

2. There is some relation between the violence of change in the price level and the degree of dispersion. In so far as the internal disturbance of price relations is affected by changes in the price level, it depends upon the violence of change, not the direction of change.
3. The degree of internal disturbance showed a definite downward trend from 1891 to 1914. The violence of the year-to-year changes was noticeably less after 1904. This downward trend indicates that during the quarter century preceding the war business and economic relations in the United States were becoming more stable, were increasingly free from violent price disturbances. The rather sharp change after 1904 may, perhaps, be attributed to the fact that the price cutting and severe industrial competition of the '90's was materially reduced after the opening of the present century.
4. The value of the index of dispersion, as here computed, seems to be independent of the price level. This conclusion is supported by the evidence mentioned in point (1) above, and also by the fact that the value of the index of dispersion for 1924 was approximately equal to the average value for the years immediately preceding the war, and lower than the values of the index of dispersion during the '90's. This is a significant fact, for it means that we have a criterion of price stability in the index of dispersion.
5. The several measures of price instability indicate that a relatively stable condition was attained during the last half of 1922. In that year, for the first time since 1914, the degree of internal disturbance was approximately equal to that which seems to be normal, judging from pre-war experience. This stability seems to have been attained by the building up of a new set of relations in the wholesale price field. The relations between commodities which prevailed before the war have been shattered, and there is no sign of a tendency to return to these relations. In the light of these facts, it is questionable if there is any justification for employing 1913 as a base year for current price comparisons.
6. Internal disturbances due to changing price relationships would be somewhat lessened if the degree of change in the price level did not vary from year to year, but would not be eliminated.

Both in sureness of statistical attack upon a difficult and complicated problem, and in the significance of the results already definitely in sight, the decision to enter this field of research, closely allied as it is to the other studies of the staff and consonant with the fundamental purposes of the Bureau, appears clearly to have been justified. At the present rate of progress, a completed first report may be expected before the end of 1926, to be published early in 1927.

Respectfully submitted,

EDWIN F. GAY  
WESLEY C. MITCHELL  
*Directors of Research.*

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# NEWS-BULLETIN

of the

National Bureau of Economic Research, Inc.

To Find Facts  
Divested of  
Propaganda

No. 18

474 West 24th Street, New York City

May 10, 1926

## Explorations in Economics

### Progress in Five Major Fields Summarized By The National Bureau's Directors of Research

QUANTITATIVE investigations in five major fields of economic interest are now being carried on by members of the Research Staff of the National Bureau of Economic Research, under the direction of Drs. Edwin F. Gay and Wesley C. Mitchell, Directors of Research.

In a report made to the National Bureau's Board of Directors, the Directors of Research summarize the activities of the Staff as follows:

Two studies have already been completed and several others are nearing completion and will soon be submitted to the directors for their criticism. One has just been accepted by the directors, *Business Annals*, compiled by Dr. Willard L. Thorp, with an introduction by Professor Mitchell. This follows, in brief outline, the fluctuations of business year by year in seventeen countries as far back as historical data, adequate for continuous yearly description, extend. The volume is a by-product of the study of *Business Cycles*, which developed sufficient importance and general interest to warrant expansion and separate publication.

The annals are compact descriptions, year by year, of business conditions.

For each country for each year, the results are summed up in five paragraphs:

1. A brief synopsis, in standardized terms, of general conditions.
2. A description of business activity, employment, important strikes, movement of commodity prices, construction, land and commodity speculation, and foreign trade.
3. Description of conditions in the money market, security prices and speculation, public finance and foreign exchange.
4. Agricultural production and prices.
5. Non-economic events of influence on business conditions, such as wars and political troubles, epidemics and natural catastrophes.

The various countries and the periods covered follow:

United States, 1790 to 1926.  
England, 1790 to 1926.  
France, 1840 to 1926.  
Germany, 1856 to 1926.

Austria, 1867 to 1926.  
Russia, 1890 to 1926.  
Sweden, 1890 to 1926.  
The Netherlands, 1890 to 1926.  
Italy, 1890 to 1926.  
Argentine, 1890 to 1926.  
Brazil, 1890 to 1926.  
Canada, 1890 to 1926.  
South Africa, 1890 to 1926.  
Australia, 1890 to 1926.  
India, 1890 to 1926.  
Japan, 1890 to 1926.  
China, 1890 to 1926.

This volume will be followed promptly by that on *Migration and Business Cycles*, by Dr. Jerome. The manuscript with tables and charts of this study is complete. It is the first result of the economic investigation entrusted to the National Bureau by the Committee on Human Migration of the National Research Council and the Social Science Research Council.

Two more publications for 1926 are also nearing completion, Professor Mitchell's first volume of a general treatise on *Business Cycles*, and Dr. Macaulay's analysis and statistical presentation of *Bond Yields and Interest Rates in the United States Since 1859*.

A voluminous collection of statistical material for use in the analysis of business cycles has been made by Dr. Thorp, assisted by Mr. Harold G. Villard and Mrs. Thorp. No such collection of monthly series has ever before been brought together, and a special effort must be made to secure the funds necessary to publish this bulky and expensive work as an extra volume. The material here gathered for the United States, England, France, and Germany, should be made accessible to other workers in the same field, and indeed to statisticians and economists generally.

The various investigations upon which the Bureau is now engaged are here briefly set forth.

### I. Study of Business Cycles.

Dr. Mitchell has been working all this year upon the treatise on *Business Cycles*. As already noted, his first draft of Volume I has been finished and is being submitted to the staff for criticism. This volume bears a subtitle, *The Problem and Its Setting*. It deals

Please turn the page

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The Bureau seeks not merely to determine facts, but to determine them under such auspices as shall make its findings carry conviction to Liberals and Conservatives alike. It deals only with topics of national importance which are susceptible of quantitative treatment.

By issuing its findings in the form of fact reports, entirely divorced from propaganda, the Bureau hopes to aid all thoughtful men, however divergent their views of public policy, to base their discussions upon objective knowledge as distinguished from subjective opinion.

No report of the Research staff may be published without the approval of the Board of Directors. Rigid provisions guard the Bureau from becoming a source of profit to its members, directors or officers, and from becoming an agency for propaganda.

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with the numerous working hypotheses concerning the causes of business cycles which have been presented by a succession of theorists, with the contribution of statistics to the subject, and with the more comprehensive but less definite materials afforded by our collection of business annuals. Finally, Volume I presents a systematic plan of procedure to be followed in Volume II, which will give a descriptive analysis of the successive phases of business cycles.

The most important material to be used in this second volume is the collection of statistics, so far as possible by monthly or quarterly intervals, which Dr. Thorp, Mr. Villard, and their assistants are compiling for the United States, England, France and Germany. It is planned to treat each business cycle covered by our figures in each country as one unit, and to investigate the regularity with which the various phenomena of business cycles have recurred from case to case. By this plan the whole investigation will be established upon a statistical foundation.

In analyzing the figures, however, the working hypotheses supplied by Volume I will play as important a part as statistical technique. Needless to say, there are many phenomena of business cycles concerning which we have no adequate statistical observations. At important points the material provided by our collection of business annuals can be drawn upon to supplement the quantitative record.

We do not suffer from the delusion that a definitive treatment of this important problem can be produced, but we do hope that our systematic collections of material and our analysis will make more efficient the efforts of the numerous economists, statisticians and business men who are concerned with business cycles.

## II. Bond Yields and Interest Rates.

The directors of research had expected that Dr. Macaulay's important study of bond yields and interest rates in the United States since 1859 would have been ready for submission and publication in the course of the past year. But difficulties appeared, both in regard to material and method, which required not only more time but statistical ability of high order to surmount.

In particular, Dr. Macaulay discovered a "drift" in the index numbers of bond yields, shown over the long series of years under investigation, which was not due to a technical "bias" in the statistical method, but to the economic improvement in the quality of bonds. This demanded the construction of index numbers on an entirely new basis, and after much arduous experimentation a method was found, both theoretically and practically satisfactory.

## III. The Labor Market.

Another of the investigations which, like that on Bond Yields, originally was suggested as needful in the study of Business Cycles, is that now being made by Dr. Leo Wolman in the statistical aspect of the labor market.

Beginning with an examination of wage changes, it became clear with the progress of the work that other elements of what is usually known as the labor

market are so closely interrelated that they must be studied conjointly. Dr. Wolman has therefore been collecting and analyzing statistical measures of wages, labor cost, employment, hours of labor, output, and standards of real wages.

Comparisons are being made between wage-rates and full-time wages wherever the figures are available. Where deviations from published rates occur, as happens in the fluctuations of business cycles, sample data are being obtained. The various series of total amounts paid in wages, now collected by different agencies and utilized as indices of the purchasing power of wage-earners, are being compared. From the censuses of manufactures and from various independent investigations, data are being gathered on labor costs.

Dr. Wolman further plans a detailed examination of payrolls in selected industries in order to obtain data on per capita output during the phases of business cycles. Finally a critical comparison will be made of the studies of wages and standards of living now in progress by other investigators in this field, with the composite measures of material progress which Dr. Wolman proposes to derive from his collected statistical samples.

## IV. Problems of Migration.

Before the completion of his first work on *Migration and Business Cycles*, already referred to in the opening paragraph of this report, Dr. Jerome was busily engaged in organizing the field-work for his second study—namely, the effect of the restriction of immigration upon the use of labor-saving machinery. This investigation, like the first, was undertaken by the National Bureau at the request of the Committee on Migration and the necessary funds were supplied through the Social Science Research Council.

By interviews with factory executives, and by direct observation in manufacturing establishments, facilitated in many cases by the endorsement of the trade associations in the respective industries and by local Chambers of Commerce, good sampling studies have been made in such lines as highway and building construction, coal handling, handling of goods at marine and railway terminals, coal mining, and in basic industries—iron and steel, machine shops, cotton mills, saw mills, brick plants, slaughtering and packing. It is too early as yet to give the results of this careful survey.

A further and comprehensive enterprise, a third stage in the migration studies, was launched by the National Bureau in March, 1925. It was proposed by the Committee on Migration that the basic statistics of international migration be collected and critically interpreted. This proposal was approved by the Social Science Research Council, and an appropriation made to the National Bureau.

Professor W. F. Willcox of Cornell University, the authority best qualified in this field, was asked by the National Bureau to undertake this task. He accepted on the understanding that he would devote to it a large part of the summer of 1925 while he was in Europe, such supervision as was necessary during the academic year 1925-1926, most of the summer of 1926, and full time under leave of absence from Cornell during 1926-1927.

Of the two parts of the inquiry, the first, including the collection, tabulation and publication of the international statistics, Professor Willcox decided, after careful investigation, to entrust to the Migration Section of the International Labour Office at Geneva.

The officials of the International Statistical Institute, such eminent statisticians as Sir Henry Rew and H. W. Methorst (the secretary of the Institute), were of the opinion that the Migration Section, having already published a monograph on *Migration Movements, 1920-1923*, and issuing current statements based on the statistics of sixty countries, was the agency best fitted to do this work. Accordingly a contract was drawn up, since ratified by the governing body of the International Labour Office and by the Executive Committee of the National Bureau of Economic Research, by which the full time of a specialist in the Migration Section (compensated by the National Bureau) and the extensive international contacts of the Labour Office are assured for the collection of the migration statistics of at least twenty European and seventeen transoceanic countries.

The second part of the inquiry, a volume more vital to the Bureau's purpose, is to include the summaries and the interpretation of the official statistics, studies by experts of various countries, and a survey of the efforts which have been made to determine the population of the earth at various dates and the evidence thus furnished of the influence of migration upon the increase and redistribution of population.

To assist Professor Willcox in this second portion of his work, the International Statistical Institute, at its biennial session at Rome in September, 1925, appointed an advisory committee, consisting of Messrs. Benini (Italy), March (France), Verrign-Stuart (Holland) and Zahn (Germany).

## V. The Structure and Working of the System of Prices.

As authorized by the directors of the National Bureau, Dr. Frederick C. Mills was engaged to begin, in the second half of 1925, a study of the structure and working of the price system on the basis of price statistics in the United States since 1890.

The problem attacked by Dr. Mills has been that of measuring price instability—first, the dispersion of prices due to the varying degrees of movement of individual commodity prices between given dates, and, second, the internal shifting or displacement of prices, causing changes in relative position. The preliminary conclusions from his analysis of price dispersion are here reported as indicating the direction the study is taking.

1. Price dispersion, and the instability due to changing price relations, do not increase with rising prices and decline with falling prices, as held by several economists. There appears to be no consistent relation between changes in the price level, when direction of change is taken into account, and degree of dispersion.