made 74 per cent more Bell calls than in 1921. Our charts suggest that the rise in the propensity to telephone was no longer proceeding very rapidly at the end of the 1930's; with respect to toll calls it may even have halted.

The product of this industry is not a durable commodity but a service, used for a great variety of purposes, business and personal. The combination of these characteristics with relative novelty is likely to cause output to grow even during periods of general economic decline. Calls increased in several business contractions, at least according to annual data for the Bell system, which at times grew more rapidly than the industry at large. Monthly figures for operating revenues of all large telephone companies rise without cyclical interruption from their beginning, in 1915, until 1930. The growth in the number of calls and in revenue was, however, commonly retarded during contractions in general business.

From 1876 to 1930 the number of telephones (Bell and independent) increased without interruption, and indeed without consistent retardation in business contractions (December 31 figures). Apparently there was always a net increase in subscribers. Each new subscriber, of course, increased his calls from zero to some positive figure. We can form some idea of the behavior of established subscribers by dividing the number of instruments into the number of calls. Conversations per instrument (Bell system) diminished in contractions more regularly than aggregate conversations.

Toll calls are apparently more sensitive to general economic conditions than local exchange calls. They declined somewhat more often in business contractions; and the ratio of toll to exchange conversations shows a fairly good positive conformity to the business-cycle chronology.

We endeavored, in a tentative way, to determine how far our conclusions about costs and profits in the railroad industry are applicable to other parts of the economy. Comparisons based on *Statistics of Income* and Fabricant's index of production suggest that, in manufacturing as a whole, profit per unit of output tends to rise in expansions and fall in contractions of aggregate production. Depreciation, taxes (other than income and payroll taxes), and interest paid are less variable than output; on a per unit basis, they tend to become a heavier burden in contractions, a lighter one in expansions. Unit profit after allowance for these overhead items therefore shows an even stronger tendency to rise and fall with cyclical variations in the output of manufactured goods.

In 1947 we plan to complete the study of British and other foreign transport, to advance the work on communications, and to investigate further the cyclical behavior of costs and profits in other sectors of the economy.

THOR HULTGREN

INTERNATIONAL FINANCIAL TRANSACTIONS

Substantial progress was made during 1946 although some difficult problems still remain. The first chapter, dealing with the general aspects of the international spread of business cycles, has been written; it is an enlargement of a paper published in 1943. Our studies of exchange rates, which had led to the consideration of forward rates, of the strange behavior of arbitrage rates, etc., required a complete rewriting of the chapter on exchange rates.

This involved a discussion of such current notions as the equilibrium rate of exchange. We discovered also data giving—at least for a few years—an idea about the relative volumes of financial and commercial international transactions. This information helps greatly in evaluating the role the phenomena dealt with in this study have in the entire cycle.

Much more work than expected went into the study of gold and gold movements, which is just now being concluded. There was a surprising and sad result: the statistics on gold movements were found so unreliable as to be utterly useless for business-cycle purposes. This was established by a detailed test of about 1500 monthly data and detailed comparison of the statistics of the chief countries involved. The consequences are serious for all statistics on capital movements, security movements, and finally for the balance of payments.

Considerable attention was given to the price of gold, the gold-silver ratio, speculation in gold shares, etc. Work was also done on long term interest rates, their mutual, international relations, and on the long term-short term differentials which are considered of such crucial importance by business-cycle theorists. But as very few empirical studies have been made, we had to start from scratch.

The work that remains is essentially in two fields: security markets and balances of payments. Preparatory work on the first has been going on for a long time; work on the second will have to be reduced to a minimum because of the lack of data for years before 1914.

OSKAR MORGENSTERN

CONSUMPTION AND PRODUCTION OF CONSUMER GOODS

Work on *Consumption and Business Cycles, A Case Study: Footwear* has moved in several directions. But rather than attempt to indicate what they are, I shall describe in shorthand one corner of the investigation concerned with discovering the causes of the changing volume of shoe buying by American consumers.

It seemed at the outset, for reasons we cannot stop to examine, that it would be more useful to analyze the dollar than the physical volume of shoe sales; the first step was to study its relation to total income. That consumer income should be an important determinant of shoe sales stands to reason. On the basis of budget studies, expenditure on shoes goes up and down with family income, and with only a slightly smaller income-elasticity than total expenditure. Over the years, shoe purchases consumed a decreasing proportion of total income. When this trend is removed by fitting a straight line to the ratio of shoe sales to income payments, the regression of monthly trend-adjusted shoe sales on income, 1929-41, is expressed in the formula: Shoe Sales ($ mil.) = $10.5 mil. + .0168 × Income Payments ($ mil.). Shoe sales calculated by this formula follow the general drift and cyclical movement in a five-month moving average of actual trend-adjusted sales very closely. On the average, predicted values were $1.65 million more or less than the actual values; this was 12 per cent of the average deviation of actual sales (five-month average) from its average value for the period —exactly $100.0 million. Fifty-six per cent of the predicted values diverged from the actual ones by not more than ±$1.65 million, and 89 per cent by not more than twice that figure. But although the trend-adjusted regression of shoe sales on income allows rather close prediction of the major changes in shoe sales, it does not seem sensitive to minor movements, such as the one that in 1931 interrupted the depression of the 'thirties, and those that in 1933, 1934, and 1939 interrupted periods of rising income.

General experience and examination of budgetary data suggested that two factors other than aggregate consumer income and trend in the sales-income ratio might be influential in determining shoe sales: shoe sales at a given level of income might rise with a shift in the proportion of aggregate income (1) in the hands of low as opposed to high income families or (2) in the hands of families whose income had recently fallen as opposed to those whose income had recently risen. There is a great deal of evidence on the first point in budgetary studies and a little on the second point, notably in an unpublished tabulation of a Bureau of Labor Statistics study of income and expenditures for a sample of families in the first quarter of 1942.

Millard Hastay collaborated in trying to discover whether our time series confirmed or refuted this thesis. Since there is no satisfactory way of measuring income distribution and direction of income change month by month, we were forced to utilize unhappy makeshifts: For income distribution, we used the ratio of monthly industrial payrolls to total income payments, in the form of deviations of the ratio from its centered 18-month moving average. For direction of income change each month, we used the average of month-to-month change in income payments for the past five months. After some unsuccessful experiments with linear multiple correlation, the Ezekiel method of subgroup averages was adopted to study the extent to which 'direction of income change' and 'income distribution' could explain the deviation of the 5-month centered moving average of actual shoe sales (the long-term trend in the sales-income relation having been removed) from sales computed by the regression formula. It is these deviations—in effect shoe sales adjusted for trend and the typical effect of income level—that we shall call 'shoe-sales-for-the-income' in the following paragraphs. The monthly data 1929-40 provided 139 observations in all.

We found that when income change was heavily upward, shoe-sales for-the-income were generally low, but rose as 'income distribution' broadened (i. e., 'trend-corrected' payrolls represented a larger proportion of total income). When income change was upward though less strongly so, shoe-sales-for-the-income were somewhat higher, and again they rose as 'income distribution broadened'. As income change fell moderately, shoe-sales-for-the-income were still higher and increased still more as payrolls became a larger proportion of the income aggregate. But when income was falling very rapidly, though shoe-sales-for-the-income were high when payrolls were low relative to total income, they dropped as the low incomes became a larger proportion of the income aggregate. This interesting twist to the correlation surface may be rationalized as an indication that when a great many people are suffering heavy drops in income they tend to stop buying shoes and buy instead nondurable necessities; and the larger the proportion of income in the hands of small income families the more marked this tendency.

From this correlation surface we may roughly calculate correction factors for shoe-sales-for-the-income that take account of the two additional variables. Thus we combine all four factors —time drift in the sales-income relation (or a different propensity to buy shoes in expansion and contraction, for the data do not tell which), aggregate income, income distribution, and direction and rate of income change—into an explanation of aggregate shoe sales.

These calculated values mirror, though weakly, a number of the minor movements in actual shoe sales. Taking account of the additional two variables reduces the average deviation about 9 per cent. Fifty-nine per cent of the observations fall within the average deviation and 87 per cent within twice the average deviation.

Certainly these are not very reassuring figures. Moreover, the method used is a hodge-podge that lacks mathematical nicety and in which intercorrelation of variables is eliminated only in a rough and ready fashion. Furthermore, our results are not subject to statistical tests of significance. But I think that anyone who had worked with the subgroup averages for this computation and others, and had examined the frailties of our basic data would feel some confidence in the fact that the evidence of the monthly time series on shoe sales supports that from other sources in suggesting that not only aggregate consumer income but also its distribution and direction of change are causal factors in the month-to-month consumption of shoes. If this is true of shoes, the chances are that it is truer still of total consumption.

RUTH P. MACK

MANUFACTURERS' INVENTORIES

I rejoined the Bureau in April 1946 with the assignment to revise my first draft of a study of Manufacturers' Inventories and Business Cycles. As first conceived, this job was to be confined largely to improving the form of the report and was to be completed in short order. As I began work, however, I saw opportunities to include data gathered during my absence, to place the statistical operations on a firmer foundation, to extend their results, to treat certain problems the preliminary report had neglected, and to enhance the significance of the findings by discussing their bearing on commonly held theories about the connection between inventories and business cycles.

This expansion of the plan has retarded the writing of my report, but I hope it may improve it enough to justify the delay. Five of the new chapters are written and I now hope to finish the entire revision by June.

The first chapter is devoted largely to a survey of the literature dealing with the behavior of inventories and with the supposed causes of their movements. Current views about the character of inventory cycles are both surprisingly diverse and uniformly simple. For example, various writers contend that inventories move together with business at large, inversely with business, or move little, if at all, in the aggregate during business cycles. These differences of opinion, however, do not prevent general adoption of the view that the behavior of inventories in the aggregate may be explained in terms of the action of a more or less homogeneous aggregate of stocks or, in a few cases, in terms of the action of two large classes—such as finished goods and goods in process, or liquid and working capital.

These theories contrast rather sharply with the findings of the present inventory study. My preliminary report stressed the conclusion that manufacturers' stocks tend to move together with production and business at large, but that the peaks and troughs in inventory cycles come much later than those in production, perhaps as much as nine months later. This behavior, however, was shown to be a result compounded from the divergent action of many categories of stocks: goods in process, which move together with output; purchased materials, which lag by a short interval if they are procured from nearby and flexible sources, otherwise, by longer intervals; staple finished goods, which behave invertedly if production can easily be varied in response to demand, but which are likely to move irregularly during business cycles in industries where production depends upon a supply of raw materials in itself unresponsive to demand; and several other categories of stocks. An explanation of the behavior of the total holdings of manufacturers is, therefore, complicated. It is believed, however, that the keys needed to unlock the riddle of the divergent behavior of the various classes of stocks are two: first, the degree of control that manufacturers in different circumstances can exercise over the rate at which they receive raw materials and fabricate them; and second, the incentive (or pressure) they feel to alter their rates of purchases and output in response to changes in demand.

In the revised report, these findings have been carried a step further. The cyclical pattern that characterizes manufacturers' stocks holds also for wholesale and retail trade and for transportation and other public utilities. Stocks in all four groups conform positively to business cycles, if allowance is made for a long lag. Together the four groups account for some 80 per cent of all inventories.

The revised report also carries the results of a new study of inventory-sales and inventory-output ratios (the inverse form of inventory turnover rates). The cyclical behavior of these ratios in manufacturing industries is perhaps the most regular of all the observable aspects of inventory behavior. When production or sales rise, the inventory-sales (or inventory-output) ratio declines; when production falls, the ratio rises. This inverted pattern of action is not only a highly regular feature of business cycles, but apparently operates without substantial lead or lag, so far as can be judged from annual data and short monthly series.

While it would take us too far afield to go into the reasons, the significance of the result deserves brief comment. It seems to suggest that expansions of business do not end, as a general rule, because an undue accumulation of stocks causes manufacturers to reduce their orders and output. Nor do business contractions end because manufacturers work themselves out of stock. These supposed causes of business-cycle turns are, at any rate, in conflict with the evidence if they are supposed to operate in some simple manner or in one applicable to aggregate inventory holdings.

The qualification, however, is important. There is still a possibility that 'requirements' for stocks relative to sales may decline when business expands and that the decline in requirements is greater than the actual decline of stocks relative to sales. It is also possible that, when better data are available, it will be established that the decline in the inventory-sales ratio for aggregate stocks and sales during expansions and its rise during contractions are due to the inverted (or positive, but lagging) pattern of certain classes of stocks. Other categories of manufacturers' inventories may, in fact, be over-accumulated during expansions and run short during contractions, thereby helping to bring about the turns of business. The results must also be checked by studies of stocks in wholesale and retail trade.

MOSES ABRAMOVITZ

IV COMMODITY PRICES

CYCLICAL BEHAVIOR OF PRICES

With the publication in 1946 of *Price-Quantity Interactions in Business Cycles*, the Price Unit of the National Bureau completed one phase of its study of revenue and outlay changes and the functioning of the price mechanism in business cycles. Work is now proceeding on a study of the movements of unit prices during specific cycles in physical quantities and of the movements of quantities during specific cycles in unit prices. The results of this investigation, together with additional materials on the problems dealt with in the monograph just published, will appear in a general study on the cyclical behavior of commodity prices.

There is, of course, some variation in the degree to which the various series relating to physical production (or exchange), to unit prices, and to the aggregate value of the goods in question conform to cycles in general business, in prices, and in quantities. In the accompanying tabulation we take account of significant conformity only (i. e., conformity that may be assumed to reflect true relations, not chance correspondences). The record

	Percentage of Commodities Showing Significant Conformity in Framework Provided by		
	Cycles in general business	Specific cycles in quantities	Specific cycles in unit prices
Quantities	69	..	59
Unit prices	61	54	..
Aggregate value of quantities	77	87	86

reveals a fairly high degree of conformity to the three frames of reference. The percentage of physical quantity series conforming significantly to cycles in general business is larger than the percentage conforming significantly to specific cycles in directly corresponding unit prices. Similarly, the conformity of unit prices to general business cycles is greater than to specific cycles in corresponding quantities. Forces associated with the broad swings of expansion and contraction in the economy at large appear to exert greater influence upon the movements of both volume and prices than do immediate market forces flowing from prices to quantities or from quantities to prices. The monetary values of the commodities here included show a higher degree of conformity to business cycles than either the price or the quantity component. The conformity of this flow of payments to specific cycles in quantities and prices is even higher, partly because the reference frame coincides in each case with the cycles in one of the two components of the value series.

In this series of investigations we have sought to define the relative responsiveness of quantities and of prices to forces operating within the three frameworks set forth above. The cyclical elasticity of quantities and the cyclical flexibility of prices have been measured for a number of commodities. The use of different reference frames assists us in tracing relations among the forces that affect quantities and prices in commodity markets, as specific and business cycles run their courses. In general, the responses of quantities (as measured by their cyclical elasticities) to the impact of expansions and contractions in business at large are apparently more direct and more pronounced than the responses of quantities to specific fluctuations in unit prices. Only for a small group of agricultural products (e. g., hogs, sheep, pork, eggs) is there evidence of a greater responsiveness to price changes than to the market forces associated with cyclical fluctuations in general business. Similarly, the market forces playing upon commodity prices are more closely linked to cycles in general business than to specific cycles in quantities. Prices rise or fall, that is, not because commodities are in short or long supply but because business activity is expanding or contracting. Here again there are interesting exceptions. The prices of beef, bread, cottonseed oil, flour, pork, lard, sheep, and sugar move, in general, inversely to changes in the respective quantities. For these commodities variations in immediate conditions of supply seem to outweigh demand shifts, and other changes connected with general business cycles, in shaping price movements.

FREDERICK C. MILLS

At the beginning of the year the Price Conference was engaged upon four projects, two old and two new. The oldest was a comprehensive study of the regulation of bituminous coal prices. The committee doing this work has completed another portion of the manuscript and hopes to finish a report this year. The other project was a continuation of the work of the Committee on War Records for the purpose of preparing a pamphlet indicating the possibilities of economic research in these records. During the first part of the year this committee completed its efforts to assure the preservation of war records and continued its liaison with a research committee of the American Economic Association, establishment of which had been stimulated by the war records work of the Price Conference. Unfortunately, however, Saul Nelson, who was preparing the proposed pamphlet, was transferred to Europe by the government. The committee has not yet succeeded in finding anyone to take over the task.

One of the two new projects was an examination of OPA cost records, possibly supplemented by those of other governmental agencies, to determine the scope and character of cost accounting in the United States. A preliminary survey of OPA records was made, but they varied so widely in character and were so closely adapted to the organization's special administrative needs that it was found they would not serve the broader research purposes of the Price Conference; accordingly, this project was abandoned.

The other new project was a study of the functions that are and can be performed by prices in a partly controlled economy. Efforts to organize this study by the special committee technique were unsuccessful because its scope was so wide as to outrun the time such committees can give to it. As the project took shape, it seemed suitable as a basis for the work of the Price Conference for several years. It was evident, however, that means would have to be found to give the project more time than can be had from members on a voluntary basis and to maintain coordination among the several parts. In view of a reduction in the funds available for the Price Conference in 1947, the question whether such a project can be undertaken, and if not what future activities are appropriate, is now being considered.

The Price Conference did not hold its customary annual meeting in 1946, owing to the chairman's assignment in Japan. Subsequently, it seemed wise to wait until the new program, now under discussion, had matured.

CORWIN D. EDWARDS, *Chairman*
Conference on Price Research

V LABOR MARKET *

WAGES

My work in labor has centered on the history of wage rates and changes in union membership. In both cases the major problems and the major findings have to do with the influences of wars. Within a quarter of a century, two wars in which the United States became a participant profoundly affected the level and structure of wages. Although the wage and price policies pursued by the government during the wars and the post-war booms differed widely, in broad outline the wage movements were much alike.

Between July 1914 and the fall of 1920, when the peak of hourly wages appears to have been reached after World War I, hourly earnings of factory employees increased from 25 to 61 cents, or 144 per cent. Between July 1914 and June 1920, when the peak of weekly earnings appears to have been reached, the weekly earnings of factory employees increased from $11.62 to $27.48, or 137 per cent.

Between August 1939 and the latest date for which the figures are available, October 1946, the average hourly earnings of factory workers increased from 62 cents to $1.13, or 81 per

* See also the studies of employment trends reported on in Section II.

cent, and their average weekly earnings, from $23.79 to $45.68, or 92 per cent.

The increases in the two periods are by no means identical, but when it is recalled that the wage base in 1914 was only 25 cents an hour, the divergencies are not so great as they seem.

According to these figures, during both war periods wages rose more than the cost of living. Thus in World War I, the cost of living rose something more than 100 per cent while wages advanced 140 per cent. In World War II, while wages were rising 80-90 per cent, living costs increased 50 per cent. But the cost of living index was not affected by price control in the first world war as it was in the second.

The record of wages shows that the hourly wages of factory employees reached a peak in September-October 1920. Thereafter they declined for 21 months, falling 21 per cent. After this war no such decline has as yet set in. Preliminary data indicate that hourly wages of factory employees are still rising. In view of the traditional behavior of wages and the role the wage rate plays in economic change, the problem to speculate about is whether we are now, as after World War I, approaching a peak in wages.

As part of the work on wages, Bry has been investigating the behavior of wages in relation to business cycles in Germany. Several chapters of his book on this subject are now completed.

LEO WOLMAN

THE LABOR FORCE

During 1946 I carried on my studies in part as a member of the Institute for Advanced Study and made further progress on my annual and monthly estimates of the labor force, employment, and unemployment in the United States, 1910-40. I spent most of the year, however, in preparing a manuscript on the labor force, and presented some of the materials and conclusions in November before the Conference on Research in Income and Wealth, under the preliminary title, The Size of the Labor Force under Changing Incomes and Employment.

My latter study proposes to inquire whether the size of the labor force—the number of employed and unemployed at a given time—is associated in any significant way with levels of labor income or employment; and thus seeks to cast statistical light not only on the ancient speculations about the supply curve of labor but also on the future stability or predictability of potential-income projections and of full employment goals based on labor force data.

The inquiry proceeds by comparing data on labor force of local and national censuses with data on real incomes of males: first, at the same moment of time between different areas or income groups in this country; second, between periods characterized by rising incomes and high employment; and third, between periods characterized by great depression and recovery changes in the demand for labor. It studies the labor force in the United States as a whole (1890-1940), in four industrial states (1930, 1934-1936, 1940); in Germany (1925-1939); in Great Britain (1911-39); in New Zealand (1901-26); and Canada (1911-41). The procedure involves standardizing population data for time and space variations in age-sex composition, and wherever necessary and possible, for differences also in rural-urban composition. It also adjusts income data to real wage and salary earnings of adult males on a 48-hour week basis. The conclusions of the study may be summarized, though no more than tentatively, into four main patterns of labor force behavior:

1) In peacetime the size of the labor force, abstracted from the changing size and make-up of the population, while manifesting considerable turbulence in internal composition, is highly stable in over-all size. At least it appears stable in comparison with other important economic magnitudes such as production, income, employment, and unemployment. The comparative stability of the over-all labor force holds even under great rises in income, or under drastic reversals of economic well-being.

2) The slight changes that do occur in peacetime are of two sorts:

a) Rising labor incomes under high employment accompany very small declines in the labor force proportion; a 1 per cent rise in income might occur during the same period as a decline in the labor force of 1/30 to 1/10 of 1 per cent.

b) Great depression declines in employment and income tend to "produce" very slight labor force declines (rather than the rise supposed in the additional worker theory). Considerable increases may occur in certain female age groups; but young and elderly males and females of all ages combined tend to be fewer in a depression labor market.

3) World War II brought substantial increases in the overall labor force (including the armed forces); but these increases seem to have been due basically to the draft and to be traceable only proximately to the great demand for labor. It is unlikely that the war permanently enlarged the proportion of the population in the labor force except to the extent that the armed forces remain above prewar strength.

4) Females as a whole are more numerous in the labor force than formerly; and boys and girls and elderly people are proportionately less numerous. These contrary trends, however, tend to offset each other and indeed may be mutually compensatory. Adult males in the labor force—the primary wage earners on whom their families rely for livelihood—manifest a fairly stable proportion both of the entire labor force and of adult males in the population.

I plan during 1947 to complete the labor force study, and then, reinforced with the results, to return to the main stream of my investigation on the labor force, employment, and unemployment.

Clarence D. Long

VI Fiscal Policy *

THE GENERAL PROGRAM

Operations of the Conference on Research in Fiscal Policy during 1946 included important progress toward the final stage of publication for three large projects carried over from earlier years, the initiation and virtual completion of a preliminary study bearing upon a projected major project of the Conference, and excellent progress in planning new projects.

The three carry-over projects are Project A, a study comparing the definitions of business income for tax purposes and for business purposes; Project E, an investigation of the tax treatment of capital gains and losses; and Project F, an estimate of the postwar federal budget. The manuscript for Project A is being mimeographed for submission to the Conference and subsequently to the National Bureau. Dan T. Smith and J. Keith Butters, who are in charge of the project, present a separate report below. A large portion of the manuscript for Project E is now being mimeographed, but some further research and writing on other portions will delay somewhat submission of the complete report to the Conference and the National Bureau. Lawrence H. Seltzer, who heads the directing committee of the project, presents a separate report below.

POSTWAR FEDERAL BUDGET

Project F was originally in charge of the Chairman of the Conference. Operations during 1943 led to three interim reports, the last of which was mimeographed and circulated to members of the Conference, Directors of the National Bureau, and selected specialists early in 1944. Revision of the study, in the light of criticisms of the third interim report and in view of the unfolding situation, has been in progress since the summer

* A report by Copeland on the development of a federal financial statement is presented in Section I.

of 1944. M. Slade Kendrick, who has been in charge of the revision, has prepared and submitted several revisions at various stages of the work. The last reached the Chairman in December and will shortly be mimeographed for submission to the Conference and the National Bureau. This report, like the interim reports, undertakes to estimate the federal budget for the average year of the first postwar decade. Estimates are shown for the expenditures and receipts sides of the budget, both broken down into principal categories. The text presents the considerations and describes the methods upon which each specific estimate is based. The tabular budget estimate shows eight categories of 'fairly certain' expenditures which in the aggregate call for about $27 billion (mean of the minimum and maximum estimates), and eight categories of 'less certain' expenditures which call for about $5 billion. Hence the total estimated outlay may average about $32 billion unless all or most of the 'less certain' items are avoided by persistent economy. Even the $27 billion for the 'fairly certain' items might be reduced by such resolute economy as would hold all or most of the items close to the minimum estimates for the separate items. The largest items in the 'fairly certain' group are for the military establishment, veterans, and interest on the public debt; they account for two-thirds of the $27 billion total. On the receipts side the estimated total for the average year is $24 billion. This figure implies a budget deficit in the average year, even if the outlays are held down to the 'fairly certain' items, but the report pictures the decade as a period in which budget deficits in most of the early years will give way to a budget balance in the later years. The revenue sources upon which the receipts side of the estimated budget rests show as chief contributors: individual income tax, about $8 billion; corporation tax, considerably over $6 billion; and excises, just under $4 billion. The estimates summarized herein are subject to correction and further revision before the report will be circulated.

NEW PROJECTS

A preliminary study, looking forward to a project on Federal-State fiscal relations in the United States, was undertaken in the summer of 1946. This study, Project G, surveyed the development of fiscal relations between the Dominion and the Provinces in Canada; James A. Maxwell, who had already done much work on this and related subjects, was in charge. Mr. Maxwell's preliminary report was referred to a committee of the Conference, whose suggestions have been used by Mr. Maxwell in a final revision. His manuscript will shortly be mimeographed and submitted to the National Bureau for possible publication as an *Occasional Paper*. The study consists of a factual account of the steps taken, especially during the war, in clarifying and improving fiscal relations in Canada, and an interpretation of the bearing upon such relations of the wartime needs of the several governments as well as the subsequent needs under economic conditions in which governmental planning will apparently have a chief role.

The return from war duties of specialists in public finance and related fields has encouraged the Conference to resume its planning for active work on new and large-scale projects. Among these, top priority is assigned to a study of the effects of taxation on business incentives. Such a study was planned as Project C before the war, but operations upon it were postponed as wartime conditions took away personnel and also shifted the apparent urgency of the several projects the Conference was considering in 1940. In recent weeks vigorous attention has been given to a revision of the plan of Project C, to allow for changed conditions and increased knowledge since 1940; and the new version of Project C has been submitted to the National Bureau for authorization and support. As the revision of the plan has proceeded, negotiations have gone forward on a tentative basis with a view to finding the needed personnel and funds for the job, and the Chairman is gratified by the progress already achieved on both counts. Excellent prospect now exists that active work, under the headship of Dan T. Smith, will be in full swing by the middle of 1947. The high importance of the issues to be raised and examined in such a study, both for the public and for economic scholarship, is so obvious that the Conference has met with active and enthusiastic cooperation in almost all of its consultations.

Plans for a second major project—a study of Federal-State fiscal relations in the United States—are at present less fully developed. Planning for this study is in charge of Lawrence H. Seltzer, Vice-Chairman of the Conference; and a definite project will probably be submitted to the National Bureau early this year.

Although these two large projects will probably require a major fraction of the resources of personnel and funds which the Conference has in sight or can secure during 1947 and 1948, further planning operations will go forward this year in the expectation that some additional undertakings will be possible in 1948. Though shortage of properly qualified personnel will from now on be a less serious obstacle than during the war, the Conference will need to choose carefully, among the many important problems in fiscal research to which it might give its attention, for several years. Only thus can it do thorough work upon the few problems of chief importance and highest urgency which it undertakes.

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

TAXABLE INCOME AND BOOK PROFIT

A manuscript on the differences between taxable income and book profit was submitted early in 1946, for mimeographing and circularization to the staff and Directors of the National Bureau. It consists of two parts: (1) a conceptual discussion of the chief sources of divergence between taxable income and book profit, as defined in ordinary business accounting, and (2) a statistical comparison of the magnitude of these sources of divergence for several samples of corporations for the period 1929-36.

The statistical findings, as they relate to the aggregate differences between book profit and taxable income, may be stated in a highly condensed form as follows:

a) On the average, for a large number of companies during the eight years 1929-36, book profit and statutory net income did not differ greatly in most industries. Book profit typically exceeded statutory net income, but usually by less than 10 per cent. (*Statutory net income* is here defined to include dividends received and interest received from United States Savings Bonds and Treasury Bonds owned in the principal amount of over $5,000.)

b) In certain mining and public utility industries, however, book profit typically exceeded statutory net income by a much larger margin—often by 50 per cent or more. Differences in depletion and depreciation accounting were probably responsible for most of these extremely large divergences.

c) The margin between the book and tax data tended to be considerably wider for companies reporting statutory deficits than for companies reporting statutory net incomes.

d) Variations between book profit and statutory net income do not seem to have been related to the size of companies in any systematic manner.

e) The above relations hold fairly consistently for large industrial groups during the eight years. But much greater variations appear when the data for any one year, or for small industrial groups, are examined.

f) Frequency distributions of divergences between book profit and statutory net income reported by individual companies within any one industrial group show a marked dispersion about the average divergence for the industry. Nevertheless, with the exception of the mining and public utilities groups, a pronounced cluster of cases typically is found about the industrial average.

g) To a substantial degree divergences between book profit and statutory net income reported by a given company in any one year were balanced by offsetting divergences reported by the same company in other years. Nevertheless, some companies in all industrial groups, and a substantial percentage in the mining and public utilities groups, showed divergences in the same direction year after year.

DAN T. SMITH and J. KEITH BUTTERS

TAX TREATMENT OF CAPITAL GAINS AND LOSSES

Considerable progress was made during 1946 in formulating the findings of the investigation on the tax treatment of capital gains and losses. This project has been subject to numerous interruptions because of war and war-related demands upon its staff. The project is in charge of a directing committee consisting of Lawrence H. Seltzer, Chairman, Selma F. Goldsmith, and M. Slade Kendrick.

As was noted in our review of 1945, a part of the preliminary report, consisting of a mimeographed volume embodying extensive statistical data on capital gains and losses, together with several chapters of interpretive discussion, was made available to the Treasury Department and the Joint Committee on Internal Revenue Taxation at their request. The Treasury recently requested and obtained the services of a member of the directing committee for several weeks to aid it in its own analysis of the tax problems associated with capital gains and losses. Preliminary drafts of other sections of the report have also been completed. It is planned to submit the complete report for the consideration of the Conference and the Directors of the National Bureau some time during 1947.

Analysis of the extensive compilations of statistical data on capital gains and losses yields many interesting findings. Net capital gains reported on income tax returns during the quarter century 1917-1941 amounted to $33.7 billion, but aggregate net capital losses, partly estimated, were only about $3 billion less. For various reasons, however, it is likely that the amount of appreciation in capital values that was not 'realized' in a legal sense—by sale or taxable exchange—substantially exceeded the unrealized capital losses. Evidence also exists that the near-equality of the realized capital gains and losses conceals large variations in the experiences of different investors.

For the twenty-five years as a whole, net capital gains constituted only 6.2 per cent of the aggregate net income of individuals reporting net income. In 1928, 1929, 1925, and 1927, however, they constituted 19.1, 18.9, 13.4, and 12.8 per cent, respectively. In each of four other years, they shrank to less than 2 per cent.

Although they constituted only a small proportion of the aggregate income of the taxpaying community as a whole, capital gains were a major source of large individual incomes. In this respect they were similar to dividends, rents, and royalties, which were also among the smaller sources of income in the aggregate, but among the major sources of large incomes. For taxpayers with incomes of $100,000 or more; net capital gains accounted for 32.4 per cent of their aggregate net income; and for those with $1,000,000 or more, for 49.9 per cent, during the twenty-five years.

Despite their conspicuous role as a source of large incomes, the greater part of capital gains is realized by taxpayers in the middle income groups. The average amount of capital gains and the proportion of taxpayers enjoying them rise sharply as we move up the income scale, but capital gains are unevenly distributed within each income group as well as among income groups.

In recent years short-term gains and losses have declined in importance relative to long. Long-term gains account for an increasing proportion of total net gain as we ascend the income scale; the uppermost income groups derive their capital gains predominantly from long-held assets.

Common stocks appear to be the chief source of capital gains and losses, with real estate a very poor second. Capital gains and losses fluctuate widely from year to year, but in rough correspondence with movements in the average of stock prices.

LAWRENCE H. SELTZER

VII BANKING AND FINANCE

From its initiation in 1938, the work of the Financial Research Program has been conducted through a series of projects, each directed towards a defined segment of our credit system and consisting of a set of closely related investigations. During 1946 the staff was concerned mainly with the execution of projects in three general fields: urban real estate finance, agricultural finance, and corporate bond research. For the first two, 1946 was the middle year of a projected three-year program; for the third, it was the initial year. In addition, the staff has been engaged in completing work and extending our investigations in certain other credit areas, namely, Basic Yields of Bonds, Securities Markets, Business Financing, Consumer Instalment Financing, and War Financing.

Work of the type undertaken by the Financial Research Program involves extensive cooperative relationships with public and private agencies, and the past year has been marked by an extension of these activities. Staff members of several universities participate in the program as do those of federal and state agencies.

URBAN REAL ESTATE FINANCE

Investigations under the Urban Real Estate Finance Project are grouped in five parts. Part I is concerned with a study of those characteristics of real estate that are significant in relation to its financing. This investigation is being made by Ernest M. Fisher of Columbia University.

Part II deals with the activities of the principal institutions extending credit on urban real estate. Carl F. Behrens, on loan to the National Bureau from the Federal Deposit Insurance Corporation, is responsible for the study of commercial bank activities in the urban mortgage market. In this, as in the other institutional studies, the most complex research problems involve the measurement of loan experience and lending costs. J. E. Morton of Cornell University has designed a method for analyzing commercial bank mortgage loan experience comparable with that which will be used in other institutional studies. To provide the necessary data, five hundred commercial banks are being requested to supply us with information on a sample of loans drawn from those they have made since January 1, 1920.

The task of assembling data for the study of insurance company activities in urban mortgage lending was nearly completed in 1946. A preliminary report was prepared on the urban mortgage lending costs of insurance companies based on detailed schedules from about seventy-five companies. Also, about twenty companies are providing us with a one per cent sample of all city mortgage loans made since January 1, 1920. These will be used in our analysis of mortgage loan experience. Field investigations have been completed and data needed for the accurate description of this segment of the mortgage market compiled.

During 1946 Edward E. Edwards of Indiana University completed his plans for a study of the mortgage lending activities of savings and loan associations. His report follows: "A pilot study of the savings and loan business in Indiana is being made in cooperation with the Federal Home Loan Bank of Indianapolis and the Department of Financial Institutions of the State of Indiana. The chief purposes are to determine the availability of information from regulatory agencies, and to draft an outline of the final report in terms of readily available facts.

"The cooperation of the Federal Home Loan Bank Administration has been obtained in constructing a sample of associations that will be requested to report their mortgage experience.

It was hoped that special emphasis could be placed on the personal characteristics of borrowers but this may be impossible in view of the lack of adequate data. A sample of associations has been prepared and loan schedules will be distributed in the near future.

"Published material on the savings and loan business, including annual reports of the various regulatory agencies, is being collected and abstracted for possible inclusion in the study."

C. Lowell Harriss of Columbia University is making an intensive study of the Home Owners Loan Corporation. He reports: "I began a study of the Home Owners Loan Corporation in the summer of 1946 and after a general review concluded that the work should be directed along two lines; (a) the experience of the Corporation itself, (b) the light its records could throw on the characteristics of homeowners and properties that became seriously distressed in the early 'thirties. The principal effort to date has been in collecting and studying published materials on the Corporation's record. These reveal an impressive achievement: more than a million defaulted mortgages involving over $3 billion were refinanced; terms and appraisals were generous and servicing was designed to meet the needs of individual cases. Despite the losses and administrative costs involved it now looks as if there will be no net loss to the government. The second part of the study—an analysis of the borrowers and the loans that needed help—was just beginning, with the full cooperation of the Corporation, as the year ended. I hope that by the end of 1947 the vast wealth of information in HOLC records will have been assembled for analysis."

The activities of the principal federal agencies, other than the Home Owners Loan Corporation, that have figured significantly in real estate finance, are being surveyed by Donald T. Wood, who reports: "I have prepared work memoranda on the Reconstruction Finance Corporation Mortgage Company, the Federal National Mortgage Association, the Federal Home

Loan Bank Administration, the Federal Home Loan Banks, and the Federal Savings and Loan Insurance Corporation, and am now finishing one on the Federal Housing Administration. The memoranda are descriptive rather than analytical; for the most part they are based on published sources, and cover each agency's organization, history, functions and scope of operations."

It was originally planned to make a special study (Part III) of risks in financing urban real estate but it was found that the necessary studies can be made most effectively in connection with studies of the activities of the several major lending agencies. Accordingly, this work has been absorbed under Part II—Facilities and Practices in Urban Real Estate Finance.

Part IV provides for a study of the effects of fluctuations and change on urban real estate and its financing. The necessity of completing other segments of the project, the results of which are needed for the successful execution of this study, and the difficulty of making personnel arrangements have led to postponements. Every effort will be made to start work in 1947 on a schedule that will provide for its completion in the following year.

Part V, the influence of government on urban real estate finance, is being conducted by Miles L. Colean, who reports as follows: "During 1946 the material embodied in the general outline of this part of the study was reorganized into two main sections: (1) Description and historical background of the various forms of government intervention in real estate finance, including impacts from both the law of real property and the more direct means by which government (federal, state, and local) has participated in real estate and realty finance. (2) Analysis and interpretation of the material of the first section with a view to establishing the nature and extent of the influence that government policy has had on the realty financial structure.

"A rough draft of the first section and of several chapters of the second was submitted for comment to those working on related parts of the project. This was followed by a major restudy and redrafting of the first section, which is now about half completed. This section should be ready for a more general review by the middle of the year.

"A special study of state laws relating to the ownership of real estate by corporations will shortly be submitted to the Director of the study.

"In the course of the investigation, a most significant relation appears between the public land policy and all later forms of governmental intervention. The creation and maintenance of a highly competitive land economy, with its aggregation of small owners posed against increasing concentration in other forms of enterprise, gives realty finance both unique characteristics and special problems. The problems created by this phase of governmental intervention color all subsequent relations between government and realty finance and seem in high degree to have dictated the numerous excursions that government has made into the realty field. Another important influence appears in the rigidity of the law of real property as compared with the more flexible forms that have been developed for capitalist enterprise generally. This situation, again, has served to keep real estate out of the main current of financial development and to give it special problems which, in turn, have required special attention from government."

R. J. SAULNIER

AGRICULTURAL FINANCE

Studies under the Agricultural Finance Project fall into five major divisions:

I The Characteristics of Agriculture in Relation to Its Financing
II Costs, Risks, and Returns in Agricultural Finance
III Agricultural Credit Institutions: Their Organization and Practices
IV Studies of Selected Problems in Agricultural Finance
V Agricultural Finance in the National Economy

The first study is being conducted in cooperation with the Bureau of Agricultural Economics of the United States Department of Agriculture. Donald C. Horton of the Division of Agricultural Finance, Bureau of Agricultural Economics, is making the study with Norman J. Wall, Chief of that Division, serving as consultant. Using data from a wide variety of sources, estimates have been made for ninety counties in different type-of-farming areas showing for 1940 (1) the estimated value of agricultural capital classified by major physical categories, (2) the distribution of equities in this capital among creditors, farm operators, and landlords, and (3) the distribution of creditor interests among lender groups. In addition, indices have been developed from Census data to measure variations by counties in other significant economic characteristics of agriculture. So far analytical work has been concerned mainly with an attempt to determine, by counties, what patterns of economic characteristics of agriculture were associated with different kinds of equity structures in 1940.

During the coming year it is planned to carry the statistical analysis far enough to permit generalization concerning the more important characteristics of agriculture that are related to its financing, and to use these generalizations as part of the basis for an appraisal of the probable impact of the major trends in agriculture on its financing.

David Durand, of the Financial Research Staff, is developing plans for a study of risks in agricultural finance under Part II of the project. The inquiry is expected to proceed along three broad lines: a general analysis which will attempt to relate farm foreclosures to economic conditions in the United States over a period of years, to economic conditions in various types-of-farming areas, to weather conditions and other factors; an attempt to relate the findings of farm management research to the problems of agricultural finance; and a comparative statistical analysis of good and bad loans, bringing together the findings of previous studies and filling in the gaps by means of small sample studies for limited areas.

Part II provides also for a study of costs and returns in agricultural lending. Information is being obtained for a sample of lenders making both farm and urban real estate loans.

The resignation of Edwin C. Johnson from the staff of the Financial Research Program to return to the Farm Credit Administration has temporarily halted work on a study of the organization and practices of agricultural credit institutions (Part III).

Two studies are in progress under Part IV: E. Fred Koller, Division of Agricultural Economics, University of Minnesota, is investigating the financing of farmers' cooperative associations; James McNulty, Jr., of Harvard is making a study, under the direction of John D. Black, of credit in relation to land tenure.

I am planning a study of agricultural finance in the national economy (Part V), but have been delayed by efforts to get work started on other parts of the program.

F. F. Hill

CORPORATE BOND RESEARCH

The Corporate Bond Research Project was organized in August 1946 to investigate certain fundamental questions of interest to government agencies, institutional investors, and students generally. The research is being organized along the following lines:

I Comparison of default and yield experience of groups of bonds meeting various criteria of bond quality

II Analyses of the continuity, stability, and level of rates of return on corporate bonds

III Fluctuations in security flotations and investment values

Section I will compare policies of bond selection based on agency-rating and market-rating grades with policies imposed by law and regulation. Section II will provide the factual background needed for the establishment of security valuation procedures and of investment loss reserves for bonds of various types. Under Section III studies will be made of the cyclical and secular changes in investor experience as related to general business conditions, and the effects of shifts in the risk structure and term structure of interest rates on the volume, values, and yields of high-grade securities.

The primary sources of data are the National Bureau's tabulating-card records of corporate bond experience. They contain detailed information on a 100 per cent sample of bonds with par amount of $5 million and over and a 10 per cent sample of smaller bonds; these samples were drawn from the universe of bonds appearing in the investment manuals. The records, which originally covered 1900-1938, are now being extended through the first quarter of 1944 by Elizabeth Simpson and her associates. This work should be completed early in 1947.

Through the cooperation of the International Business Machines Corporation, the extensive tabulating and computing equipment of the Watson Scientific Computing Laboratory has been made available to us, and machine operations are now being conducted there on a twenty-hour a week basis.

Basic tabulations describing the condition of the corporate bond market in the first half of each of the quadrennial years beginning with 1900 and ending with 1944 have been completed; in addition, tabulations of investor experience over certain four, eight, twelve, sixteen, and twenty year intervals, within the period 1900-1944, have been prepared. These materials have been organized to permit comparison, within major size and industry groups, of securities eligible for saving bank and trust fund investment in New York State and of those not eligible for such investment.

Preliminary analysis suggests that 'legal' bonds possess most of the attributes of 'gilt-edge' investments, as that term is usually interpreted. A relatively large par amount of New York legal bonds is designated as high-grade by the rating agencies and by the market. Legal bonds are typically large bonds of large obligors with special marketability features. The par amount in default per dollar of par amount outstanding is significantly lower for legal than for nonlegal bonds. Surprisingly, however, New York legal bonds do not show a marked superiority with respect to stability in quality, prices, and market yields; nor are their realized yields systematically higher. Indeed, from 1936 to 1944 most nonlegal bonds had larger realized yields.

Analogous results were obtained from similar comparisons of large and small bonds. For example, large bonds are rated higher than small bonds by both the agencies and the market, but the realized yields of the former show no continuing superiority.

There is clear evidence of a downward drift in the quality of railroad bonds since World War I, and, more recently, of an upward drift in bonds of manufacturing industries. Owing to the dominant position of railroad bonds, however, both the relative and absolute volume of high-grade bonds has declined in recent years.

The Corporate Bond Research Project was established as a limited project to run three years. It is being conducted by the Financial Research Program with the support—intellectual and financial—of a number of interested groups, among which the following are the most active:

The Institute for Advanced Study

New York State Banking Department

Trust Investment Study Committee of the New York State Bankers Association

Mutual Savings Banks in New York and Massachusetts

Savings Division of the American Bankers Association

Life Insurance Investment Research Committee

Board of Trustees of the Banking Research Fund of the Association of Reserve City Bankers

W. Braddock Hickman

OTHER FINANCIAL STUDIES

In addition to the three projects reported on above, a number of other studies are being made under the Financial Research Program which carry forward work in credit areas that have been the subjects of earlier projects.

Basic Yields of Bonds

During 1946 David Durand and Willis J. Winn were engaged in a study that carries forward an earlier investigation dealing with the yields of corporate bonds. Mr. Durand reports on the collaborative effort: "The analysis of bond yields on which I have been collaborating with Willis Winn is a sequel to Basic Yields of Corporate Bonds, 1900-1942 (*Technical Paper No. 3*). We have made estimates of the basic corporate bond yields for 1943-46, which will bring the earlier study up to date. In addition, we have explored the municipal bond market and have made estimates of the basic municipal yield for the same period. As in the old study, we have compared these basic yields with government bond yields. Consequently, the study gives a complete, comparative picture of basic yields in the three most important sectors of the domestic high-grade bond market for the past four years. For each year (first quarter only) we have drawn yield-maturity curves showing the term structure of municipals, corporates, and governments for bonds ranging from about one year up to forty years. Although the main purpose was to estimate high-grade bond yields by term to maturity for the past four years, the analysis has been extended to several related points. Charts showing the general movement of the three basic yield series for three selected maturities have been presented for 1926-46 in order to illustrate the changes in the level and term structure of bond yields. In the analysis of municipal bonds it was found that coupon rates are an important variable affecting yields, and a brief appendix was prepared showing the variation in the yield of municipal bonds having the same maturity and quality but different coupon rates. The manuscript is now ready for preliminary circulation; 1947 estimates will be added before publication."

Research in Securities Markets

The report of the Exploratory Committee on Research in the Securities Markets, prepared at the request of the National Association of Securities Dealers, was completed and distributed in 1946. The Financial Research Program has no plans at this time for embarking upon studies proposed in this report, but is prepared to cooperate closely with other research groups or individuals who may undertake such studies.

Business Financing

In February 1947, *Business Finance and Banking,* by Neil H. Jacoby and R. J. Saulnier, was published. Summarizing and extending the several investigations made under the Business Financing Project, it provides a description and analysis of changes in the credit relationships between business financing agencies and borrowing enterprises from 1900 through World War II.

Two investigations that had been deferred by the military service of the authors were resumed last year: Changes in the Financial Structure of American Business Enterprise, 1900-40, by Sidney S. Alexander, and Financing Problems of Small and Medium-Sized Business, by Robert V. Rosa and Malcolm C. Urquhart.

Consumer Instalment Financing

Building on earlier work of the Financial Research Program in the field of consumer instalment credit, the opportunity was taken during 1946 to initiate an investigation dealing with the demand for instalment sales credit. Avram Kisselgoff, who is conducting it, reports: "An effort will be made to identify and define as precisely as possible the factors affecting the demand for instalment sales credit. A thorough analysis of the factors influencing the demand for instalment sales credit will be supplemented by an attempt to measure the influence exerted by the various factors.

"The first step was to explore the relation between income and instalment sales credit. A marked degree of sensitivity of instalment sales credit with respect to income is suggested by the materials. The relation between instalment sales credit and such factors as prices of durable consumer goods, stocks of durable consumer goods, and credit terms is also being investigated."

War Financing

Three studies in preparation during 1946 will complete the investigation of war financing, the principal concern of the Financial Research Program during the war: Lombard Street in War and Reconstruction, by Benjamin H. Higgins, which complements *Occasional Paper 19;* Changes in the Ownership of the Federal Debt, by Willis J. Winn; and Financing Problems of Business, World War II, by Wilson F. Payne. Mr. Payne, who has had Howard Greenbaum associated with him, reports: "The principal areas in which wartime financial changes may be observed are operations, plant investment and the impact of tax laws. The output of war materials and civilian goods together far surpassed any previous volume, however measured. The most important consequence was a nearly twofold increase in working capital funds. To understand how this came about, the inflow and outflow of funds through individual corporations must be observed closely. On the investment side the physical plant of the United States has increased vastly since 1939. Yet at the end of the war the net book value of manufacturing plants was only slightly above that of 1939. This profound change, with its consequences extending far into the peacetime economy, requires meticulous analysis. Since investment could be made under contracts of varying degrees of risk and write-off, it is necessary to tabulate plant additions and retirements, etc., according to type of contract. This analysis likewise requires individual company reports.

"As a consequence of basing our observations on the experience of individual companies rather than on national aggregates, samples had to be selected with considerable care. While our coverage of large manufacturing companies (200) constitutes almost a census in that class, our knowledge of small companies must rest on samples far less adequate in their coverage. Two samples of our own, one of 500 and another of 110 firms, plus the Federal Reserve-Robert Morris sample of 400, carry the main burden for the small company sector. We plan to complete the assembly and adjustment of the basic statistical data by June, then prepare the report itself. The effort that could go into the latter phase is so boundless that we have arbitrarily restricted the scope to that which we could reasonably expect to cover adequately in six months.

"As a corollary to tracing the flow of funds during the war years, problems in the theory of measurement had to be solved. In comparing the objectives and techniques of various systems we noted discrepancies in definitions and assumptions that seemed fundamental. And in designing a system for our present purpose we reached certain conclusions that seem to have general interest and to be applicable to a wide range of problems. These conclusions, embodied in a systematic technique for measuring fund flows, are now being prepared for circulation among individuals interested in the field."

CHANGES IN RESEARCH PERSONNEL

Ralph A. Young, who had been Director of the Financial Research Program since 1939, resigned in March 1946 to become Assistant Director of the Division of Research and Statistics of the Board of Governors of the Federal Reserve System. He continues to serve as chairman pro tem of the Committee on Research in Finance.

Donald S. Thompson, who was chairman of the Exploratory Committee on Research in Urban Real Estate Finance and was responsible for the direction of studies under the Urban Real Estate Finance Project, resigned in August to become Vice-President of the Federal Reserve Bank of Cleveland. He continues to serve the National Bureau as a member of the Committee on Research in Finance.

W. Braddock Hickman rejoined the staff of the Financial Research Program in 1946, following his service in the United States Naval Reserve. He is a member of the Central Research Staff of the Program and is responsible for the direction of the Corporate Bond Research Project.

RAYMOND J. SAULNIER, *Director*
Financial Research Program