PART III

Staff Reports

1. ECONOMIC GROWTH

LONG SWINGS IN U.S. ECONOMIC GROWTH

That economic growth of capitalist countries has been subject to fluctuations with a period longer than ordinary business cycles is an hypothesis long entertained by economists. This hypothesis has taken a variety of forms of which the most famous was advanced by the Russian scholar, Kondratieff, who held that long waves with a duration of 40 to 60 years could be discerned in capitalist development. Closer examination, however, has shaken the empirical basis for Kondratieff's theory, except perhaps in price series. In more recent years attention has been directed to another long-swing hypothesis for which the empirical basis is much firmer. This is the notion that economic growth moves in recurrent waves of acceleration and retardation with a period of between fifteen and twenty years. Kuznets, Burns, and others have shown that since 1870, successive swings of this duration have occurred at about the same time in many aspects of economic life including production, prices, population growth, and international movements of people and capital.[1] The present writer has assembled evidence which supports the view that waves of this same sort characterized the economic growth of this country between 1815 and 1870.[2]

The present study of long swings in economic growth is concerned with these 15 to 20 year waves of acceleration and retardation in the pace of development in the United States. The study has several aims: to establish the variety of aspects of economic life that display these swings and to describe their main fea-

[1] Cf. S. S. Kuznets, *Secular Movements in Production and Prices*, Houghton-Mifflin, 1930, and "Long Swings in the Growth of Population and Related Economic Variables," *Proc. Amer. Phil. Soc.*, Feb. 1958, and A. F. Burns, *Production Trends in the United States Since 1870*, National Bureau of Economic Research, 1934.

[2] National Bureau of Economic Research, 38th Annual Report, May 1958, p. 47 *et seq.* Compare also the earlier work of Walter Isard, "A Neglected Cycle: The Transport-Building Cycle," *Rev. of Econ. Stat.*, Nov. 1942, pp. 149-58.

tures, to discover what elements of regularity have characterized the relations between the long swings of different departments of the economy, to throw light on the association that has been noticed between the long waves of economic growth and the occurrence of severe depressions,[3] and to determine, if possible, whether the long swings are systematic reflections of some stable mechanism in our economy or whether they are the outcome of episodic disturbances. The present writer is attempting a general study of the subject. Richard Easterlin, who reports on his work below, is making a special investigation of long swings in population growth and movement.

Four Basic Chronologies

The rate of growth of output may speed up or slow down for any of three reasons or any combination among them. Our stock of resources may expand more or less swiftly; the efficiency of a representative unit of resources used at normal intensity may grow more or less rapidly; or the intensity with which we use our resources may rise or fall at changing rates. The rates of growth of these four variables — output, stock of resources, productivity, and intensity of resource utilization—need not be related to one another in any regular way. Long swings in the rate of growth of output might emerge by chance from quite irregular fluctuations in one or more of the other three. It is, therefore, of fundamental importance that we can find evidence of long swings of similar duration in the rates of growth of all four variables and, further, that with almost no exception, every long swing in the rate of growth of output is matched by a long swing in the rates of growth of productivity, stock of resources, and level of utilization. The four variables are bound together. Not only that, but their periods of acceleration and retardation appear to occur in a certain regular order which repeats itself from occasion to occasion.[4] The regularity of the pattern in which the four variables rise and fall suggests that some stable mechanism gives the long swings their form. The particular order of events suggests the direction in which an explanation of long swings should be sought.

The empirical material on which these statements rests is summarized—more compactly, perhaps, than the data really justify—in Table 1, which shows the years when the long swings of the four variables reached their peaks and troughs. The manner in which the various chronologies were derived will be described in the full report. Some comment on the make-up and meaning of the various columns is, however, necessary.

1. By *long swing peaks and troughs,* we mean the turning points in a series smoothed by one means or another to reduce or eliminate the influence of standard business cycles.

2. The turning points in the column headed "Rate of Growth of Output: A" were derived from data smoothed by a more radical method than was applied to the series which yielded the turning points in "Rate of Growth of Output — B." The latter, therefore, displays a larger number of long swings than does the former, and the turning points fall in different years. The productivity measures were treated in the same manner as were the output series underlying the A chronology of output growth, and are, therefore, comparable with the A but not with the B chronology of output growth. The measures of additions to resources were treated in a fashion comparable with the smoothing of the series underlying the B chronology of output growth. We prefer this latter and less radical smooth-

[3] Cf. Burns, *op. cit.*, Ch. V.

[4] These statements are subject to important qualifications: (1) The basic historical series on which we must rely are throughout less trustworthy than we would like and less trustworthy for earlier decades than for later. (2) Methods of "correcting" for business-cycle fluctuations are necessarily crude. Doubtless they distort the patterns of the long swings and the time when they appear to reach peak and trough levels. (3) We cannot measure the level of resource utilization directly over long periods. Instead, we rely on a series which identifies periods of severe and protracted depressions. (4) Our direct measures of productivity do not extend back of the 1870's, and they do not completely separate the effects of changes in the intensity of resource use from changes in resource efficiency at normal rates of utilization. The long swings we observe in productivity growth are, no doubt, partly traceable—they may, indeed, be mainly traceable—to the long swings in the intensity of resource use. This point requires closer study than we have yet been able to give to it, and we may not be able to settle it with the data available.

ing, but the productivity data available when we made our measures did not lend themselves to it. We hope to eliminate this difficulty in the future by using the more adequate productivity data derived from Kendrick's work.

3. The chronologies in each of the columns are based on figures which are, to some degree, imperfect indicators of the variables they are supposed to represent.

Our basic measures of *productivity* are ratios of an index of net national product in 1929 prices to an index of the combined input of labor (manhours) and capital stock. The figures, therefore, reflect not only the changes in the productivity of resources when employed at normal intensity, but also a portion of the effects of changes in the intensity of employment.

The *output* chronology after 1860 is based on the rate of growth of indexes of aggregate production. Before that year, however, it is based on the consensus in the long-swing turning points of the rate of growth of a considerable number and variety of economic processes. Experiment shows, however, that this method of approximating a chronology of output growth would have yielded good results in the period after 1860, and we believe it is satisfactory for the earlier period.

A chronology of turns in the rate of growth of *resources* was approximated on the basis of series representing the annual volume of additions to our labor supply and to our stocks of capital and of land in private ownership. No formal weighting scheme was used to combine these series; rather, turning points were selected on the basis of the consensus in the behavior of the various series observed. While the turning points in the different categories of resources were spread over a range of years, the range was sufficiently narrow to justify the statements we shall make below about the behavior of the rate of growth of resources and that of output.

We are unable to compile a reasonably accurate direct measure of the level or rate of growth of *unemployment* annually over a long period. To indicate the existence of a long swing in unemployment which can be matched with the swings in the other basic aspects of

Table 1

A CHRONOLOGY OF THE PEAKS AND TROUGHS OF FOUR BASIC ASPECTS OF THE LONG SWINGS IN ECONOMIC GROWTH

LONG SWING PEAKS					LONG SWING TROUGHS				
Rate of Growth of Productivity	*Rate of Growth of Output*		*Volume of Additions to Resources*	*Years Preceding Severe or Protracted Depressions*	*Rate of Growth of Productivity*	*Rate of Growth of Output*		*Volume of Additions to Resources*	*Years Preceding Sustained Recovery from Depression*
	A	B				A	B		
n.a.	n.a.	1814	1816	1815	n.a.	n.a.	1819	1823	1821
n.a.	n.a.	1834	1837	1836	n.a.	n.a.	1840	1844	1843
n.a.	n.a.	1846	1854	1853	n.a.	n.a.	1858	1860	1858
n.a.	n.a.	1864	1871	1873	n.a.	n.a.	1874	1877	1878
1876(t)	1876(t)	1881	1883	1882	1886	1891	1886	1886	1885
		1890	1891	1892			1892	1898	1896
1896	1901	1899	1908	1907	1911	1911	1911		1914
		1914		1920			1920	1918	1921
1921	1921	1923	1925	1929	1931	1931	1930	1935	1932
1936	1941	1938-9	—	—	—	—	—	—	—

(t) = a "tentative" peak, so marked because the series begins; the actual peak may have occurred earlier.
n.a. = not available. Blanks = no apparent turning point. — = peak or trough not yet determined.
Rate of Growth of Output — A: comparable with chronology for Productivity.
Rate of Growth of Output — B: comparable with chronologies for Additions to Resources and for Depressions.
The data and methods of treatment underlying the chronologies will be described in the forthcoming report on the study.

economic growth, we have identified the beginnings and ends of periods of exceptionally severe and protracted depressions. We reason that if such depressions occur in a sufficiently regular fashion and leave their marks on the volume of unemployment, a series of unemployment ratios, smoothed to eliminate the effects of standard business cycles, will also show a long swing. The only long-term series of unemployment ratios available to us indicate that this is so.[5]

As already stated, the chronologies and the time series from which they are drawn support the assertion that the long swings in the rate of growth of output are the outcome of related long swings in the rates of growth of all three basic elements into which output change can be resolved — productivity, resources and intensity of resource use. The long swings in the rate of growth of output are matched by similar long swings in the rate of growth of productivity during each of the three long swings over which productivity could be measured.[6] With one exception, the eight cycles in the rate of growth of output since 1814 (B chronology) are matched by similar long swings in the volume of additions to resources. The exception occurs during World War I. Under the pressure of wartime demand, the rate of growth of output rose. Immigration, however, was sharply reduced so that the rate of growth of the labor force continued to fall. Although the volume of capital formation rose, certain categories of private investment were also depressed by wartime costs and restrictions. We conclude, therefore, that in this case, the acceleration of output growth occurred without a matching rise in the rate of growth of resources as a whole. Finally, each of the eight long swings in the rate of growth of output was accompanied by one and only one severe and protracted depression.[7]

The sequence in which our four variables rose and fell was notably regular — an impressive finding in view of the crudity of our data and smoothing technique. The rate of growth of productivity reached its peaks and troughs at about the same time, or sometimes before, the rate of growth of output did. The volume of additions to resources reached peak and trough levels considerably later, sometimes several years later, than either productivity or output growth. At about the same time the rate of growth of resources turned down, the economy entered a severe depression from which it began to emerge at about the time the rate of growth of resources turned up.

This sequence of events lends itself to interpretation. The main lines of what we consider to be a promising explanation were briefly sketched in the last Annual Report.[8]

Work Plans

Our chief aim during the coming year is to complete the preparation of a preliminary report of the work on long swings in U.S. growth up to the stage we have now reached. This report will attempt to present the main features of the long swings in greater detail than the table above suggests and with full consideration of the evidence. The report will also explore the chief explanations of long swings suggested by these empirical characteristics with a view to defining the direction of additional work.

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[5] The average standings during business cycles of Stanley Lebergott's estimates of the proportion of nonfarm workers unemployed moves in long swings whose peaks and troughs (inverted) are:

Peaks	*Troughs*
1905	1909-10 (subsidiary trough, 1915)
1916-17	1921-22
1925-26	1935

A similar swing with turning points in earlier years may be observed in the rate of change of the unemployment ratio between business-cycle averages (cf. S. Lebergott, "Annual Estimates of Unemployment in the US, 1900-1950," in *The Measurement and Behavior of Unemployment,* Princeton University Press for the National Bureau of Economic Research, 1957.

[6] John Kendrick's more carefully prepared productivity estimates, which we have just had a chance to inspect, bear this out. Moreover, they go somewhat further. When smoothed in a fashion comparable with the treatment of the series underlying output chronology B, they display long swings which regularly match the larger number of cycles indicated by the B chronology.

[7] All the depression periods but one (1920-21) were abnormally long as well as severe. One short depression, 1937-8, was as severe as several we included in our list. But it fell outside the limits of our general chronology. It might, however, be argued that sustained recovery from the depression beginning 1929 did not start until 1938-9.

[8] National Bureau of Economic Research, *Investing in Economic Knowledge,* 38th Annual Report, May 1958, pp. 47-66.

During the past year, we have also compiled a considerable quantity of material bearing upon long cycles in construction, an activity which we believe plays a crucial part in producing the general long swings we observe in the economy. When certain measurements of the secular changes in these data have been made we hope to begin a more detailed study of construction cycles than we can include in the preliminary report referred to above.

MOSES ABRAMOVITZ

LONG SWINGS IN THE GROWTH OF POPULATION AND LABOR FORCE

Discussion of the historical record of United States population growth has typically been concerned with the underlying primary trend, although some attention has also been paid to the character of population change during business cycles. Recently several investigators have pointed out that a number of time series relating to population growth and movement exhibit in addition fluctuations considerably longer in duration than the usual business cycle — swings lasting upwards of 15 or 20 years — and have subjected these movements to examination.[9]

The importance of this finding scarcely needs to be stressed. If it can be established that population grows in systematic long swings, the procedures presently employed in projecting the future size and composition of the population would require drastic reconsideration. More fundamental, and of more immediate importance to the present study is the question of the factors responsible for such swings and the relation they bear to those in other aspects of the economy, either as cause or effect. Since population change exerts a dual influence — in affecting, on the one hand, the supply of labor, and, on the other, the demand for goods — it is clear that it must play an important part in any attempt at a comprehensive explanation of long swings in economic growth.

Considerations such as these were responsible for initiation of the present study last spring. The purposes of this study, which is conceived within the broader framework of that of long swings in the economy as a whole, are, first, to synthesize and extend the present description of long swings in population and labor force growth and movement, and, second, to determine as far as possible the factors responsible for these swings. Among the principal variables that have been or will be examined are: rate of total population increase, rate of natural increase, birth rate, death rate, immigration rate, internal migration rate, marriage rate, rate of family or household formation, and rate of labor force growth. The study is concerned not only with the movement of these variables for the aggregate population but also with the differential behavior of population when subdivided by age, sex, color or race, nativity, farm-nonfarm or rural-urban residence, region or state, and so on. The space and time dimensions of the study are the United States since the early nineteenth century.

Table 2 presents a tentative chronology of long swings in total population and labor force for the period since 1870. The reference chronology through 1940 derived by Abramovitz for the rate of growth of total output and presented above in his report is repeated here for comparison. Both population and labor force exhibit three peak-to-peak swings from 1870 to World War I and an additional one and a half swings through the mid-1930's. The number of swings during this period conforms on a one to one basis with those in the rate of growth of output, except for the additional output swing around World War I. The population and labor force swings tend to lag substantially behind those in output, with a minor exception occurring after the first World War. Since the mid-thirties the rate of growth in the labor force has shown an additional one and a

[9] Cf. Simon Kuznets, "Long Swings in the Growth of Population and Related Variables," *op. cit.*, and *Capital in the American Economy: Its Formation and Financing, op. cit.*, Chapter VII; Dorothy S. Thomas, "Age and Economic Differentials in Interstate Migration," *Population Index*, Vol. 24, No. 4, October 1958, pp. 313-325, and "Some Aspects of a Study of Population Redistribution and Economic Growth in the United States, 1870-1950" in United Nations, *Proceedings of the World Population Conference, 1954, Volume II*, pp. 667-713; Margaret S. Gordon, *Employment Expansion and Population Growth*, 1954, chaps. 6 and 8; and Brinley Thomas, *Migration and Economic Growth*, Harvard University, 1954, Chapter VII.

Table 2

CHRONOLOGY OF PEAKS AND TROUGHS IN THE RATE OF GROWTH OF TOTAL POPULATION AND TOTAL LABOR FORCE, 1870-1957, AND IN RATE OF GROWTH OF OUTPUT, 1870-1940

	Rate of Growth of Total Population (including Armed Forces Overseas)	*Rate of Growth of Total Labor Force*[a]	*Rate of Growth of Output*
Peak	1871(+)	1873(+)	1864
Trough	1878	1878	1874
Peak	1882	1883	1881
Trough	1889	1888	1886
Peak	1891	1893	1890
Trough	1897	1898	1892
Peak	1909	1905	1899
Trough			1911
Peak			1914
Trough	1919	1909	1920
Peak	1923	1923	1923
Trough	1935	1935	1930
Peak		1941	1938-9
Trough		1946	
Peak	1955(+)	1951(+)	

[a] The series prior to 1900 is a backward extension of an annual labor force series on the basis of quinquennial observations on the rate of change of the male population of working age, and all observations for this period fall on the years ending in 3 and 8.

half swings, the most recent peak occurring tentatively in 1951. In contrast, the rate of population growth has not yet shown a clearly defined peak since the beginning of the upswing in the mid-thirties. While the swing has leveled off since around 1948, the highest rate yet reached was in the most recent business cycle, centered on 1955.

Table 3 shows for the several color-nativity components of the population the extent to which the rate of total increase and its component elements showed movements conforming to the long swings in the rate of total increase of the total population since 1870, presented in Table 2. The impressive feature is the unanimity of results — the rate of change of every component series shows a positive conformity index of 50 or higher. Of course, many of the series are to some extent intercorrelated because of their arithmetic relationships. Moreover, the number of observations on long swings is quite small, amounting to 8 in the case of the native and foreign born white populations, and 9 for the other groups. For example, the index of +50 for the birth rate of the native born white population actually means only that instances of positive conformity occurred in six cases out of eight. Hence, only limited confidence can be placed in the index for any one series. On the other hand, while some intercorrelation exists among the series, it does not necessitate conforming movements. And even for the largely independent series — the birth rate, death rate, and migration rate — the coefficients are uniformly fairly high. This agreement in results suggests that the forces responsible for long swings in the rate of total population growth typically made themselves felt in virtually all of the underlying component series. In the case of the rates of total and natural increase and the migration rate, this typically took the form of a swing in the level of the series; in the case of the birth and death rates it was more often an increase and decrease in the rate of change of the series rather than its absolute level.

Table 3

INDEX OF CONFORMITY OF RATE OF CHANGE IN SPECIFIED SERIES TO LONG SWING EXPANSIONS AND CONTRACTIONS IN RATE OF TOTAL INCREASE OF TOTAL POPULATION, 1870-1955

	All color-nativity groups	WHITE			
		Total	*Native born*[a]	*Foreign born*[a]	*Non-white*
Rate of total increase	+100	+100	+75	+100	+56
Rate of natural increase	+100	+100	+75	+75	+67
Birth rate	+78	+67	+50	—	+78
Death rate (sign reversed)	+100	+78	+50	+75	+56
Rate of net migration	+100	+100	—	+100	—

[a] Omits final expansion from 1933 to 1953 because of incomplete data.

While all of the component series contributed to the swings in the rate of total increase of the total population, their relative importance differed considerably. On the average the most important single factor by far was the net migration rate of the foreign born population. Next in order were the birth and death rates for the native white population, and least important, the birth and death rates for the nonwhite population and the death rate for the foreign born.

Some significant changes in the characteristics of the long swings deserve mention. In the twentieth century, there has been a sharp rise in the contribution of increased fertility and a drop in that of immigration to total population increase. And while the rate of internal migration has typically conformed, it has shown increasing amplitude in the recent period, in contrast to the net immigration rate, which has not only declined markedly in terms of level but also in amplitude of movement. Finally, recent swings in the labor force take much more the form of participation rate changes than population changes via immigration as in the past, and in consequence the conformity between population and labor force swings has disappeared.

We plan to push the description of the historical character of long swings considerably further, especially in distinguishing the extent of geographic diffusion, the relative participation of rural versus urban segments of the population, and in a more comprehensive examination of the internal migration patterns. However, even the preliminary results bear on some of the explanatory hypotheses which we propose to explore. At the conceptual level one may distinguish between two principal lines of explanation of the fluctuations in aggregate population and labor force. On the one hand there is the position, represented for example by the views of Simon Kuznets, that the swings represent primarily a response to domestic economic conditions. On the other, there is the hypothesis that they are essentially exogenous to the domestic economy—arising for example from a built-in mechanism such as an echo effect via changes in age composition of some earlier impulse to fertility, or as suggested by Brinley Thomas, from the impact of waves of immigration originated by factors abroad.

While we plan to test both lines of speculation, it is worth noting that the view of the swings in demographic factors as a response to economic conditions lends itself well to explanation of some of the changing features of these swings noted above. Thus one may reason that long swings in the economy at large give rise to long swings in the demand for labor, and that before World War I these were felt primarily by the foreign-born population. The income and employment opportunities generated during an expansion were met by a marked surge of immigration from abroad. With the decline in these opportunities during contraction, the rate of immigration abated. Consistent with this view is the evidence that the birth and death rates for the foreign born population exhibited greater variability than those for the native born during this period. With the restriction of free immigration, however, the effect of swings in labor demand was focused much more on the native population. Greater pressure was placed on marginal segments of the labor force, such as women and older men, and movements in the labor force were accomplished more by changes in participation rates than by population changes via immigration. For the same reason the amplitude of swings in internal migration rose, while that in immigration fell. Finally, the sharply increased impact on the native born population resulted in a much more marked fertility response than earlier, and gave rise to an actual upswing in the level of the birth rate rather than simply a slowing down in the rate of decline as formerly.

So that these lines of thought may be tested, we are presently looking into the availability of series on income and unemployment, and in particular for materials that may throw light on the question of the differential effects of changes in these factors.

Since 1900, the availability of annual estimates for components of population and labor force growth and movement makes possible a more intensive study. For the most part the analysis will follow the general lines sketched above. In addition, however, we plan to explore the patterns of change of the demographic vari-

ables within business cycles, both because of their inherent interest and for comparison with long cycles.

We have assembled series for each state beginning in 1900 or later on the rate of increase, birth rate, death rate, and infant mortality rate of the total population. Under the guidance of Charlotte Boschan, these series have been processed on the secular program prepared for the IBM 704 computer. In addition the program for cyclical amplitudes and a new program for long swing averages has been used. The results of these runs are now being summarized in terms of various measures of central tendency and dispersion on the IBM 602A. A number of national series on the components of population change for the principal color-nativity groups have also been assembled. These have now been punched on cards, and are to be run through the same programs as the state series. Plans are currently being made for similar treatment of a number of regional series on the rate of increase of the farm population and its components of change.

RICHARD A. EASTERLIN

UNITED STATES GROWTH BEFORE 1860

The central focus of this study is to explore the economic interrelationships involved in U.S. expansion during 1790-1860 in order to get an integrated view of the way in which U.S. growth took place. The three statistical chapters in the report present a great many series unearthed from early government documents (particularly on interregional trades). New series include the balance of payments, 1790-1860 (presented at the Income and Wealth Conference in September 1957 and to be published in Studies in Income and Wealth, Vol. 24) and the terms of trade of the United States, 1790-1860.

DOUGLASS C. NORTH

EXPLORATORY STUDY OF ECONOMIC GROWTH AND STRUCTURE

The purpose of this study is to survey the need for and scope of a systematic quantitative comparative study of economic growth and to explore alternative approaches to such a study. This project was started in the spring of 1958 with the help of a grant from the Ford Foundation.

Two conferences on the subject were held — one in Princeton in June and another in Washington in July — part of the discussion being based on about ten especially prepared papers by experts in the United States and abroad. A draft of a report making use of these papers and the discussion at the two conferences was circulated in November to participants as well as to a number of experts who could not attend the conferences. Comments and suggestions have been received and it is expected that a revised draft will be submitted to the Directors this spring.

The table of contents together with a list of the contributed papers will give an idea of the scope of the report.

PART I — EXPLORATORY REPORT, by Raymond W. Goldsmith

PART II — SUPPLEMENTARY MEMORANDA

F Some Suggestions for Research on Comparative Development, by Albert G. Hirschman

G On Historical Comparisons in the Study of Economic Growth, by Bert F. Hoselitz

H On Comparative Study of Economic Structure and Growth of Nations, by Simon Kuznets

I Notes on Comparative Analysis of National Economies, by Lloyd G. Reynolds

J Some Notes on Research Possibilities, by Joseph J. Spengler

K Comparative Studies of Economic Growth, by Jan Tinbergen

RAYMOND W. GOLDSMITH

ECONOMIC GROWTH OF THE SOVIET UNION

The object of the study, begun in 1954 under a grant from the Rockefeller Foundation, is to set forth and analyze the evidence bearing on the question: How rapidly has the Soviet economy grown? The study was undertaken in full recognition of the inherent difficulty of arriving at an answer and of the special difficulties in securing reliable information.

Studies of the industrial, transportation, and agricultural sectors and of Soviet population and employment are reported below. A summary report is planned that will bring together the findings of these studies as well as materials on a number of other sectors, including housing construction and the standard of living.

Industrial Production

A draft monograph, "Industrial Production in the Soviet Union," has been mimeographed and distributed for review and comment. It includes the following chapters:

1. Introduction
   - Which Period to Study
   - Dating of Periods and Subperiods
   - Nature and Plan of the Study
2. The Data: Knowns and Unknowns
   - Sources of Data
   - Reliability of Data
     - Distortive elements in the statistical system
     - Deficiencies and distortions in published data
     - Internal evidence on reliability
   - Some Generalizations about Soviet Data
3. The Product Mix: Composition, Quality, and Variety
   - A General View of Quality of Production
   - Changes in Quality in Individual Industries
4. Growth Trends: A Structural Study
   - Trends over the Soviet Period as a Whole
   - Trends over the Pre-Plan and the Plan Years
   - Retardation in Growth
5. Growth Trends: A Comparison with Industrial Developments in the United States
   - Study of Soviet Lags behind the United States
   - Comparison of Soviet and American Growth Rates
6. General Measures of Industrial Growth: Technical Details
   - The Index Number Problem
   - General Description of Our Indexes
   - Details on Weights and Weighting Systems
   - Details on Product Coverage
   - Comparison of Our Production Indexes With Others
     - The official Soviet index
     - Indexes by Western Scholars
7. General Measures of Industrial Growth: A Comparison of the Soviet Union and the United States
   - Total industrial production
   - Industrial production per head of population
   - Industrial production and employment
   - The structure of industrial growth
   - Relative levels of industrial production in the Soviet Union and the United States
8. Some Details of Growth in the Interwar and Postwar Periods
   - The Pre-Plan Period
   - The First and Second Five Year Plans
     - The disappearance of small-scale industry
     - General economic developments
     - Output of machinery
     - Growth cycles
   - The Third Five Year Plan
     - General economic developments
     - Output of munitions
     - Some conclusions about industrial growth, 1937-1940

Postwar Industrial Developments
The extent of war damage
Recovery of industrial production, 1945-1950
Postwar growth, 1950-1955
Growth in 1956 and 1957

It would be impossible to summarize the findings of this monograph in the space available here. However, we do present in Table 4 some preliminary indexes of labor productivity, which supplement the production indexes given in last year's annual report. The indexes of labor productivity are derived from moving-weight production indexes, using both 1928 and 1955 weights, and from unweighted numbers of persons engaged, derived in part by indirect procedures from various official Soviet data. The usual warnings about the shortcomings of Soviet data and all statistics derived from them need to be issued, and perhaps even more strongly emphasized in this case, because comprehensive data on industrial employment have not yet been published in any systematic form by the Soviet government.

Adam Kaufman is revising his manuscript on "Small-Scale Industry in the Soviet Union."

Marie-Christine Culbert and Julia Kamermacher assisted in the work on the industrial sector.

G. WARREN NUTTER

Statistics of Industrial Output

I have prepared a revised report on "Soviet Statistics of Physical Output of Industrial Commodities: Their Compilation and Quality," which has been distributed for review and comment. The contents are as follows:

PART I INTRODUCTION

PART II THE SOVIET STATISTICAL SYSTEM
Brief History of the Statistical Apparatus
Some Characteristics of the Statistical System
Reporting
The Data and Their Flow

PART III THE QUALITY OF THE DATA
Soviet Concern with Reliability
Errors; Mechanization
Distortion in the Enterprise
Write-ups by the Worker
Write-ups by Management
Devaluation of the Physical Unit of Measure
Underreporting: Write-Downs
Checks to Distortion
Distortion at Intermediate Levels
Distortion in the Economic-Administrative Hierarchy
Distortion in the Statistical Apparatus
Distortion at Publication
Numerical Distortion
Descriptive Distortion
Summary and Conclusions

GREGORY GROSSMAN

Table 4

OUTPUT PER PERSON ENGAGED IN SOVIET INDUSTRY: INDUSTRIAL GROUPS, BENCHMARK YEARS
(1913=100)

	1913	*1928*	*1933*	*1937*	*1940*	*1950*	*1955*
All industrial products	100	110	85	121	117	138	167
Ferrous & nonferrous metals	100	133	116	255	281	244	374
Fuel & electricity	100	117	150	259	287	284	369
Fuel	100	101	116	178	191	187	238
Electricity	100	184	173	298	371	410	593
Chemicals	100	85	64	109	92	157	153
Construction materials	100	118	81	115	97	101	136
Wood materials	100	121	88	101	90	98	134
Mineral materials	100	108	57	194	127	110	144
Machinery	100	97	105	169	109	195	180
Food & allied products	100	112	90	111	108	110	154
Textiles & allied products	100	109	94	109	118	127	152

Transportation

The summary report, *Freight Transportation in the Soviet Union,* was published as Occasional Paper 65. The mimeographed monograph, "Transportation in the Soviet Union" (briefly described in last year's annual report), is being revised in the light of comments and recently published Soviet data. It is being prepared for final review.

ERNEST W. WILLIAMS, JR.

Agricultural Production

Work on agricultural production continues to be hampered by the paucity of published Soviet statistics on output of agricultural products. Output series covering the entire Soviet period have been compiled for aggregate grain (and separately for wheat, rye, and corn), cotton, long-fiber flax, hemp fiber, sugar beets, sunflower seed, potatoes, meat and lard, milk in all uses, eggs, and wool. Series on sown area have been compiled for a larger group of products. A monograph is being drafted utilizing these data and others collected and analyzed over the course of the study, some of which have been described in earlier annual reports. A summary report is also being prepared as a prospective Occasional Paper.

GEORGE M. KUZNETS

Agricultural Input and Productivity

The major topics that we will cover in our report are the following: (1) Estimates of the most important inputs used in agricultural production (labor, land, machinery and other capital items) for the period from 1925 to date. (2) Changes in the productivity of Soviet agriculture, based on comparisons of changes in output and the aggregate level of inputs as well as changes in output-input ratios for individual inputs such as labor, land and capital. (3) An analysis of the implications of the stated Soviet goal of overtaking the United States in per capita output of meat and milk, including an indication of the requirements for feed and the relationship of those requirements to the current levels of output in the Soviet union. (4) Estimates of the income of the agricultural population, valued in current rubles and in rubles of constant purchasing power, with comparisons with other groups in the rest of the economy.

My associates in this venture are Arcadius Kahan and Douglas Diamond.

D. GALE JOHNSON

Population and Employment

A working memorandum on Statistics of Population, Labor Force, and Employment in the Soviet Union is being mimeographed for review and comment. The table of contents is as follows:

I. Population
   - A. Introduction
   - B. Annual Estimates of Total USSR Population, 1914-1940
   - C. Annual Estimates of USSR Population since World War II
   - D. Urban-Rural Population Estimates
   - E. Age and Sex Distribution of USSR Population

II. Labor Force
   - A. Introduction
   - B. The Soviet Labor Force in 1926
   - C. The Urban Registration of 1931
   - D. Estimates of Total Labor Force, 1939 and 1955
   - E. Aggregative Estimates of Total Labor Force

III. Employment of Wage and Salary Workers
   - A. Introduction
   - B. Annual Employment Series — Agricultural and Nonagricultural
   - C. Employment by Industry Division ("Labor" Series)
   - D. Industrial Employment Statistics ("Industry" Series)
   - E. Pre-World War II Distribution of Employment in Areas Annexed by USSR

Bibliography

HAROLD WOOL

TRENDS IN WAGES AND PRODUCTIVITY IN THE UNITED STATES

This research program, undertaken with the assistance of grants from the Alfred P. Sloan

Foundation, is close to completion. A summary report, *Basic Facts on Productivity Change,* by Solomon Fabricant was published in January 1959. Clarence D. Long's report, "Wages and Earnings in the United States, 1860-1890," is being prepared for press. The status of Albert Rees' work on wages and John Kendrick's on productivity is indicated below.

Real Wages

A draft manuscript "Real Wages in Manufacturing, 1890-1914" is being revised after review by the staff. The principal results of this study were reported in last year's annual report.

I am now working on a new series of average hourly compensation of manufacturing wage earners for 1914-1957. This series differs from those now available in two principal ways. First, it includes "fringe benefits" in addition to cash wages. Second, it relates to hours at work rather than hours paid for. In addition, the series attempts to close some gaps in the data for the years 1914-29.

ALBERT REES

Productivity

A preliminary draft of the manuscript "Productivity Trends in the United States" was completed last spring. Based on comments received from the staff reading committee, the revision of text and appendixes was in an advanced stage at year-end. In addition, the several sets of productivity estimates for the economy have been revised and extended through 1957. It is expected that the entire manuscript will be submitted to the Board of Directors this spring.

JOHN W. KENDRICK

TRADE UNION MEMBERSHIP

The union membership figures for a proposed monograph on this subject are being revised and brought up to date. When completed they will continue the annual series of total union membership in the United States from 1934, the terminal year of Wolman's previous monograph, *Ebb and Flow in Trade Unionism,* to 1957.

New sources of information make it possible to reconstruct earlier figures for the vital period immediately following the enactment of the Wagner Act of 1935 and the years of the Second World War. Following the adoption of the Wagner Act an unprecedented wave of union organization spread through American industry. New unions were formed and established organizations gained members rapidly. The earliest available records of membership for this period in many instances grossly overstated the degree of union growth, for the figures frequently rested on unverified union claims and reports. It has now become possible to improve this record by means of estimates derived from dues receipts and other financial data. The result is a series of union membership figures consistent with our more recent figures and with our definition of union membership as the number of workers paying dues to a union.

LEO WOLMAN
LEO TROY

OTHER STUDIES

Clarence D. Long's book, *The Labor Force under Changing Income and Employment,* which deals with the factors determining the size of a nation's labor force over long periods as well as short, was published. Two reports that also deal with long run trends as well as shorter fluctuations are nearing publication: *The Merger Movement in American Industry, 1895-1956,* by Ralph L. Nelson, is in press, and "Wages in Germany, 1871-1945," by Gerhard Bry is being prepared for press.

Three conference proceedings volumes are being readied for press: "Trends in the American Economy in the Nineteenth Century," Studies in Income and Wealth 24; "Output, Input and Productivity Measurement," Studies in Income and Wealth 25; and "The Interrelations of Demographic and Economic Change in the Developed Countries," Special Conference Series 11.

Michael Gort's manuscript, "Diversification and Integration in American Industry" is being reviewed by the staff. Its six chapters are: I Concepts and Methods; II Diversification Patterns in 1954; III Integration and Non-

Manufacturing Activities; IV Trends in Diversification; V and VI The Directions of Diversification.

Douglass North has completed the collection of data on ocean freight rates, 1750-1914. His paper, "Ocean Freight Rates and Economic Development, 1750-1910" was published in the *Journal of Economic History,* December 1958.

"The Growth of Public Expenditure in the United Kingdom," by Alan T. Peacock and Jack Wiseman, has been reviewed by the staff and is being revised. This is one part of the study of government's role in modern economies assisted by a grant from the Ford Foundation. It is a companion report to Abramovitz' and Eliasberg's *The Growth of Public Employment in Great Britain,* which was published in 1957. For additional studies of governmental activity see Sections 2, 3 and 4.

A report on trends in capital formation and financing is described in Section 2. Studies bearing on the growth of U.S. foreign trade and on the relations between international capital movements and economic growth are reported in Section 5.

2. NATIONAL INCOME, CONSUMPTION, AND CAPITAL FORMATION

CONSUMERS' BUYING PLANS

The aim of this project is to investigate the relationships between purchases of durable goods by consumers and their purchase plans, expectations about economic events, and attitudes. The data have been obtained from mail questionnaires sent annually to member-subscribers of Consumers Union, the product testing and rating organization. The research is being supported by grants from the Relm Foundation and from Consumers Union as well as by other funds of the National Bureau.

Two special surveys were made in 1958. The first, in early April, was sent to some 33,000 people and elicited over 26,000 responses. Five differently worded questionnaires were used, each going to a randomly selected sub-group. The second, in early October, was mailed to 24,000 people; over 20,000 replies were obtained. The October questionnaire was designed as a re-interview of April respondents who agreed to answer identified questionnaires. April respondents were assigned identifying numbers, and the same numbers were stamped on the outgoing October questionnaires.

Aggregate Results

The survey taken in April 1958 (which turned out to be the bottom of the 1957-58 recession) indicated a sharp decline, relative to October 1957, in buying intentions for all major durable goods except used cars. The decline was about 25 per cent for new cars, and about 15 per cent for household durables. For the most part, the households in the survey had been unaffected by the recession in terms of such factors as income and income changes. Their expectations about personal financial prospects were generally favorable, though not so much so as in some previous surveys of the same group. The decline in buying plans seemed to be mainly associated with adverse expectations about general business conditions, and perhaps with dissatisfaction about price trends—people who expected favorable price movements (decline) had considerably more buying plans than others.

The level of prospective sales indicated by the April survey seems reasonable in the light of subsequent developments. Actual sales of new cars in the six-month period after April 1958 were about 10 per cent lower than in the preceding six months; sales of furniture and major appliances were about 5 per cent lower. These declines in purchases for the U.S. population as a whole are quite a bit smaller than the decline in plans reported above. But many people in the sample held pessimistic expectations about the trend of business conditions that were not borne out, since conditions improved steadily from May onward. Consequently, many people must have been "pleas-

antly surprised." In view of the fact that those with pessimistic business expectations in the April survey had fewer buying plans than those with optimistic expectations, this factor may have brought about an upward revision of purchase plans. This is not to say that other factors may also have turned out differently from what was expected, nor can we be sure that the relationship between intentions and expectations follows the pattern described above. Research now in progress will clarify this, since we can now examine individual plan fulfillment, making use of the April data for plans and the October reinterview survey for purchases.

The survey taken in early October showed a marked improvement relative to April in expectations and attitudes (except with respect to prices) but only a small increase in buying intentions. The latter were also considerably below the level of a year earlier, in October 1957. Preliminary analysis of the results suggests that price expectations may be a major factor in explaining why buying plans showed such a small increase when most of the factors that are associated with plans (past and expected income change, debt and asset change, etc.) improved between April and October.

Analysis of Factors Associated with Purchases and Plans

Most of 1958 was devoted to an intensive analysis of the relationship between buying intentions or purchases and other variables. In order to minimize the problem of intercorrelation between financial, expectational, and demographic variables, each of the five subsamples were stratified by age of family head and income class.

Two categories of questions may be put to these data: First, are expectational and financial factors more closely associated with short horizon and firmly held buying plans or with longer horizon and loosely held plans. Second, which expectational and financial factors seem to be most closely associated with buying plans and purchases?

Table 5 shows the average level of April 1958 buying plans for six and twelve months ahead, respectively, for households with the same age of head and the same income level but different expectations or financial situation. The average level of purchases for the same households over the period April 1957 to April 1958 is also shown.

Although households with either improved financial circumstances or favorable expectations had more buying plans for both the short and longer term period than other households, they had *relatively* more for the shorter period (on a percentage basis). This result suggests that buying plans are part of a rational decision-making process by these households, in which plans are contingent upon expectations. If such were not the case, one would expect that plans would tend to be randomly distributed with respect to expectations. The looser relationship between longer range plans and expectations is probably due to the greater uncertainty attached to future events; hence, the distribution of long range plans is more likely to be random with respect to any current variable.

The second question posed above — an examination of expectational and financial variables to find out which are most closely related to buying plans and purchases — yields some interesting but inconclusive results. It is clear that most of the variables examined are of some significance, comparing households in the same age group and income class. But since there are strong interrelationships among many of the variables tested, it is uncertain which of these variables is really significant and which appear significant only because of interrelationships with another variable.

The variables above all show a statistically significant relationship to buying intentions; their relationship to past purchases is usually, though not always, less strong and less consistent. Of the financial variables, all except total financial assets are strongly related to plans, but only the debt classifications show much relationship to purchases. It seems likely that those who made heavy purchases, relative to age and income, incurred debts in order to do so; to a lesser extent, these people also reduced liquid assets. But debts are inversely related to plans, partly, no doubt, because the purchases had already been made.

Table 5

AVERAGE LEVEL OF APRIL 1958 BUYING PLANS FOR HOUSEHOLDS WITH THE SAME AGE OF HEAD AND THE SAME FAMILY INCOME

(current dollars)

	RECENT CHANGE IN INCOME		
	Increase	*No Change*	*Decrease*
6 month plans	360	300	280
12 month plans	690	650	510
April 57-April 58 purchases	870	880	960
	EXPECTED CHANGE IN INCOME		
6 month plans	370	290	280
12 month plans	740	610	540
April 57-April 58 purchases	900	860	990

	LONG-RANGE FINANCIAL PROSPECTS				
	Improve Considerably	*Improve Somewhat*	*Improve Slightly*	*Remain the Same*	*Deteriorate*
6 month plans	440	340	310	260	250
12 month plans	790	660	650	610	580
April 57-April 58 purchases	1030	900	890	810	790

	EXPECTATIONS ABOUT BUSINESS CONDITIONS			
	Improve	*Stay the Same*	*Worsen*	*Worsen Considerably*
6 month plans	380	310	290	260
12 month plans	680	660	620	610
April 57-April 58 purchases	930	920	870	800

	ASSET CHANGE OVER PAST 6 MONTHS		
	Increased	*Unchanged*	*Decreased*
6 month plans	370	290	240
12 month plans	710	620	540
April 57-April 58 purchases	840	850	930

	AMOUNT OF FINANCIAL ASSETS	
	More than $2000[a]	*Less than $2000*
6 month plans	350	280
12 month plans	670	640
April 57-April 58 purchases	900	870

	AMOUNT OF PERSONAL DEBT			
	No debt	*Less than $500*	*$500-999*	*$1000-over*
6 month plans	350	330	290	280
12 month plans	660	680	670	560
April 57-April 58 purchases	750	830	1060	1260

	LENGTH OF TIME HOUSEHOLD EXPECTS TO REMAIN IN DEBT[b]			
	No Debt	*Less than 1 Year*	*1-2 Years*	*More than 2 Years*
6 month plans	340	380	210	220
12 month plans	670	730	580	430
April 57-April 58 purchases	760	920	1190	1110

[a] There were no systematic differences in the plans or purchases of people with $2000-$10,000 and those with over $10,000 in financial assets.

[b] The average level of plans and purchases for this group is slightly different from that for the preceding one because some people gave inconsistent answers to the two debt questions. The questionnaires were not edited to eliminate this kind of inconsistency because it seemed quantitatively unimportant.

One of the most interesting features of the above data is the strength of the relationship between long-range financial prospects and both buying plans and purchases. This finding supports the hypothesis, developed by Milton Friedman, that household consumption is affected by the subjectively estimated "permanent" income, rather than by the actual (measured) income in any given period of time. Further, the strength of the relationship between long-range prospects and buying plans is not diminished by taking account of additional variables. Table 6 shows the average level of buying plans for households with the same age and income plus the same value of a third specified variable, but with different long-range financial prospects.

One other interesting aspect of the data concerns the relationship between buying plans and price expectations. The gross relationship between these two, keeping age and income constant, is relatively weak. Households who expect prices to either rise or fall have more plans than households who expect prices to remain the same. However, if we also hold constant opinions about buying conditions, a comparatively strong relationship emerges; households who expect prices to fall have more plans and those expecting a rise have fewer than people expecting no change (Table 7).

The explanation for this relationship seems to be that the expectations of price increases are correlated with a generally favorable view of buying conditions, probably because the latter is related in turn to the expectation that business conditions will improve. Consequently, the joint expectation of rising prices and improved business tends to result in a relatively high level of buying plans, masking the tendency of the expectation of rising prices, taken by itself, to result in a relatively low level of buying plans.

A manuscript of a proposed Occasional Paper, "Consumer Expectations, Plans and Purchases: A Progress Report," is being reviewed by the Directors.

F. THOMAS JUSTER

INVESTMENT IN EDUCATION

This study, financed by a grant from the Carnegie Corporation of New York, is concerned with investment in the human agent, especially educational investment. A report in preparation contains two main sections. One discusses the general theory of human investment, contrasts it with investment in tangible capital, and develops several observable implications.

Table 6

AVERAGE LEVEL OF BUYING PLANS FOR HOUSEHOLDS WITH DIFFERENT EXPECTATIONS ABOUT LONG-RANGE FINANCIAL PROSPECTS, WITH AGE, INCOME, AND ONE OTHER SPECIFIED VARIABLE HELD CONSTANT

(current dollars)

VARIABLE HELD CONSTANT, ALONG WITH AGE AND INCOME	EXPECTATIONS ABOUT FINANCIAL PROSPECTS FIVE YEARS AHEAD				
	Improve Considerably	*Improve Somewhat*	*Improve Slightly*	*Remain the Same*	*Deteriorate*
6 month plans					
Business expectations	380	310	270	220	190
Income expectations	420	310	280	260	200
Price expectations	430	320	280	260	210
Opinion about buying conditions	450	330	300	250	270
Debt	340	280	270	160	170
12 month plans					
Business expectations	700	640	620	540	530
Income expectations	650	610	600	520	560
Price expectations	730	650	630	560	530
Opinion about buying conditions	740	650	620	560	590
Debt	560	590	540	500	450

Table 7

AVERAGE LEVEL OF BUYING PLANS AND PURCHASES FOR HOUSEHOLDS WITH DIFFERENT PRICE EXPECTATIONS, WITH AGE, INCOME, AND OPINION ABOUT BUYING CONDITIONS HELD CONSTANT

(current dollars)

	EXPECTATIONS ABOUT PRICES		
Plan or Purchase Category	*Increase*	*No Change*	*Decrease*
6 month plans	300	320	380
12 month plans	600	630	740
April 57-April 58 purchases	820	830	820

This theory helps to explain why the incomes of highly skilled persons rise more rapidly with age than the incomes of unskilled persons do. It shows why actual incomes may often be inversely related to "permanent" incomes, as these have been defined by M. Friedman in *A Theory of the Consumption Function.* It is also shown that on-the-job training is usually paid for by the employee, not by the employer, and several implications of this are explored.

In the second section I try to estimate the rate of return to investment in formal education. The basic data, which give the incomes of persons by color, sex, age and educational class in a particular year, were adjusted for such factors as unusual unemployment and the probability of surviving to a given age. These adjusted income data were related to the direct and indirect costs of education to obtain rates of return. It has often been argued that investment in education is limited because many people are unable to pay educational costs. On the other hand, investment in education is encouraged by the large subsidy to education. Educational capital, like all capital invested in unincorporated enterprises, is also encouraged by the tax on the return to corporate capital. I tried to determine the relative importance of these conflicting forces for both 1940 and 1950. If their net effect has been to discourage investment in education, the rate of return on educational capital should be greater than that on corporate capital. It appears that the return to urban white males calculated on private costs of a college education alone was greater than the average private return to tangible capital. The return to urban white males calculated on the total costs of a college education was, however, less than the before-tax return to tangible capital invested in corporations.

In 1940 the rate of return to nonwhite male college graduates was less than that to whites, presumably because of discrimination against nonwhite graduates. Also, the rate of return was greater to nonwhite graduates employed in the South than to those employed in the North. This result may seem surprising, but it is supported by other evidence (see Friedman, *op. cit.*).

There is very limited evidence before 1940 on the income of persons with different amounts of education. Some evidence on earnings in different occupations indicates a secular decline in the ratio of skilled to unskilled earnings and a secular increase in the real difference between their earnings. Since the rate of return on skilled training depends more closely on the real difference than on the ratio of these earnings, there is no evidence of any secular decline in this return. Similarly, the secular decline in the ratio of earnings by college graduates to those by high school graduates, which these occupational data suggest, may be consistent with no secular decline in the rate of return on college training. In fact, unless this ratio declined considerably the rate of return would have increased.

To turn to another aspect of investment in the human agent, I presented a paper entitled "Economic Aspects of Fertility" at the Universities-National Bureau Conference on "The Interrelations of Demographic and Economic Change." It was shown, among other things, that there is a close connection between the decision to have children and the decision to

give children formal education and other types of training. This connection between the quantity and "quality" of the population will be explored further in subsequent work.

GARY S. BECKER

THE DISTRIBUTION OF WEALTH ACCORDING TO ESTATE TAX RETURNS

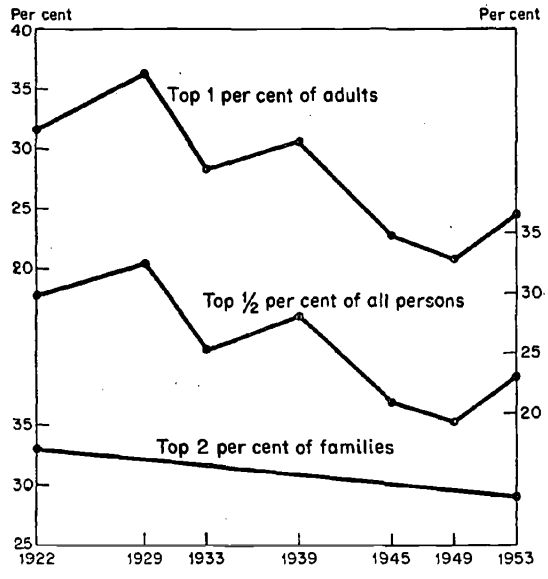
This study was initiated in September 1957 and carried forward while the author was Research Associate. The principal source of data used is tabulations of federal estate tax returns, including a special tabulation made available to the National Bureau by the Internal Revenue Service for the year 1953. A report dealing with the characteristics of the top wealth-holder group, the composition of their estates, and their share of the national wealth, 1922-1953, is being prepared.

A paper reporting on changes in the share of wealth held by top wealth-holders was read at the December meetings of the Econometric Society, and is being revised for publication as an Occasional Paper. The paper presents estimates derived from federal estate tax data of the number of (living) top wealth-holders and of the aggregate amounts of wealth held by them for selected years between 1922 and 1953. Changes in the concentration of wealth during that period are delineated by relating the numbers of top wealth-holders to the population and the amount of wealth held by the top group to independent estimates of the amount of wealth held by all persons. A summary of the findings follows.

Thirty per cent of the assets and equities of the personal sector of the economy in 1953 are assignable to the top wealth-holders, i.e., persons with $60,000 or more of wealth, who were 1.6 per cent of the total adult population that year. The top group owned at least 80 per cent of the corporate stock held in the personal sector, virtually all of the state and local government bonds, nearly 90 per cent of corporate bonds, and between 10 and 35 per cent of each other type of property held in the personal sector in that year. These relationships are quite close to those found by the Survey of Consumer Finances for the same year.

Chart 1

SHARE OF PERSONAL SECTOR WEALTH (EQUITY) HELD BY TOP WEALTH-HOLDERS, SELECTED YEARS, 1922-1953



Source: "Changes in the Share of Wealth Held by Top Wealth-Holders, 1922-1953," by Robert J. Lampman, NBER, 1959.

The top wealth-holder group, defined according to estate-tax requirements, has varied in number and per cent of the total population over the years. Also, the group's share of total wealth has varied. It appears, however, that the degree of inequality in wealth-holding increased from 1922 to 1929, fell to below the pre-1929 level in the 1930's, fell still more during the war and to 1949 and increased from 1949 to 1953. However, the degree of inequality was considerably lower in 1953 than in either 1929 or 1922.

To compare degrees of wealth concentration it is convenient to consider a constant percentage of the total adult population. The top one per cent of adults held 32 per cent of personal sector equity in 1922, 36 per cent in 1929, 31 per cent in 1939, and 24 per cent in 1953. The decline in inequality of wealth concentration is less when families are considered as the wealth-holding units, since married women are an increasing part of the top wealth-holder group. We estimate families by subtracting

married females from all adults. Defined on this basis, the top two per cent of families held 33 per cent of personal sector wealth in 1922 as compared to 29 per cent in 1953 (see Chart 1).

In these figures two types of error in estimation are likely to offset each other in some degree. On the one hand, the selection of mortality rates tends to understate the decline in inequality. On the other hand, differences in completeness of reporting personal sector wealth and of estate tax wealth may tend to overstate the decline. It is difficult to imagine any combination of errors which would yield a result of increasing concentration over time. Interestingly, the conclusions about changes in concentration of wealth over the years are not affected by selection of one or another variant of wealth.

ROBERT J. LAMPMAN

THE MOBILITY OF CAPITAL IN MANUFACTURING INDUSTRIES

The study of the capital stocks of all manufacturing industries for the period 1938 through 1954, and the rates of return thereon, is in part a task of data collection: compiling in more useful and comparable form the information provided by the corporate income tax returns. This task has been completed, and work is now progressing on the second task: the analysis of some economic questions on which this wealth of new information sheds light.

One of the most ancient propositions of economic theory invites reflection in this context: the tendency of rates of return to approach equality under competition. As the proposition stands, it has no obvious empirical counterpart: almost any observable distribution of rates of return would be compatible with it—in particular the distributions in Table 8. These data pertain to "unconcentrated" industries in which the four largest firms account for less than fifty per cent of the "value-added" of the respective industries, and the markets are national in scope.

A part — a substantial part — of the observed dispersion of rates of return can fairly be attributed to deficiencies of the data. For

Table 8

THE DISTRIBUTION OF UNCONCENTRATED MANUFACTURING INDUSTRIES BY AVERAGE RATES OF RETURN

Average Rate of Return (%)	*1938-47*	*1947-54*
0-1		1
1-2		
2-3	1	
3-4		3
4-5	2	6
5-6	6	8
6-7	5	7
7-8	16	10
8-9	6	10
9-10	3	7
10-11	3	5
11-12	1	
Total	43	57
Mean Rate	7.43%	7.10%
Standard Deviation	1.63%	2.18%
Coefficient of Variation	21.9%	30.7%

example, the rates are in book value prices, so depreciation and assets are valued at prices that vary among industries. Another well-known difficulty is the tendency of officer-owners of small corporations to withdraw a portion of their property returns as salaries. An estimate of the effect has been made by means of a regression of rates of return on the proportion of assets held by small corporations, and use of this correction reduces the coefficient of variation in 1947-54 from 30.7 per cent to 25.4 per cent. A portion of the observed differences may also be risk premia but several measures of risk, such as the dispersion of rates among firms and the fluctuation of industry over time, have proved to be uncorrelated with the average rate of return. The remaining dispersion of average rates of return is partly due to differences which would persist even in the long run, arising out of differential impacts of tax laws and other factors.

Work is progressing on the rate at which industries lose their relatively prosperous or unprosperous positions, and the factors governing this rate. In general, the correlations between rates of return in the same industries in different years fall off rapidly as the period lengthens, as the following sample indicates:

Average of Correlations Between Rates of Return

	1938-47	*1947-54*
Successive Years (T and T+1)	.69	.75
Years Separated by Two Years (T and T+3)	.18	.60
Years Separated by Four Years (T and T+5)	.06	.50
Years Separated by Six Years (T and T+7)	.04	.20

It will be noticed that differentials in industry earnings have persisted longer in the postwar period. The correlations are much higher over long periods in the concentrated industries.

The sources of disequilibrium in industry rates are highly diverse — new inventions, shifts in demands, changes in foreign markets, etc. One summary variable of some of these disturbances which are not fully anticipated, and therefore affect realized rates of return, is unexpected changes of product prices. Unexpected price changes have been approximated by the standard deviation of price indexes after elimination of their linear trend. The correlation between the fluctuations of industry rates (i.e., their standard deviations) and this measure of unexpected price changes is .336, for the 58 industries for which price indexes can be constructed. On the other hand, there is no relationship between the standard deviation of each industry's rates of return and total price fluctuations.

The full study will deal also with determinants of the rates of growth of capital and the relationship between capital and labor and their rates of remuneration.

GEORGE J. STIGLER

CAPITAL FORMATION AND FINANCING IN THE UNITED STATES

Work on the study of long-term trends and future prospects in capital formation and financing in the United States, which has been supported by a grant from the Life Insurance Association of America, is in its final stages. Reports on the investigation have been issued as papers (listed in the 1956 *Annual Report*) and monographs. Three monographs have been published:

Capital Formation in Residential Real Estate: Trends and Prospects, by Leo Grebler, David M. Blank, and Louis Winnick (1956)

Capital in Agriculture: Its Formation and Financing since 1870, by Alvin S. Tostlebe (1957)

Financial Intermediaries in the American Economy since 1900, by Raymond W. Goldsmith (1957)

One monograph is in press:

Capital in Transportation, Communications and Public Utilities: Its Formation and Financing, by Melville J. Ulmer

Of the two remaining sector monographs, "Capital in Manufacturing and Mining: Its Formation and Financing," by Daniel Creamer, Sergei Dobrovolsky and Israel Borenstein, has been approved by the Board, and "Trends in Government Financing," by Morris Copeland, will shortly be submitted for Board review.

The summary monograph that I am preparing, "Capital in the American Economy: Its Formation and Financing," consists of two volumes (for an outline of the first and brief description of the second, see *Annual Report* for 1957, p. 22). It was reviewed by the staff during the summer, and work is now under way on revising the analytical volume in the light of the comments received. It is hoped that the monograph will be ready for review by the directors in the spring, and, unless unforeseen difficulties arise, ready for the press in the summer of 1959.

SIMON KUZNETS

NATIONAL WEALTH AND NATIONAL BALANCE SHEETS

A manuscript discussing the growth of national wealth and changes in its structure during the postwar period, with some attention to the relation between capital and output, was nearing completion at the end of the year. One of the features of this draft is that it supplements our earlier estimates of net stock of reproducible assets with comparable gross stock estimates. Since it is doubtful whether the gross or the net stock figures, or some compromise between them, is best adapted to the measurement of productive capacity, both estimates of the stock of capital are needed.

Morris Mendelson and I have assembled

most of the material for annual national and sectoral balance sheets for 1945 through 1955, distinguishing the following eleven sectors: nonfarm households; personal trust funds; farmers; unincorporated business enterprises; manufacturing and mining corporations; public utility corporations; other nonfinancial corporations; financial corporations; state and local governments; federal financial institutions; and federal government. Most of the basic data were available from our saving or national wealth studies and Morris Mendelson's flow of funds study, but considerable work was required to make the material fit into a consistent framework of sectoral and national balance sheets on the basis of current prices (replacement cost for reproducible assets).

RAYMOND W. GOLDSMITH

OTHER STUDIES

The National Economic Accounts of the United States: Review, Appraisal and Recommendations, a report by the National Accounts Review Committee of the National Bureau of Economic Research, was published. This report was made at the request of the Bureau of the Budget and was reprinted from the published *Hearings* of the Subcommittee on Economic Statistics of the Joint Economic Committee (85th Congress, 1st Session).

A Critique of the United States Income and Product Accounts and *An Appraisal of the 1950 Census Income Data,* Vols. 22 and 23, respectively, of Studies in Income and Wealth, were published. Vol. 24, "Trends in the American Economy in the Nineteenth Century," will soon be ready for press.

The 1959 autumn meeting of the Conference on Research in Income and Wealth will be devoted to a comprehensive appraisal of the flow-of-funds type of social accounting.

Studies of postwar capital markets and of sources of funds for capital financing are reported in Section 4. A study of international capital movements is reported in Section 5.

3. BUSINESS CYCLES

THE POSTWAR BUSINESS CYCLE

A brief monograph on the general features of business cycles in the postwar period is planned. These features will be viewed against the background of historical experience that our records provide. It will thus be possible to consider some of the fundamental changes that have occurred in cyclical behavior, and the role of institutional change and of public and private policy in bringing these changes about. The study should help to distinguish the lasting from the temporary changes and to indicate ways in which economic fluctuations may be brought under better control.

ARTHUR F. BURNS
GEOFFREY H. MOORE

POSTWAR CYCLES IN MANUFACTURERS' INVENTORIES

Examination of manufacturing inventory data for the recent recession and the preceding expansion reveals patterns of behavior consistent with those previously noted for the earlier postwar period. It now appears firmly established that inventories (i.e., changes in inventory investment) have played a major role in postwar recessions. This has been at least as important as their prewar role, but played under conditions in which manufacturers have acted to keep stocks much smaller relative to sales. Thus, movements in inventories have been cyclically more sensitive relative to size of stocks since the war.

This seems to be the result of a sensitive response of stocks at each stage of fabrication to movements of the business cycle:

Finished goods. A solid finding is that peaks in finished goods inventory investment, in the postwar period, occurred no later than the early stages of recession and that troughs in finished goods inventory investment occurred no later than the early stages of expansion. Thus finished goods inventory investment

moved in phase with business activity during most of both expansion and recession phases. The less adequate data available prewar suggest that longer lags were typical then, according to Abramovitz *(Inventories and Business Cycles,* NBER, 1950).

Goods in process. We do not have prewar time series data for goods in process, but it is possible to draw inferences from evidence relating to composition of these stocks and from knowledge of how the components have behaved during the past 12 years. Manufacturers' stocks now contain a much higher proportion of goods in process than prewar due entirely to the increased importance of durables inventory holdings. These durables inventories contain a much higher percentage of in-process stocks held between stages of manufacture than do nondurables. These "between stage" in-process stocks are subject to much greater accumulation and deaccumulation during business cycles than are the in-process stocks held "within stages," which are functionally related to the rate of output. Hence the in-process stocks are likely to move more sensitively now than prewar, and to have a greater influence on total inventory investment because they are relatively larger.

Purchased materials. Abramovitz' prewar purchased materials data are of limited scope and do not permit comparison with the postwar Department of Commerce series. I think, however, that there is circumstantial evidence that purchased materials stocks are more sensitive than prewar: (1) They are very sensitive to the upper turning point of the cycle, frequently leading business cycle turns. Abramovitz found nothing to suggest that this was so prewar. (2) Durables stocks are more important than prewar. These purchased materials show the highest cyclical sensitivity because they are demand-oriented and in large measure easily procurable, not subject to supply caprices as are agricultural raw materials. Further, since durables are produced largely to order, manufacturers guide their purchasing policy by orders received.

Four of the five chapters of the study are completed. Manuscript of a final chapter dealing with implications of the findings is being prepared.

T. M. STANBACK, JR.

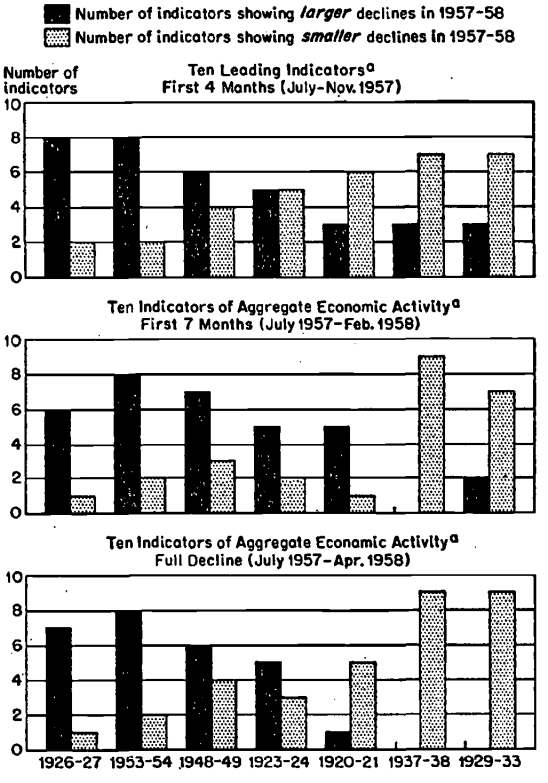
STATISTICAL INDICATORS

Some experiments with selected economic indicators to provide measures of a business cycle contraction while it is in progress were described in *Measuring Recessions* (Occasional Paper 61), and applied to the contraction that began after July 1957. A further evaluation of these experiments can be made with the data that have subsequently become available.

During the summer of 1958 it became apparent that April 1958 would probably mark the end of the business cycle contraction. Studies recently conducted by Alexander Pitts

Chart 2

RELATIVE SEVERITY OF 1957-58 CONTRACTION AT SELECTED DATES



The earlier business contractions are listed in order of severity.

[a]The number of indicators available for each comparison is sometimes less than ten. For list, see *Measuring Recessions,* NBER, 1958, Table 284.

confirm the choice of April as the business cycle trough.[1] The contraction, therefore, lasted nine months. Only three contractions among the twenty-four since 1854 have been so brief, although many have lasted not much more than a year. The 1957-58 contraction adds one more observation to the evidence that business contractions in the United States have become somewhat shorter than they used to be, before World War I.

The method of comparing the severity of the 1957-58 contraction with earlier contractions month-by-month worked out as shown in Chart 2. The bottom panel shows how the full declines in ten aggregate indicators from July 1957 to April 1958 compare with their full declines in earlier contractions, which cover a longer span in each case. On this basis the recent contraction was somewhat more severe, by most indicators, than the contractions of 1926-27, 1953-54, 1948-49, and 1923-24. It was, of course, less severe than those of 1920-21, 1937-38, and 1929-33. This was approximately the picture obtained from ten leading series when data for November 1957, the fourth month of recession, became available late in December (top panel), and in each succeeding month thereafter. It was confirmed by the aggregate indicators when data for February 1958, the seventh month of recession, became available late in March (middle panel).

It should be observed that this experiment in measuring the severity of a recession while it was in progress did not pinpoint the magnitude of the decline, but rather defined a broad range within which it might fall. Moreover, it was only partly successful in indicating the duration of the period of "depressed activity," i.e., the interval from the business cycle peak to the time when activity regains its pre-recession level. Since this interval has in the past varied with the severity of the contraction, the indicated intermediate severity of the 1957-58 contraction implied an intermediate period of "depressed activity," ranging from a year and a half to two years. According to one of the two methods used to measure this period, the actual interval will be a bit more than a year and a half: the Federal Reserve index of industrial production in February 1959, or 19 months after the July 1957 business cycle peak, had just regained its level of July 1957 (145). According to the other measure, based on the date when at least five out of ten indicators of aggregate economic activity regained their pre-recession levels, the interval was sixteen months. By November 1958, personal income, retail sales, bank debits, gross national product and the wholesale price index were above their July 1957 levels, while industrial production, carloadings, nonfarm employment, unemployment rate (inverted), and corporate profits were not.

Compilation and analysis of measures of the current and preceding recoveries, along the lines described in the Thirty-sixth and Thirty-seventh Annual Reports, has been proceeding. Charlotte Boschan has prepared a program for the IBM 704 that computes "recession and recovery patterns" for thirty-six month periods starting 12 months before the trough and ending 24 months after. Standings at each month are provided, together with per cent changes using both the trough standing as base and the preceding peak standing as base. Any cycle chronology whatever can be used. These patterns facilitate detailed study of the behavior of given economic processes in different recovery periods and of different economic processes during the same recovery period. By means of machine time contributed by the International Business Machines Corporation, the method has been applied to a large number of economic time series. A sample chart shows the current upswing in gross national product compared with earlier expansions (Chart 3). Some of the preliminary findings based on these analyses are:

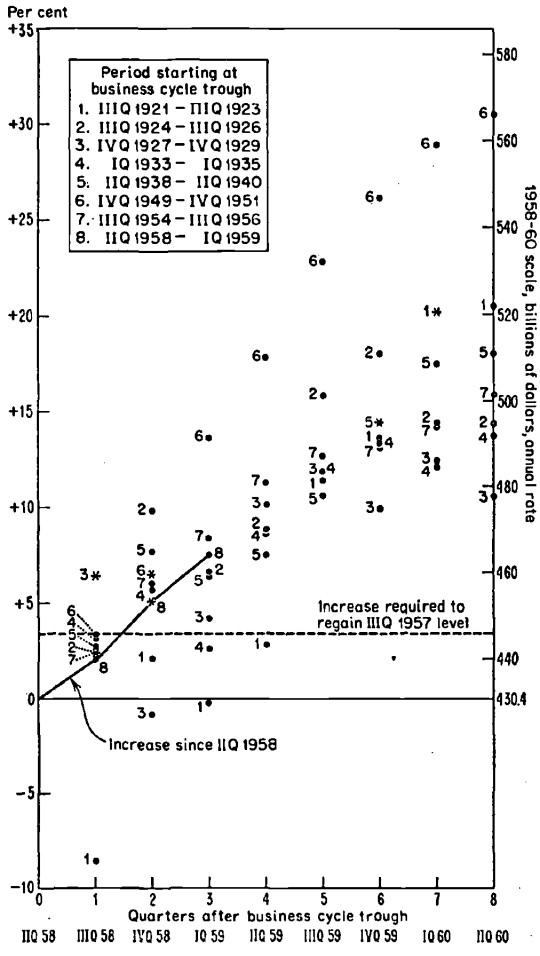
1. Recoveries in output, employment, and profits have usually taken place at a faster pace after severe depressions than after mild contractions.

2. Despite the faster pace after severe contractions, recovery to the previous peak levels

[1] The choice of a quarterly trough is more difficult, since some important measures of aggregate economic activity reach lows in the first quarter of 1958, others in the second quarter or later. Tentatively we have designated the second quarter as the trough.

Chart 3

BUSINESS RECOVERY PATTERNS: PER CENT INCREASE IN GROSS NATIONAL PRODUCT



*Level at preceding peak regained by this date.

Percentage increases after business cycle trough are computed on base of standing at preceding peak, in current prices. Example: 33.6 billion rise in Gross National Product from 430.4 in IIQ 1958 to 464.0 in IQ 1959 is 7.5 per cent of IIIQ 1957 standing (445.6).

has taken longer when the preceding contraction has been severe.

3. Nearly every business expansion has carried output, employment, and profits beyond the level reached at the preceding peak.

4. The rate of growth in output, employment, and profits has usually been largest in the initial stages of a business expansion. Slower growth has been the rule once the preceding peak levels have been regained.

5. Stock prices, unlike output, employment, or profits, have advanced more rapidly after mild recessions than after severe contractions.

A paper on The Behavior of Business Indicators in a Recovery Period was presented at a conference held by the American Management Association in October, and published in *Evaluating and Using Business Indicators,* AMA Management Report No. 25 (1959). A paper on "The 1957-58 Business Contraction: New Model or Old?" was presented at the December meeting of the American Economic Association and is to appear in the *American Economic Review,* May 1959.

The proposed book, "Business Cycle Indicators," is being reviewed by the Board. It contains essays on the selection, use, and evaluation of indicators; analytical reports on each of several types of "leading indicator"; and technical reports and tables pertaining to cyclical measures and historical data.

GEOFFREY H. MOORE

COSTS AND PROFITS

Labor Cost

The proposed Occasional Paper, "Changes in Labor Cost during Cycles in Production and in Business," will shortly be circulated to the Directors. The important conclusions have appeared in previous annual reports. Since the work was done, another business cycle, 1954-58, has run its course. We are bringing our figures up to date, and they will be included in the final version, considerably broadening the basis of the study. At the request of the Joint Economic Committee of Congress, a summary of the findings was provided and included in the committee's compendium of papers on *The Relationship of Prices to Economic Stability and Growth,* Joint Economic Committee, 85th Congress, 2nd Session, March 31, 1958, pp. 211-224.

Reflection of labor cost in prices

The changes in labor cost in various industries invite comparison with changes in the prices received by those industries. For that purpose, we made special combinations of BLS price indexes to match the labor data for the following industries: meat, wool, textiles, hosiery,

men's coats and suits, women's outerwear, millwork and plywood, paper, petroleum refining, iron and steel, non-ferrous mill shapes. For cigars, cotton, lumber, tires and tubes, shoes, cement, and iron and steel foundries, the regularly published BLS indexes could be used. For confectionery and non-ferrous foundries, no material on prices is available. Imperfections of the data, and noncomparabilities between the two kinds, forbid precise comparative calculations, but some comparisons of direction may be ventured.

Three industries—cigars, cement, and steel—had no cycles, but only a step-wise rising trend in their prices. Even in the other 15, many turning points in cost have no analogues in prices. The latter often pursued a steady trend while cost fluctuated. In 52 instances, however, more or less neighboring turns in both could be found. In most instances, prices turned up, and likewise down, before labor cost (Table 9, upper part).

The peaks in cost, and likewise the troughs, tend to cluster in time, with long intervals between groups of turns. In most of the individual clusters, as in the aggregate, early rises in prices outnumbered late rises. From June 1952 to July 1955, however, turning points in cost were often not accompanied by any corresponding turn in prices.

These conclusions have a limited foundation, since data are available only for about 24 per cent of manufacturing industry. The latest figures are for 1955; the analysis will later be extended through 1958.

Prices and production

We also compared the turns in prices in each industry with those in output. In most cases where turns could be paired, production re-

Table 9

TURNING POINTS IN LABOR COST AND IN PRODUCTION COMPARED WITH TURNING POINTS IN PRICES RECEIVED, FIFTEEN MANUFACTURING INDUSTRIES

	NUMBER OF TURNS WITH				
	Earlier Turn in Prices	*Coinciding Turn in Prices*	*Later Turn in Prices*	*No Turn in Prices*	*Total Number*
Turning points in labor cost					
Peaks					
June 1934-June 1935	3	0	1	1	5
May 1937-Dec. 1937	5	0	1	1	7
April 1948-June 1949	7	0	2	1	10
July 1952-June 1954	2	0	0	7	9
Miscellaneous dates	3	0	0	2	5
	20	0	4	12	36
Troughs					
Mar. 1933-June 1933	5	0	0	0	5
July 1936-Dec. 1936	3	1	0	1	5
Dec. 1938-April 1941	4	0	1	2	7
April 1949-Jan. 1951	9	0	2	1	12
Feb. 1954-July 1955	1	0	1	4	6
Miscellaneous dates	1	0	0	2	3
	23	1	4	10	38
Peaks and Troughs	43	1	8	22	74
Turning points in production					
Peaks	7	0	21	28	56
Troughs	5	2	25	31	63
Total	12	2	46	59	119

Note: There were 12 peaks and 8 troughs in *prices* with no corresponding turn in cost, and 7 peaks and 7 troughs in *prices* with no corresponding turn in production.

vived for some time, or contracted for some time, before the prices received for that production began to move in the same direction (Table 9, lower part).

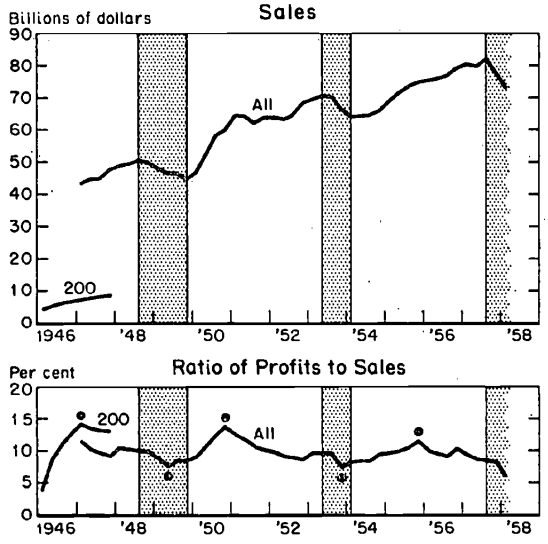
Sales and profit margins

We adjusted the FTC-SEC quarterly estimates of sales and profits in manufacturing as a whole, and in 22 major groups of manufacturing industries, 1947-57, to allow for discontinuities made apparent by revision of the basic sample in 1951 and, less importantly, in 1956. To eliminate the effects of changing tax rates, refunds and adjustments, we used the data on margins before taxes on profits.

In manufacturing as a whole, the margin was always higher at a peak in sales than at the preceding trough, lower at a trough in sales than at the preceding peak (Chart 4). Similar changes occurred in the various groups. Two of them, to be sure, provide no data, for sales grew without interruption over the entire period; there were no completed expansions or contractions. But in one or another of the remaining 20, at one time or another, there were 39 expansions and 44 contractions of sales. The profit margin had a net rise in 85 per cent of the expansions and a net fall in 93 per cent of the contractions.

Chart 4

SALES, AND PERCENTAGE RATIO OF PROFITS BEFORE TAXES TO SALES, IN MANUFACTURING



200 Large Corporations, IQ 1946 — IVQ 1947; All Corporations, IQ 1947 — IQ 1958.

Shaded areas are contractions in sales. Dots designate peaks and troughs in profit ratio. Data for 200 corporations from *Federal Reserve Bulletin*. Figures for all manufacturing corporations based on estimates in Federal Trade Commission and Securities and Exchange Commission, *Quarterly Financial Report, United States Manufacturing Corporations.*

Table 10

TURNING POINTS IN SALES AND IN PROFIT MARGINS (BEFORE TAXES), 22 GROUPS OF MANUFACTURING INDUSTRIES

	NUMBER OF TURNS IN SALES		
	Peaks	*Troughs*	*Total*
Turning points in sales with			
Earlier turn in margins	20	17	37
Coinciding turn in margins	5	14	19
Later turn in margins	5	5	10
No turn in margins	22	13	35
Total	52	49	101

These findings refer to the net change. Profit margins often do not move in the same direction throughout an expansion or contraction of sales. As our chart indicates, the margin for all manufacturing began to fall well in advance of each peak in sales, and to rise before each trough. In individual groups, we found 66 instances in which turns in one occurred in the same neighborhood of time as in the other. In most of these, margins turned up, and likewise turned down, before the corresponding turn in sales (Table 10). The tendency for profits to turn somewhat early was more noticeable at peaks; at the latter, early turns in margins were twice as numerous as coinciding or later turns.

Often, however, there are no corresponding turns. Sales turn while margins continue for a long time in their previous direction, or vice versa. The two industries with continuously increasing sales nevertheless had fluctuations in their margins. We can approach the question of interrelation in a different way which does not depend on the presence of a corresponding turn in the margin. The latter must have moved in some direction before each turn in sales, no matter how long it may have done or continued to do so. Looking at the matter from this point of view (Table 11), we find that when sales

Table 11

DIRECTION OF CHANGE IN PROFIT MARGINS BEFORE AND AFTER PEAKS AND TROUGHS IN SALES, 22 GROUPS OF MANUFACTURING INDUSTRIES

	TURNING POINTS IN SALES			
	Number with Margins		*Percentage with Margins*	
	Rising	*Falling*	*Rising*	*Falling*
Just before trough	21	27	44	56
Just after trough	35	13	73	27
Just before peak	12	43	22	78
Just after peak	7	48	13	87

begin to rise, margins in most cases widen for some time thereafter. As the expansion proceeds, however, the situation changes, and by the time sales reach their peak, margins in most cases have been narrowing for some time. Downturns in sales increase the preponderance of falling margins, but again the situation changes, although less radically. As sales approach their upturn, most margins are still falling, but the frequency of falling margins is no longer as great.

Sometimes margins turn downward at a very early date. In the last sales expansion on the chart, the margin expanded with sales during the first seven quarters, as the position of the asterisk indicates, but it contracted during the other seven. Margin and sales were in phase with each other during only half of the period. For all sales expansions in all the several groups the in-phase percentage is also, as it happens, 50. In contractions of group sales, margins moved in closer harmony; the in-phase percentage is 74.

The figure for expansions is influenced, however, by the unusual circumstances attending the Korean outbreak. The latter brought a sharp upsurge in demand. Supply could not immediately rise as fast. The all-manufacturing margin climbed to an extremely high level, 13.9 per cent, in the fourth quarter of 1950, but necessarily declined thereafter. The course of margins was similar in the various groups. When the data for 1951, 1952 and early 1953 are excluded from the calculation, the in-phase figure based on the experience of the various groups in their various sales expansions rises to 59.

A tentative sequence

Although the cost data cover a narrower range of industry than the price data, and although our information relates cost to production cycles and margins to sales cycles, which do not always coincide, it is suggestive to combine the two sets of findings. When sales first rise, costs decline, and while prices also decline, they do not decline as fast, and margins widen. Eventually prices begin to rise, presumably because of rising demand, since cost continues to fall, and margins widen further. Later, cost begins to rise; although prices continue to rise, cost finally overtakes them and margins decline. The onset of falling sales is accompanied by a further rise in cost which, even though attended for a while by further rises in price, causes margins to decline further. Prices turn down before cost, and margins are squeezed even more. Before the contraction ends, however, prices and cost begin to align themselves in such a way that declining margins become less common.

Remaining work

We are planning an analysis of the relations between sales and profit margins of large individual corporations before 1947, similar to the analysis for industries described above. Both will be embodied in an Occasional Paper on margins and related phenomena. Collection and processing of some figures on dividends will enable us to complete a study of profits and the stock market.

THOR HULTGREN

REGIONAL CYCLES

A manuscript entitled "Regional Cycles of Manufacturing Employment in the United States, 1914-1953" has been submitted to the Directors. Four principal conclusions are reached in the study.

1. Lasting differences in the severity of cyclical fluctuation in manufacturing employment are experienced in different states, which are partly due to differences among states in types of manufacturing industry. These differences have, however, tended to diminish over the past four decades, as a result of greater industrial diversification within states (Table 12).

Table 12

INTERSTATE VARIABILITY IN CYCLICAL AMPLITUDE OF MANUFACTURING EMPLOYMENT, 33 STATES, 1914-53

	Mean	*Highest*	*Lowest*	*Range*	*Standard Deviation*	*Coefficient of Variation*
			Decline Rates per Year (%)			
1919-21	13.59	31.14	1.57	29.57	5.38	0.40
1929-31	15.30	30.36	6.98	23.38	4.87	0.32
1931-33	2.47	8.72	+7.50	16.22	3.55	1.99
1948-49	5.73	10.76	1.52	9.24	2.10	0.35
			Expansion Rates per Year (%)			
1914-19	5.17	14.53	0.16	14.37	3.42	0.66
1921-23	11.62	23.58	4.78	18.80	4.53	0.39
1933-35	9.14	19.40	2.65	16.75	3.04	0.33
1935-37	9.41	14.79	0.58	14.21	3.44	0.37
1949-53	5.30	10.98	2.81	8.17	1.70	0.32
1949-51	8.04	14.36	4.74	9.62	2.20	0.27

2. Related to this is the finding that states with major industries showing high cyclical fluctuations also experience more severe cycles in other industrial sectors. However, this relationship is apparent only in the case of cycles with strong contractions.

3. The association between cyclical variability and long-run rate of growth is not close. More often than not, however, states with high rates of long-term growth experience larger cyclical variations than states with slower growth rates (Table 13). In part, this is due to the fact that strongly growing states often have industries characterized, on a national level, by wide cyclical fluctuations. However, a number of states have enjoyed high growth rates and relatively moderate cyclical fluctuations, notably Texas, North Carolina, and Iowa, and some have had low growth rates and severe fluctuations as well (e.g., Connecticut, Pennsylvania, Mississippi).

In addition, strongly growing states have more vigorous cyclical expansions than weakly growing states. However, growth differentials have no substantial influence on the magnitude of cyclical declines among states. In Table 13 the entries in parentheses refer, respectively, to the ranking of the states with respect to average rate of cyclical decline and cyclical expansion (high, medium, low). All but one of the states with strong growth rates have high (H) or medium (M) rates of expansion while all but one of the states with weak growth rates have low (L) or medium (M) rates of expansion.

4. States that experience retardation in growth, relative to other states, frequently show larger cyclical swings in manufacturing employment. This is true even when allowance is made for the effect of differences in industry mix on the size of cyclical swings in different states. This suggests that a discontinuity in state growth trends alters the cyclical behavior of the state industries relative to their national counterparts. When the state loses its growth position, its industrial components evidence wider cyclical swings. This is a fruitful hypothesis to test against data on later state cycles.

GEORGE H. BORTS

THE TIMING OF CYCLICAL CHANGES IN THE AVERAGE WORKWEEK

The manuscript with the above title was thoroughly revised and extended. Present plans are to include an abbreviated version in the proposed book on Business Cycle Indicators, and to publish the full story as an Occasional Paper. The major addition to the original draft is an analysis of the cyclical timing of hours and employment in 20 large individual plants producing fairly homogeneous products. The plant evidence was made available to us by particu-

larly helpful efforts on the part of the Bureau of Labor Statistics.

Our basic analysis revealed that, on the average, cyclical turns in average weekly hours precede those in related employment by about 4 months. This lead tends to be longer at peaks than at troughs, although the evidence on this is not entirely conclusive.

These observations are based on the analysis of industry aggregates. The question arises whether the leads of hours over employment turns occur only in the process of aggregation or whether they dominate also the behavior of labor input at the firm or at the plant level. Theoretically the hours lead shown by industry data could be the result of large changes in hours in individual plants, shortly after their specific turns; this could produce the observed industry leads in spite of coincident timing of hours and employment on the plant level. The other alternative is that turns in hours precede employment turns on the plant as well as the industry level. The evidence for 20 manufacturing plants reveals that in 62 of 74 related cyclical turns, average weekly hours lead employment. At 6 of the remaining turns, hours and employment moved coincidentally; at the other 6, hours lagged.

These findings permit us to ask further questions, exploring the reasons for managerial behavior. While it is easy to understand why managers cut overtime, and thus hours, before reducing employment levels, it is not so obvious why employment continues to increase for several months after hours are cut. Some informal interviews with plant managers and industrial relations executives provided information on this point. The main explanation given was that hours changes constitute predominantly short-term adjustment to current work loads and are determined by foremen and supervisors. These decisions are made fast and frequently; they lead to many small irregular fluctuations. Some of these become "turning points" as a result of broader decisions on labor input made at a later date. Employment policies leading to longer-term adjustments are determined at a higher managerial level. They are changed less frequently, which explains why employment series have a somewhat smoother contour. Small fluctuations are less frequent and less important in relation to cyclical amplitudes. Cyclical turns in employment express managerial policy based on changed expectations. The changes in expectations and labor input policies are based on external and internal evidence — among which are changes in equipment utilization, overtime, and average hours worked. Only the conviction that these changes are of more than temporary nature

Table 13

RATES OF GROWTH AND CYCLICAL VARIABILITY, MANUFACTURING EMPLOYMENT, 33 STATES, 1914-1953

	AVERAGE CYCLICAL VARIABILITY		
Growth Rate	*Low*	*Medium*	*High*
Strong	North Carolina (L, L) Iowa (M, M) Texas (L, H)	Kentucky (L, M) Tennessee (M, H) Alabama (H, M) Georgia (L, M)	Indiana (H, H) Michigan (H, H) Oregon (H, H) California (L, H)
Medium	Virginia (M, L) South Carolina (L, L) Missouri (L, M)	New Jersey (M, M) Minnesota (M, M) Maryland (L, M) Illinois (M, H)	Ohio (H, H) Wisconsin (H, H) Washington (H, H) West Virginia (H, L)
Weak	Maine (L, L) New Hampshire (M, L) Massachusetts (L, L) New York (L, L) Louisiana (M, L)	Rhode Island (M, L) Florida (M, M) Vermont (H, M)	Pennsylvania (M, M) Mississippi (H, H) Connecticut (H, M)

leads to sufficiently marked revisions of hiring and lay-off practices to bring about cyclical turns in employment levels.

A brief paper on the findings regarding individual plants was published in the March issue of the Bureau of Labor Statistics' *Employment and Earnings.*

GERHARD BRY

MONEY AND BANKING

A section of the manuscript by Anna Schwartz and myself on the "Supply of Money in the United States" was presented at the annual meetings of the American Economic Association in December under the title "The Demand for Money — Some Theoretical and Empirical Results." This paper will be published in the August, 1959 issue of the *Journal of Political Economy* and will be reprinted as an Occasional Paper.

A paper based on some of our results and entitled "The Supply of Money and Changes in Prices and Output" was published in a *Compendium* of papers on *The Relationship of Prices to Economic Stability and Growth* published by the Joint Economic Committee, 85th Congress, 2d Session (Washington, 1958).

The section of the manuscript on the historical background of the money supply, which was the only section not in draft form at the time of last year's annual report, is still not complete. This section has grown inordinately in the process of being written. It now consists of two long chapters in semi-final form, one covering the period from 1865 to 1913, the other the period from 1913 to 1933, and one chapter at a much earlier stage, covering the period from 1933 to date. We hope to have this final chapter done very shortly.

Part two of the manuscript, describing the construction of our money estimates — annual or semi-annual, 1867-1906; monthly, 1907-1957 — has been reworked during the year. Problems of estimation and the solutions found are discussed in this part.

During the course of the year, I began some fairly extensive experiments with the application of "spectral analysis" to our time series on the stock of money and to related series on bank clearings and prices. "Spectral analysis" is a variant of periodogram or Fourier analysis and is a means of decomposing a time series into components of different amplitude and periodicity, and of comparing different time series in these respects. Substantial advances in methods of analyzing data along these lines and of interpreting the results have recently been made, primarily by John Tukey of Princeton University, and modern high-speed computing machines make it feasible to apply these methods on a large scale. Tukey and I were both fellows at the Center for Advanced Study in the Behavioral Sciences this past academic year. He was interested in having some of his methods tried out on lengthy economic time series and I in finding some independent method of checking results, particularly with respect to timing, derived by the Bureau's standard method of cyclical analysis. Accordingly, we have cooperated in these experiments.[2]

Though the analysis has as yet yielded no important substantive results, it has demonstrated a power to uncover minor systematic movements that persuades me it has great potentialities. The method revealed a systematic fluctuation in the clearings-debits series of some three months in duration that baffled us for a time but that we finally discovered had been produced because the seasonal adjustment did not allow for variation in the number of Saturdays and Sundays in a month. In a series of some 40-odd years, the analysis also revealed a fluctuation roughly five months in length that turned out to have been produced by the effects of the bond campaigns, spaced at approximately that interval, during the two World Wars.

We are now in the process of adjusting the data to eliminate these irrelevant systematic fluctuations — "cleaning up" the series, as Tukey would put it — so that we can study more accurately fluctuations corresponding in duration to business cycles.

Phillip Cagan has substantially completed a draft of his monograph on the determinants of

[2] I am much indebted to the Center for Advanced Study in the Behavioral Sciences, not only for the opportunities arising out of my fellowship, but also for providing us with time on an IBM 650 operated by Stanford.

the money supply in the United States from 1875 to 1955. The chapter titles are:

I Introduction: The Three Determinants of the Money Supply

II Contribution of the Three Determinants to Secular and Cyclical Variations in the Stock of Money

III Highpowered Money
- A. Factors affecting secular movements
- B. Factors affecting cyclical movements

IV The Currency Ratio
- A. Factors affecting secular movements
- B. Factors affecting cyclical movements

V The Reserve Ratio
- A. Redistributions of deposits
- B. Legal reserve requirements
- C. The long-run decline in the usable reserve ratio
- D. Cyclical movements

VI Implication of the Findings: To what extent are variations in the money stock causes or effects of business cycles?

VII Summary of the Findings: The monetary aspect of economic disturbances

Section IV-A was published in the August 1958 issue of the *Journal of Political Economy* under the title, "The Demand for Currency Relative to the Total Money Supply," and reprinted as Occasional Paper 62.

MILTON FRIEDMAN

INTEREST RATES AND BUSINESS CYCLES

The purpose of this exploration is to consider ways of studying interest rate changes and their relationship to business cycles. The problem is not a new one, of course, various aspects of it having been examined by Mitchell, Macaulay, Durand, Hickman, and others at the National Bureau, as well as by numerous investigators elsewhere. But previous studies have worked within rather narrowly defined scopes. Thus Durand and others have concerned themselves largely with the problem of term structure; Hickman has dealt mainly with corporate bond yields and their relation to stock prices; and so forth. And most of these earlier studies have not been explicitly related to the broader area of general business cycle research.

Attention is being given to questions involving variations in interest rates by term to maturity, nature of borrowers, and character of lenders. Are there dependable cyclical patterns in interest rate differentials? How do the postwar cycles compare with those of a generation or two ago with respect to interest rate behavior? Insofar as there are dependable cyclical patterns, or insofar as the recent differs from the more distant past, what is the explanation? What are the implications of observed interest rate behavior for business cycle theory and for interest theory?

RICHARD T. SELDEN

CYCLICAL BEHAVIOR OF MANUFACTURERS' ORDERS

A report entitled "The Timing of Manufacturers' Orders during Business Cycles" has been prepared for inclusion in the proposed volume on Business Cycle Indicators. A larger study of the timing as well as of other aspects of the cyclical behavior of orders is in its final stages and will be proposed for separate publication.

The behavior of orders during the 1957-58 recession, described in these studies, conformed well to the pattern determined from historical records. Peaks in new orders led the business cycle peak of July 1957 by intermediate or long intervals in each of the major manufacturing industries. But when orders are matched with production and shipments the leads are considerably shorter. In this recession, activity turned down much earlier in manufacturing than in most other sectors of the economy. Backlogs of unfilled orders in dollar values were not so high as in the previous postwar cycles, and they were much smaller when measured in months of current shipments. This reflects the growth in the capacity of durable-goods industries, which during the war and postwar years has reduced markedly the aver-

age delivery period (thereby shortening the period during which manufacturing activity can be maintained by drawing upon an order backlog of any given absolute size). Accordingly, the leads of unfilled orders were on the whole shorter at the last recession than at the preceding ones, although early timing at the peak continued to be characteristic of these series.

In contrast, upturns in new orders of all the major durable industries except transportation equipment preceded the April 1958 business cycle trough by short intervals ranging from 1 to 3 months (2 months for the over-all aggregates of new orders for durable and nondurable manufactures). Only the new orders for motor vehicles and parts lagged, while other transportation equipment turned up a few months earlier than the rest of the durables. Upturns in manufacturers' shipments, too, followed closely upon those in the corresponding new order values. New orders did not drop much below shipments in 1957 so they regained the levels of shipments readily in the first months of the recovery (which signifies also a roughly coincident timing of the order backlogs). In this respect, the recovery of 1958 resembled the recovery of 1949 but differed substantially from that of 1954 (when new orders declined more relative to shipments and led them on the upturn by longer intervals).

A major addition to our analysis of the cyclical behavior of orders was made by deflating the OBE series on aggregate values of manufacturers' new orders. The deflators were constructed mainly from the appropriate components of the BLS wholesale price index. As would be expected, the main difference between the undeflated and the deflated series for the period covered (1948-58) is that the latter show much less vigorous upward trends. Short-term movements were largely unaffected by the adjustment, since the price deflators are very smooth and the new order series to which they were applied are much more volatile. The timing of troughs was changed little but in several cases peaks occurred considerably earlier in the constant price than in the current value series. The series in constant prices were used for comparisons with the corresponding major-industry components of the Federal Reserve Board index of production. The results show lags of outputs relative to deflated new orders that are generally similar to the corresponding lags of shipment-values or "sales" relative to new orders in current prices.

VICTOR ZARNOWITZ

APPLICATION OF ELECTRONIC COMPUTERS TO ECONOMIC ANALYSIS

The project aims to explore and advance the use of electronic computers in economic research, by converting known techniques to machine applications, developing new techniques, and exploring the extent to which electronic computing can be used to process related information on a broad sector of the economy. We are particularly conscious of the potential use of computers in areas which, in the past, permitted only rudimentary analysis because of the sheer mass of information. Large scale questionnaire analysis, and analysis of economic behavior on the firm or plant level are cases in point. In addition to originating projects, we also advise and participate in programming and processing electronic computer work for other National Bureau research projects.

The project is financed through machine time and cash grants by the International Business Machine Corporation, and a cash grant by the National Science Foundation. A cooperative arrangement with the Federal Reserve Board also helps to defray the costs of this work.

During the past year our efforts were concentrated in the following fields:

1. Programming of the standard Business Cycle Analysis of the National Bureau. This work is now completed, with the exception of conformity tables and indexes. In connection with Easterlin's study of Interstate Differences in Economic Growth, amplitudes and secular trend measures were computed for four population variables in 48 states.

2. Programming and running of Moore's analysis of the severity of recessions and the progress of recoveries. The output of this program was used in his paper on "Measuring Recessions." Additional measures are being

prepared in connection with a study of recovery periods.

3. Description of the relations between cyclical changes in two or more time series, such as price and production or hours and employment. We are interested in developing measures that describe the changes in the relationship between series over various segments of the cycle. The computation of such measures may lend itself to electronic processing.

4. Use of electronic computers in the analysis of a broad sector of the economy. The subject matter selected is "Work and Wages." One of the possible computer applications is subaggregative analysis describing firm or plant behavior by dispersion, diffusion or other measures of structural changes.

In addition to these projects, our plans for the current year include application of the business cycle analysis program to long cycles, and assistance in the questionnaire analysis used in Juster's study of consumers' buying plans.

The seasonal adjustment program developed by Julius Shiskin and Harry Eisenpress and decribed in their report, *Seasonal Adjustment by Electronic Computer Methods* (NBER Technical Paper 12, 1958) has been widely adopted, by both government agencies and private users. Originally programmed for the Univac, it is now available for the IBM 704 and the IBM 650. Shiskin has developed, at the Bureau of the Census, an application of the method to adjust weekly series for seasonal variations. Since the presence of seasonal variation in many of the more important weekly commercial, industrial, and financial statistics has long impeded their effective analysis, this application seems likely to prove extremely useful.

GERHARD BRY
CHARLOTTE BOSCHAN

OTHER STUDIES

International Financial Transactions and Business Cycles, by Oskar Morgenstern, and *The Labor Force under Changing Income and Employment,* by Clarence D. Long, were published. *Quality and Economic Significance of Anticipations Data,* Special Conference Series 10, is in press. Leo Grebler's proposed Occasional Paper, "Housing Issues in Economic Stabilization Policy," has been revised after review by the staff and a number of outside specialists. It will shortly be submitted to the Directors. The following manuscripts have been reviewed by the staff and are being revised and completed: "Subcycles and the Buying of Materials," by Ruth P. Mack; "The Role of Business Expectations in the Operating Behavior of the Firm," by Millard Hastay; "Cyclical Behavior of Federal Receipts and Expenditures since 1879," by John M. Firestone.

The influence of severe depressions on long swings in economic growth is one of the factors considered in Abramovitz' study, and Easterlin's related study will yield some analysis of the business cycle behavior of population variables (Section 1). Juster's study (Section 2), deals, in part, with changes in consumer buying plans during the 1957-1958 recession. For a report on a study of the quality of credit in booms and depressions see Section 4. In Section 5 Ilse Mintz reports on a study of cycles in foreign trade.

4. FINANCIAL INSTITUTIONS AND PROCESSES

THE QUALITY OF CREDIT IN BOOMS AND DEPRESSIONS

The broad objective of this study, begun in 1956 with the aid of a grant from the Merrill Foundation for the Advancement of Financial Knowledge, is to develop and appraise methods of measuring the changing quality of credit under varying economic conditions. Historical studies have shown that credit quality in various financial markets has sometimes deteriorated seriously during booms. They give some ground for hoping, too, that useful current measures of such deterioration might be constructed. Our investigation has proceeded by finding or selecting those sources of information on credit quality that appear to give most promise of successful development. From these

sources we have then undertaken to compile and analyze records of past performance.

One of the sources being explored is the records of bank examiners. Tabulations developed from Federal Reserve Bank examiners' records supplemented by data derived from loan surveys and call reports are expected to yield useful statistical information on the quality of business credit, particularly in the area of small or medium-size business. The value of bank examination materials for this purpose was clearly indicated by the late Edward J. Kilberg's pilot analysis, which is described below in the report on Risks and Returns in Small Business Financing.

Proceeding from the results and experience gained in the pilot study, plans were drawn for a larger experimental study. The basic data are being compiled under the direction of Thomas Atkinson of the Federal Reserve Bank of Atlanta, Albert Wojnilower of the Federal Reserve Bank of New York, and Victor Zarnowitz. Bank examination and research personnel of the Federal Reserve Banks of Atlanta, New York, and Philadelphia are cooperating in the project.

Progress on several other sectors is reported below. It is planned to bring the results of these studies together in a summary report that will also review previous work in this field. Professor James Earley of the University of Wisconsin has agreed to take charge of the project beginning February 1, 1959.

GEOFFREY H. MOORE

Consumer Credit Quality

This study was largely completed in draft form during the year. Considerable attention has been devoted to developing the regional and local evidence of changes in credit quality. The purpose was to test with these data the conclusions which had previously been reached with national data concerning the relationship between both loan terms and employment, on the one hand, and collection experience on the other. These relationships had been explored primarily at the aggregative level in the paper written by Geoffrey H. Moore, Thomas R. Atkinson, and myself for the Federal Reserve Board's study of *Consumer Instalment Credit* published in March, 1957.

In addition to the regional analysis, new national data have been explored for the relationship between certain borrower characteristics and loan terms (downpayment percentage and loan maturity). Characteristics which appear to be significantly associated with loan terms include occupation, age, and income of the borrower. Borrowers in professional, clerical and sales occupations tend to obtain (or require) less liberal loan terms whereas wage earners and farm operators are concentrated in the more liberal loan term categories. Likewise, younger borrowers and lower income groups also are concentrated in the more liberal loan term classes.

This association suggests that these borrower characteristics may be significantly related to collection experience as well. With the cooperation of the research staff of the Board of Governors of the Federal Reserve System we have obtained data bearing on this point. Table 14 shows the bad loan ratios[1] for six separate borrower characteristics. "Bad loans" include all loans that were repossessed, refinanced, or delinquent at any time. All the borrower characteristics shown were significantly related to loan collection experience according to a chi-square test. The possession of liquid assets during the life of the loan appears to be most important in determining whether loans run into collection difficulties.

These data also enable us to analyze borrower characteristics together with loan terms to see what the actual collection experience is when both are considered simultaneously. It seems clear that the downpayment is an important factor in ultimate collection experience, even allowing for the characteristics of the borrower. Similarly, the borrower characteristics associated with greater risk appear to maintain this association even when the downpayment is the same. Table 15, for example, shows the bad loan ratios computed for a cross tabulation of real downpayment ratios and liquid asset holdings. It shows almost without exception that within downpayment classes bad loan

[1] For an explanation of the bad loan ratio see the footnote to Table 14.

Table 14

BORROWER CHARACTERISTICS AND COLLECTION EXPERIENCE, 1954-1955

BORROWER CHARACTERISTICS	BAD LOAN RATIO[a]	BORROWER CHARACTERISTICS	BAD LOAN RATIO[a]
Age		*Income in Year of Purchase*	
Under 30 years	1.27	Under $3.0 thousand	1.27
30-39	1.28	3.0-3.9	1.53
40-49	.76	4.0-4.9	1.25
50 and over	.63	5.0-9.9	.88
Life Cycle Status		10.0 and over	.61
Under 45 years		*Net Worth*	
Single	.93	Negative	2.02
Married: no children	.40	Zero	2.53
Married: with children	1.34	Less than $1.0 thousand	1.45
45 years and over		1.0-2.9	.88
Single	.76	3.0-4.9	1.36
Married: no children	.49	5.0-9.9	.98
Married: with children	1.10	10.0-24.9	.47
All others	1.60	25.0 and over	1.11
Occupation		*Liquid Asset Holdings*[b]	
Professional	.93	Negative	2.44
Self-employed	.95	Under $200	1.68
Manager, official and proprietor	.48	200-499	.37
Clerical and sales	.89	500-999	.40
Skilled, semi-skilled,		1,000-1,999	.54
unskilled and students	1.16	2,000-4,999	.47
Farmers	3.05	5,000-9,999	.90
Miscellaneous	.81	10,000 and over	0

[a] Bad loans are loans which were repossessed, refinanced, or behind in payments. A bad loan ratio of 2.0, for example, means that the percentage of bad loans in that class was twice as great as the percentage of bad loans in the entire sample.

[b] Liquid assets are defined as the value of these assets currently held by the car buyer's spending unit at the time of the interview.

Source: Unpublished personal interview data from the new automobile purchasers survey conducted by National Analysts, Inc., for the Federal Reserve Board, 1954-55.

The analysis is based on a replicated sample of 5,069 borrowers; the original sample contained approximately 3,000 interviews with credit buyers. Not all are included in each category as information on some points was not always available.

Table 15

DOWNPAYMENT PERCENTAGE, LIQUID ASSET HOLDINGS, AND COLLECTION EXPERIENCE

BORROWER'S LIQUID ASSET HOLDINGS	REAL DOWNPAYMENT IN PER CENT OF REAL CAR PRICE[a]			
	10-29%	*30-39%*	*40% and over*	*Weighted Average*[b]
	Bad loan ratio[c]			
None	2.98	1.96	0.70	2.47
$1-499	1.25	0.89	0.43	1.03
500-1,999	0.46	0.83	0.27	0.47
2,000 or more	0.63	0.80	0.26	0.52
Weighted average[b]	1.33	0.94	0.37	1.00

[a] The terms "real downpayment" and "real car price" are the results of efforts to develop for each loan an estimate of both the downpayment and the price which would be free of the effects of overallowance on trade-ins.

[b] Including loans on which either downpayment or liquid asset information or both were not available.

[c] See note a, Table 14.

Source: See Table 14.

ratios fall as the liquid assets of borrowers increase. It is equally clear that within a group of borrowers with the same liquid assets the bad loan ratios decline as downpayments rise. Other cross tabulations have produced similar results.

The results of this analysis, together with an up-dated version of the previously published work and the regional and local findings, are being incorporated in a manuscript which should be available by mid-year.

PHILIP A. KLEIN

Credit Quality in Agriculture

The study of credit quality in agriculture has centered on the lending activities of the Federal Land Banks and the Production Credit Associations. During the past year, with the cooperation of the Springfield office of the Farm Credit Administration, new data were obtained on the lending activities of both the PCA's and the FLB in the Springfield District (New England, New York, and New Jersey). PCA data for the other eleven Districts are being collected for our use by the Farm Credit Administration's Washington office. Considerable analytical work has been done on the PCA data, while a start has been made with the Land Bank materials.

Data on Springfield Land Bank loans are on some 85,000 IBM cards. Individual cards were punched for each loan made by the Bank since the first loan in 1917. Available measures of quality include the grade of farm and grade of area as designated at the time the loan was made, loan-to-value ratios, foreclosure rates and loss rates. Data now tabulated and currently under analysis are for loans in the State of New York disposed of by April 30, 1958, by year in which the loan was made. Some additional tabulations have been completed by year of loan disposition.

A preliminary summary of some 12,000 loans made between 1933 and 1942 suggests that the incidence of loan difficulty, as indicated by the percentage of loans going into foreclosure or actually foreclosed, is smaller on farms assigned a high grade at the time the loan was granted or located in a high-grade

Table 16

PRELIMINARY SUMMARY OF SPRINGFIELD FEDERAL LAND BANK LENDING EXPERIENCE FOR LOANS MADE DURING 1933-1942 AND DISPOSED OF BY APRIL 30, 1958

		FORECLOSURE RATES, PER CENT[a]		LOSS RATES, PER CENT[b]	
Grade of Farm	*Total Number of Loans*	*Based on Number of Loans*	*Based on Amount of Loans*	*On All Loans in Grade*	*On Loans Going to Foreclosure or Foreclosed*
A	570	4.6	3.6	−.27	− 7.6
B	6,567	5.9	5.9	−.07	− 1.1
C	4,432	5.9	5.5	−.18	− 3.3
D	253	7.1	7.6	−.40	− 5.3
Unknown	425	7.5	9.9	+.05	+ .5
Total	12,247	5.9	5.7	−.12	− 2.0
Grade of Area					
A	610	3.3	2.7	−.23	− 8.7
B	4,547	4.6	4.7	−.14	− 2.9
C	3,343	4.3	4.1	−.14	− 3.4
D	192	5.2	5.3	−.81	−15.2
Unknown	3,564	9.7	9.7	−.01	− .1
Total	12,256	5.9	5.7	−.12	− 2.0

[a] Loans going to foreclosure as well as those actually foreclosed.

[b] Negative sign denotes a profit.

area (Table 16). As it turned out, however, foreclosures in this period did not, on balance, involve a loss to the Land Bank. Hence the loss rates are negative and show, if anything, the opposite relation to grade of farm and area.

The production credit study is directed toward determining the extent to which the Farm Credit Administration loan examination procedure, designed for the production credit associations, generates data that are useful as measures of the quality of outstanding loans. Data have been compiled for the Springfield District showing by years from 1937 through 1956, for each PCA:

1. Total number and amount of outstanding loans by grades.
2. Loss data, including charge offs, recoveries and additions or deductions in the account, and provision for estimated losses.
3. Number and amount of current "D" loans by grade in previous year, and by disposition in following year.

In addition to these data, other materials bearing on credit quality were obtained from the Farm Credit Administration and elsewhere.

The loan grading system employed by the PCA's appears to be effective in grouping loans into classes that ultimately have significantly different loss rates. Examination of "D" loans (the lowest grade) by their disposition in the following year indicates that (1) about 20 per cent are charged off, (2) about 50 per cent remain classified as "D" and (3) the remaining 30 per cent are paid in full or graded A, B or C. Hence, ultimately about 40 per cent of all "D" loans are charged off; e.g., 20 per cent the first year, 10 per cent the second year, 5 per cent the third year, etc. This is, of course, a much higher charge-off rate than for the higher graded loans, since the over-all charge-off rate is only a fraction of 1 per cent. Examination of loss rates in relation to both loan grade and farm income indicates that loss rates are positively correlated with "D" loan percentages and negatively correlated with percentage changes in farm cash income (Table 17).

GEORGE K. BRINEGAR

Credit Ratings of Business Concerns

Credit ratings are primarily used by, and designed for, nonfinancial business enterprises that grant trade credit. How efficient are such appraisals in discerning among the users of trade credit those who will prove good risks and those who will prove poor risks? By rendering a substantially favorable verdict on this question, the available evidence on the relation between ratings and loss experience definitely encourages further analysis — of what the financial and credit ratings are and what they show.

Through the courtesy of the American Credit Indemnity Company in Baltimore we were able to explore one set of data on the practical use of, and experience with, credit ratings: the credit insurance premiums, losses, and coverage figures, classified by ratings and net worth of the insured firms' customers.

Table 17

AVERAGE NET LOSS RATES ON PRODUCTION CREDIT LOANS IN EACH YEAR, IN RELATION TO THE PERCENTAGE OF D LOANS AND TO PERCENTAGE CHANGE IN FARM INCOME, SPRINGFIELD DISTRICT, 1937-1956

Percentage change in cash receipts from farming[a]	AMOUNT OF D LOANS AS PERCENTAGE OF ALL OUTSTANDING LOANS				
	0-0.99	1.99	2.0-3.99	4.0-6.99	*Average*
	Average net loss ratio adjusted[b]				
Highest quartile	−0.013	−0.232	−0.335	0.147	−0.133
2nd quartile	0.049			0.677	0.174
3rd quartile	0.074	0.293	0.659	0.289	0.279
Lowest quartile	0.127	0.239		1.458	0.415
Average	0.071	0.017	0.162	0.543	0.184

[a] Including government payments.
[b] Negative sign denotes a profit.

According to the structure of the basic rates of credit insurance premiums, the company anticipates smaller losses on the accounts receivable of an insured firm if its customers have high ratings, or if they have larger net worth within the same rating group. The loss-to-coverage ratios are in fact systematically lower on accounts rated "high" than on those rated "good", and again lower on the latter than on the "fair" or "limited" accounts (Table 18). The ratios also show a broad tendency to vary inversely with net worth within the rating categories "high" and "good", where cross-classifications by both characteristics are available. These relationships hold with impressive regularity in every year on the record (1952-57).

Table 18 suggests also that there is a cyclical element in the loss ratios. They were particularly high in the recession year 1954. But it is important to note that the high-rated accounts did not prove vulnerable even then.

The evidence provided by credit insurance experience with respect to the relation between credit ratings and losses on trade credit is supported by an entirely independent record of losses on loans. The records of the Reconstruction Finance Corporation, analyzed in Saulnier, Halcrow, and Jacoby's *Federal Lending and Loan Insurance* (NBER, 1958, p. 458), show the incidence of loan default for firms with different credit ratings in the year before the loan was made. Thus, for example, the amount of direct-business loans in default taken as a percentage of outstanding loans on December 31, 1951, was 0.5 per cent for firms with "high" ratings, 5.0 per cent for "good," 16.9 per cent for "fair," and 20.5 per cent for firms with "limited" ratings.

With the cooperation of Dun and Bradstreet, we began an experimental sampling of the information from their *Reference Books,* which contain listings for several million business concerns. From each bimonthly issue a random sample of 1,200 listings was drawn, starting in 1950. The statistical approach and method of presentation are, of course, such as to assure strict observation of the confidential character of the data, which cover the following characteristics of the business population: (1) net worth, by 16 size groups; (2) credit rating, by 4 categories (limited, fair, good, and

Table 18

NET PROVABLE LOSSES MINUS SALVAGE AS PERCENTAGE OF COVERAGE, BY CREDIT RATING AND NET WORTH OF THE INSURED ACCOUNTS, 1952-57[a]

		RATIOS OF NET LOSSES TO COVERAGE, PER CENT[b]							
		On Accounts Rated "High"			*On Accounts Rated "Good"*			*On Accounts Rated "Limited" or "Fair"*	*Total (All Accounts)*
	Year	*Large*[c]	*Small*[d]	*Total*	*Large*[c]	*Small*[d]	*Total*		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	1952	0.004	0.233	0.052	0.002	0.271	.093	1.075	0.478
2.	1953	.030	.110	.046	.116	.649	.275	1.330	.605
3.	1954	.036	.141	.057	1.146	1.298	1.193	3.061	1.459
4.	1955	.075	.185	.097	.320	.689	.433	2.098	.964
5.	1956	.254	.318	.269	.331	1.048	.548	1.336	.771
6.	1957	[e]	.167	.064	.169	.832	.456	2.113	.938
7.	Average 1952-57	.063	.221	.097	.350	.856	.507	1.845	.883

[a] The credit rating and net worth classifications are those of Dun and Bradstreet, Inc.
[b] Excluded are all those account categories on which information is not sufficient to permit their classification by credit rating and net worth separately.
[c] $125,000 net worth and over.
[d] Up to $125,000 net worth.
[e] Salvage exceeds net provable loss, apparently due to discrepancies in time coverage.
Source: American Credit Indemnity Company of New York.

Table 19

Per Cent of Concerns Rated "Limited" or "Fair"
1950-58

Age in years	Concerns with net worth of: Less than $2,000	$2,000 to $20,000	$20,000 and over	All rated concerns
5½ or less	40	23	20	24
Over 5½	24	18	14	17
All ages	30	20	15	19

high); (3) industry (SIC two-digit); and (4) age of concern, by year of establishment.

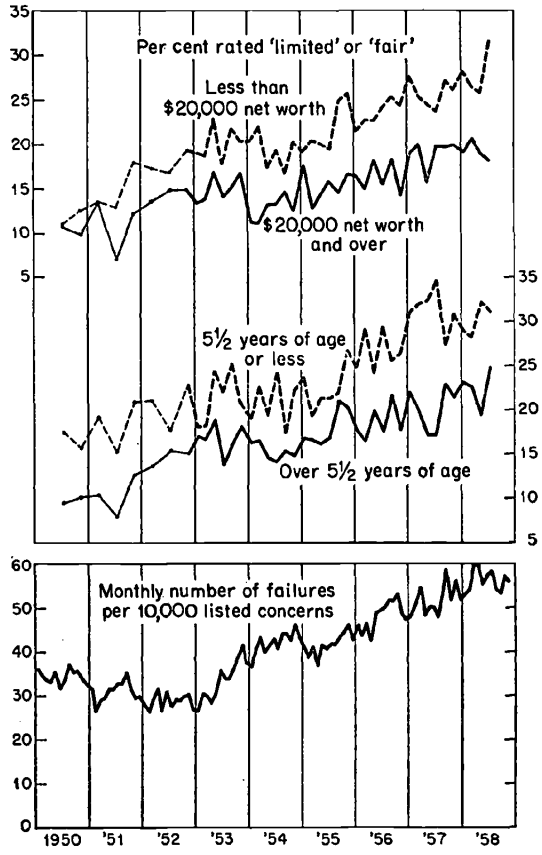
The percentages of concerns with "limited" or "fair" ratings are in every period covered by our samples larger for concerns in the lower than for those in the higher net worth brackets (see the upper pair of curves in Chart 5). The same relation holds for each of the individual industry divisions with but a few occasional lapses.

Chart 5 also shows the limited-or-fair ratings to be consistently more frequent among the young than among the older concerns. Such an association could conceivably be just a reflection of the relationship between credit rating and net worth, since net worth is positively correlated with age. But Table 19 indicates that the age-rating relation represents more than this: the proportion of lower ratings remains higher among the young than among the older concerns within each of the net worth groups distinguished. The age factor is particularly potent when coupled with small net worth. For concerns with larger capital it makes much less difference.

The period since mid-1950 witnessed an upward drift in the proportion of firms with limited-or-fair ratings (Chart 5). This indication that the credit standing of business concerns has on balance been deteriorating is borne out by the upward movement in the rate of business failures over the period since 1953 (but not for the years 1950-52).[2] Since 1953, the number of concerns with limited-or-fair ratings increased from 15 per cent to 25 per cent of all rated concerns, approximately. At the same time, the number of failures per 10,000 concerns listed in the *Reference Books* increased from about 30 to nearly 60.

Chart 5

CREDIT RATING IN RELATION TO NET WORTH AND AGE OF CONCERN, AND BUSINESS FAILURE RATE



Source: *Credit ratings,* NBER sample study of Dun and Bradstreet *Reference Book. Failure rate,* Dun and Bradstreet, Inc.

Since the incidence of low ratings is particularly high among new firms, an increase in the relative frequency of such firms could be responsible for the observed uptrends in the low ratings and in failures. However, the proportion of new concerns in the total business population, according to Department of Commerce estimates, remained remarkably stable throughout the period in question. So also were the percentages of new firms in manufacturing, wholesale trade, and retail trade — the industry divisions that are particularly well represented in our samples. The proportions of

[2] The apparent discrepancy in 1950-52 may be due to the change in the Dun & Bradstreet rating key beginning July 1950, which affected concerns below $10,000 net worth (see Chart 5, upper curves).

firms in young-age groups according to our *Reference Book* samples were likewise stable, subject only to mild erratic or other short-period oscillations. Moreover, Chart 5 as well as similar charts not reproduced here, which show the trends in ratings for various groups of concerns, indicate that the recent upward drift in the percentage of limited-or-fair ratings was not limited to any particular group. Here too, business failure data provide supporting evidence by showing upward trends in most age and size groups and industry divisions. We conclude that these measures point to a deterioration of credit-worthiness that, while of moderate magnitude, has been steady and rather widely diffused.

VICTOR ZARNOWITZ

RISKS AND RETURNS IN SMALL BUSINESS FINANCING

During 1958 the preliminary report on "Risks and Returns in Small Business Financing" was published as one part of the investigation of small business financing conducted by the Board of Governors of the Federal Reserve System.[3] Findings of the preliminary report were summarized in the Annual Report for 1957. Further investigations were subsequently begun in order to complete the analysis of data already at hand and to develop new sources of information. These studies are being supported in part by funds provided by the Federal Reserve Board.

The original question to which the study was addressed was whether the creditworthiness of small firms was typically lower than, or deteriorated relative to, large firms during the expansion phase of the business cycle, thus causing lenders to ration credit more severely with regard to small firms during periods of restrictive monetary policy. Although after the study began Congressional emphasis shifted toward the possible lack of private financing facilities for small firms, this has not diminished the importance of finding the facts on creditworthiness of small versus large business firms. Accordingly, efforts continue in this area along several lines of inquiry. In pursuing the investigation we have been fortunate in securing the cooperation of the Robert Morris Associates and the Federal Reserve Banks of Atlanta, Chicago, New York, and Philadelphia.

The longest historical record on the financial condition of business enterprises by size of firm is that available in the *Statistics of Income* compilations for corporations. These data are useful to compare firms of different sizes according to financial condition, as indicated by customarily used credit ratios, such as the ratio of current assets to current liabilities. Two problems are of particular interest. First, are the credit ratios of small firms generally lower than those of large? Second, do the ratios of small firms deteriorate more than large firms during economic expansions?

Considering first for all manufacturing corporations the three smallest asset-sized groups (under $250,000, $250,000-$1 million, and $1-$10 million), it appears that financial ratios measuring liquidity (current assets to current liabilities, and working capital to total assets) and the relation of equity to borrowed funds (net worth to debt) have in most years averaged better for the larger firms than for small firms. Even the $10-$50 million size group had ratios generally better than the next smaller size. The two largest size groups did not follow this progression but had, in fact, lower ratios than medium-size firms in most years, and sometimes even lower than small firms.

The thesis that financial ratios of small firms deteriorate more than large firms during the expansion phase of the business cycle is generally confirmed for the four peacetime expansions since 1933, although the very largest size group ($100 million and over) shows somewhat more relative deterioration than the very smallest size firms and considerably more than the medium sized firms in liquidity ratios though not in worth to debt. Some efforts are being made to explain the anomalous behavior of the very largest size firms.

A second avenue of exploration is a detailed study of bank credit files maintained by the Robert Morris Associates. Arrangements were made with the association to obtain IBM cards,

[3] *Financing Small Business*, Report to the Committees on Banking and Currency and the Select Committees on Small Business, U. S. Congress, by the Federal Reserve System, Part I, pp. 40-106.

coded to avoid disclosure of bank or firm, showing data for each of about 10,000 firms in 1955, 1956, and 1957. In order to analyze these data, each firm in a particular industry was ranked into quartiles of credit risk based on the selected financial ratios but without respect to size of firm. We then found that the small firms were generally under-represented and the large firms over-represented in the first quartile of credit risk (lowest risk). The variation in financial ratios among small firms is also greater than among the large firms. It appears, too, that firms in the best credit quartiles in their respective industries are successful in expanding bank loans, trade credit and total credit, and total debt in all size groups analyzed. Indeed, small firms with good financial ratios expanded their credit use more than any other group. These data suggest no real discrimination against small firms in credit use and indicate that credit risk rather than size is the most important determinant of credit use.

Light on bank lending losses by size of business borrower in 1957 has been obtained through a special survey of 979 member banks conducted by the Federal Reserve Bank of Chicago. In general, loss rates are greater for loans to small business than for loans to medium-size and large business, in each major industry group. This tendency is most pronounced in the largest banks (over $100 million deposits). The preponderance of small business loans in smaller banks helps to account for the higher average loss rates in these banks. However, smaller banks also had higher average loss rates than larger banks on loans to small firms.

Principal effort during the year was devoted to developing tabulations from bank examination records. The late Edward J. Kilberg conducted a pilot survey of eight banks in the New York and Atlanta Federal Reserve Districts which indicated interesting possibilities in utilizing bank examination materials to determine lending risks in relation to size of firm as well as other factors. While the pilot study was too small to give statistically reliable results, it did suggest that the incidence of loans classified by examiners as substandard, doubtful, or loss was higher in the smaller firm categories. Furthermore, firms whose loans were classified by bank examiners as subject to undue risk had notably worse financial ratios than did firms whose loans were not classified by the examiners. The more severe examiner classifications (doubtful and loss) were found to be harbingers of ultimate charge-offs.

These highly tentative results indicated that a greater effort should be made to utilize bank examination data in the area of small business financing problems. Additional possible uses of bank examination materials as a check on current loan quality also seem worth exploring. Accordingly, with the cooperation of the Federal Reserve Banks of Atlanta, New York, and Philadelphia, data from a sample of 60 banks is currently being compiled.

Albert Levenson has been exploring the difference to banks in the cost of making loans to "large" as opposed to "small" businesses, using data for 1955 for thirty-five banks in the Atlanta Federal Reserve district. The results may help to explain the higher interest rates charged on bank loans to small businesses. They imply that, on average, these banks experienced expense rates (ratios of loan expenses to loans) nearly twice as high on small business loans as on large business loans ("small" businesses being those with assets under $250,000). Considerable variation around these averages exists, however.

A study of the credit ratings of business firms by Victor Zarnowitz, summarized in the preceding pages, will also help in evaluating the risks in small business financing.

THOMAS R. ATKINSON
GEOFFREY H. MOORE

THE IMPACT OF PUBLIC AND PRIVATE PENSION SYSTEMS ON SAVING AND INVESTMENT

This project was begun in 1958 under a grant from the Maurice and Laura Falk Foundation of Pittsburgh to investigate the present and prospective structure of both public and private pension systems and to explore their impact on saving and investment. In addition, a grant from the Life Insurance Association of America will support study of the ways in

which pension programs operate to affect the distribution of income among individuals and groups. In the formulation of the research program, we have been greatly aided by an advisory committee of distinguished experts in the pension field.

Several distinct but interrelated phases of the study can be identified:

1. A comprehensive view of the pension structure and the trends affecting it over the visible future. Some preliminary observations are included in Daniel M. Holland's report below.

2. The question of whether the growth of pension arrangements causes an increase in aggregate saving or simply redirects the same saving flow through different channels. Some tentative thoughts on this question are outlined in Phillip Cagan's report, in which he also mentions the information being digested from the Consumers Union survey.

3. The effects of transfer payments on those who bear the costs of contributions and on those who receive the benefit payments from retirement systems. The transfers of claims to resources may be between different income classes, between the working group and pensioners, and even between generations. The redistributive effects upon saving and consumption may, of course, influence the level of aggregate saving. To the extent that the investment of fund accumulations contributes to an increase in productivity (used in a broad sense), retirement systems may represent only a slight net "burden" on the economy.

4. The impact of the pension structure on the capital market. Regardless of other economic effects of public and private retirement programs, it is clear that the channelling of funds into various segments of the capital market will continue to be altered by the institutional arrangements made to handle both the funds destined for current benefits and the amounts invested to provide for future payments.

Capital Market Influences

Insured pension plans over the years have added more than $15 billion to the assets of life insurance companies, thereby enlarging the scale of their lending and investing activities in the traditionally predominant fields of corporate and real estate finance. In this case, it is doubtful whether assets accumulated to meet pension plan reserves have a separate identity in the planning of the allocation of funds to different segments of the capital market.

The impact of fund accumulations under the OASDI, Civil Service and Railroad Retirement systems is directly on the management of the federal government's debt because these funds are restricted to U. S. Treasury obligations. Indirectly, however, the results may be significant in the competition which the Treasury may be giving to other seekers of long-term funds.

The operations of state and local government retirement systems, currently adding almost $1.7 billion a year to asset holdings of over $15 billion, have been a factor in altering the flow of funds. In recent years, corporate bonds on a large scale, together with real estate mortgages and common stocks on a small scale, have become the principal outlet for new funds. While state and local government securities have claimed a fairly consistent 25 per cent of net additions to assets, federal obligations have been of decreasing importance as more and more governmental units have broadened the statutes and regulations which define eligible investments.

Equally dramatic have been the shifts in the investment policies of the noninsured pension funds of business firms, nonprofit organizations, unions, and joint union and employer groups. With the assistance of Elizabeth Simpson, we are gradually piecing together the data for the non-corporate funds not included in the surveys of the Securities and Exchange Commission. If they are included, the annual rate of growth appears to have been in excess of $3.3 billion last year and holdings are now more than $25 billion.

The striking developments have been the increase in equity investments during recent years and a growing, although still modest, interest in real estate loans and investments. The noninsured funds have served to accelerate the trend of institutional investments away from media characterized by liquidity and short-term price stability.

Institutional participation in the market for equity securities has been growing over a long period of years, but the rate of growth has been sharply increased by the activities of pension funds. We are exploring some of the implications for the supply of equity capital, the range of price fluctuations in the stock market, and

the differentials in rates of return. Preliminary findings suggest that pension fund buying of seasoned issues has not caused appreciable disparities in market valuations relative to less seasoned issues. There remains the question of whether this general statement will hold true under different economic conditions. The extent of the concentration of pension fund buying in selected seasoned issues is under study as an essential element in tracing the impact on various classes of equity securities.

ROGER F. MURRAY

The Pension Structure

I have been concerned with developing a statistical description of the pension structure, a history of its growth up to now, and its growth possibilities over the next several decades.

Table 20

COVERAGE OF PRIVATE PENSION PLANS, 1940-57

Year	*Employees Covered*	*Total Employees[a] (in millions)*	*Percentage Covered*
1940	4.1	29.5	14%
1945	6.4	33.0	19
1950	9.8	40.2	24
1955	15.2	43.9	35
1956	16.3	44.7	36
1957	17.7	43.8	40

Sources: Coverage: through 1956, *Social Security Bulletin*, March, 1959, p. 10; 1957, from Mrs. Weltha Van Eenom of the Actuary's Office of the Social Security Administration, who warns that all these figures are rough estimates. Employment: through 1955, Bureau of Labor Statistics, *Seasonally Adjusted Employees in Nonagricultural Establishments by Industry Division* (issued June, 1956); 1956 and 1957, *Federal Reserve Bulletin*.

[a] Nonagricultural, nongovernmental.

Table 21

PER CENT OF WORKERS IN ESTABLISHMENTS PROVIDING PENSIONS, SELECTED CITIES AND INDUSTRIES

City	*All Industries*	*Manufacturing*	*Public Utilities*	*Wholesale Trade*	*Retail Trade*	*Finance*	*Services*
A. OFFICE WORKERS							
Atlanta							
April 1957	85	79	90	82	82	91	—
March 1951	57	40	90	39	83	69	—
Boston							
Sept. 1957	77	73	95	65	54	89	58
March 1951	63	50	90	43	33	80	50
Cleveland							
Oct. 1956	73	78	91	58	—	83	—
Oct. 1951	52	58	89	38	—	26	—
Seattle							
August 1956	72	83	79	—	64	—	—
Sept. 1951	37	12	60	—	41	—	—
B. PLANT WORKERS							
Atlanta							
April 1957	59	58	92	56	60	—	—
March 1951	34	24	57	19	67	—	—
Boston							
Sept. 1957	59	59	88	55	61	—	16
March 1951	38	41	73	33	28	—	17
Cleveland							
Oct. 1956	67	72	100	57	—	—	—
Oct. 1951	49	56	53	27	—	—	—
Seattle							
August 1956	63	69	94	—	53	—	—
Sept. 1951	18	5	61	—	18	—	—

Source: Bureau of Labor Statistics, Occupational Wage Surveys.

Both history and current status are of interest not only for themselves, but also insofar as they give clues to future growth.

There follows a preliminary report on some of the features of private plans that we have examined for trends that may be helpful in projecting pension magnitudes.

1. Coverage. The single most pronounced fact about private pension plan coverage is its extremely rapid growth. Yet despite this rapid growth, not much more than two-fifths of the potentially eligible working population is covered (Table 20).

The rapid growth in coverage experienced to date has been the result of two factors—(1) the institution of new pension programs and (2) additions to the work force of business enterprises that already provide pensions. In the main it is a further development of (1) that would lead to an increase in the percentage of total employeees covered. On this score we can reasonably expect slower growth, certainly geometrically and probably in absolute terms as well. For the more likely situations for the introduction or extension of pension plans have already been tapped; the harder cases remain. And for them coverage may well rest upon the development of new types of arrangements.

Data from the BLS Occupational Wage Surveys suggest that in some industries the percentage of employees in establishments offering a pension program is rapidly approaching a practicable ceiling while in some, at least, of the industries where this is not the case, growth in coverage has tended to be slow (Table 21).

2. Vesting. Many factors other than coverage determine pension plan fiscal magnitudes. One of these plan characteristics is vesting. The earlier the employer's contribution vests in an employee (in terms of age, length of serv-

Table 22

VESTING PROVISIONS OF CONVENTIONAL PENSION PLANS, BANKERS TRUST SURVEYS, 1943-55

	1943-47	*1948-50*	*1950-52*	*1953-55*
	Per Cent of Total Providing			
Immediate vesting	4	3	2	—
No vesting	24	19	24	25
Vesting on completion of a period of service	20	31	29	21
10 years or less	10	14	13	8
15 years	4	7	6	5
20 years or more	6	10	10	8
Vesting on attainment of a specified age	14	5	4	5
50	1	1	1	1
55	6	2	1	2
60	7	2	2	2
Vesting on completion of a period of service (from 10 to 25 years) and attainment of a specified age	35	38	38	42
45 or less	7	7	9	10
50	4	9	10	11
55	18	17	12	13
60	6	5	7	8
Miscellaneous (information incomplete, partial vesting only, etc.)	3	4	3	7
Total	100	100	100	100

Source: Bankers Trust Surveys.

Table 23

ESTIMATED MEDIAN PERCENTAGE RETIREMENT BENEFITS WILL COMPRISE OF ASSUMED AVERAGE EARNINGS UNDER THE AVERAGE COMPENSATION PLANS IN THE BANKERS TRUST SURVEYS

	Median Percentage Benefits of Private Plans Alone			*Median Percentage Benefits of Private Plans and Primary Social Security Benefit Combined*		
Income Level	*1948-50*	*1950-52*	*1953-55*	*1948-50*	*1950-52*	*1953-55*
$3,000	30	27	26	52	59	62
$4,200	33	29	26	50	55	58
$7,200	37	39	37	48	54	57
$15,000	42	48	43	46	56	56

Based on expected pensions at selected income levels after 30 years service, weighted by the number of workers covered by the particular plan (not the number of workers at each income level). Includes only "conventional" plans whose benefits are based on average compensation.

ice or a combination of these), the higher, other things equal, the costs of a pension program to the employer; i.e., the larger the necessary fund accumulation must be. What has been the trend for vesting provisions?

According to Table 22, few or no plans have provided for immediate vesting, while about one-fourth of all conventional plans make no provision for vesting at any time. The majority, however, provide for vesting on the basis of both age and service period. In general, these data suggest no real trend toward a liberalization of vesting requirements over the last decade.

3. Benefit formulae. How much retirement income will be made available under present benefit schedules is, of course, of interest. Table 23 gives preliminary findings for plans whose benefits are based on average earnings. The entries show median benefits as a per cent of earnings. For example, in the 1953-55 survey, half of all workers came under plans that will provide benefits equal to 26 per cent of salary, for those who earn $3,000 for 30 years, while the other half will receive less than 26 per cent. Half of all workers fell under plans where those earning $15,000 can expect 43 per cent of their salary, etc.

First, as to the private pension programs alone:

1. Reading from low to high incomes for any one of the survey years, the benefit structure is "progressive," i.e., the higher the assumed earnings, the higher the fraction that retirement benefits represent of it. This, of course, is the reverse of the benefit pattern established by OASI.

2. Reading across any of the income levels from all of the survey years we find no evidence of a trend toward liberalizing benefit formulae. If anything, the contrary appears to have been the case. This is a puzzling result for it goes counter to a widely held feeling that liberalization of benefit formulae has been characteristic. More investigation will be required here.

Now, taking account of OASI primary benefits also:

1. We noted that private pension benefits will be progressive in relation to working-life earnings, and OASI benefits regressive in relation to the same base. The net result of these two patterns can be seen in the last three columns of Table 23. On balance, reading in any of these columns from low to high incomes, we find a falling median percentage, but a very gentle fall. The combined pensions are substantially proportional to income. This is an interesting example of the need to look at pension arrangements as a whole.

2. With OASI brought into the picture, reading across the years at any income level, we find a fairly sizable rise in the median percentage. This suggests that there have been liberalizations in projected benefits over the last 5 years or so, but they have been brought about solely by changes in OASI. This point also will require further investigation.

It is important to note that even with no change in benefit formulae, private pension costs can be expected to go up if wage levels move up, because of the progressive nature of benefit patterns. The relation of benefit patterns such as these to income distribution will be studied as part of our research into the redistributive effects of pensions.

4. Further Research. There are, of course, numerous ways of projecting pension magni-

tudes into the future. We have been experimenting with the possibility of using the annual reports of corporations for 1950 and 1957 to get a more refined industry breakdown of contributions per employee than is available from the SEC data. If satisfactory data can be obtained, these will probably support better projections than the broad aggregates.

I plan to continue studying trends in the various characteristics that affect the size of pension fund accumulation, and to attempt to estimate the proportion of covered workers who are likely eventually to receive benefit payments. This latter depends on the nature of vesting provisions and the degree of labor mobility. These explorations may provide a basis for projecting future levels of pension plan magnitudes.

DANIEL M. HOLLAND

The Impact on Aggregate Saving

One interesting question posed by the growth of pension programs is their effect on aggregate saving. Their growth represents a change in the form in which people make expenditures on assets (that is, save). Ordinarily a shift in the form of a class of expenditures is not associated with a major change in the total amount of such expenditures. For example, a shift in consumer expenditures from Chevrolets to Fords, or from unpackaged to pre-packaged meats and vegetables, need not involve much change in total expenditures on automobiles or food. But in the shift of savings to company pension plans there are some good reasons to suppose that the change in form has had the effect of increasing the total amount. The chief of these is the well-known tax advantage of pension fund participation, which doubtless encourages many to save more than they otherwise would.

It is not, however, an easy matter to determine whether, and by how much, pension plans may have increased total U.S. saving. Long-run movements in aggregate saving in the economy are affected by so many factors that we could not hope to discern the separate effect of growth of pension plans. However, a promising approach is through surveys. Here we can compare the stated rates of saving of people who appear alike in every important respect except in the amount of their own and their employer's contribution for them to a company pension program. We can then correlate the amount of this contribution with the amount of their total saving.

There are two principal disadvantages to this approach. A sample survey that would be fairly representative of the total United States population would be too small to yield information of the detailed kind we require (else the survey costs would be exorbitant), and the answers about pension contributions would be mostly "don't knows" or inaccurate. We have tried to avoid these two disadvantages by giving up some of the representativeness of our sample. In the Consumers Union survey recently administered by the National Bureau (see the report on Consumers' Buying Plans by F. Thomas Juster), information was obtained on pension characteristics and contributions and on total saving from about 20,000 people admittedly above average in ability and willingness to answer a complicated questionnaire. We are now engaged in analyzing these data for the information they contain on the questions posed above.

The entire group was asked about saving habits, so that it will be possible to compare the behavior of the larger group (about 60 per cent) who are covered under pension programs other than OASI with that of the smaller group who are not so covered. In this comparison, age and income class can be held constant. In about two-thirds of the questionnaires, the covered individuals were asked detailed questions about their and their employers' contribution rates, the amount of their equity in the plan, the expected level of benefits on retirement, the extent of vesting, and additional questions designed to discover how important the pension plan appears to them in their planning for the future.

While these data give every indication of providing us with our main and richest source of information, we shall also to the extent possible compare the results from them with information from other surveys.

PHILLIP CAGAN

THE POSTWAR RISE IN MONETARY VELOCITY

Except for brief and mild declines during business contractions, monetary velocity, i.e., the volume of transactions per unit stock of money, has moved steadily upward since the end of World War II. This is true whether one includes or excludes time deposits as a segment of the money stock, and whether one measures velocity by a broad aggregate such as deposit turnover or by any of the several variants of income velocity. By 1957 one income velocity measure, the ratio of annual GNP to total demand deposits plus currency, reached a level it had not experienced since 1930.

In part the rising trend of velocity represents a readjustment from the abnormally low wartime levels, but the continued rise since 1952 cannot be explained realistically in these terms. The phenomenon of a persistent rise in income velocity during a time of peace is unique in American history. The fact that it has occurred during a period of rising real income per capita makes it all the more difficult to explain since rising income seems to be the main explanation of the generally *declining* trend of velocity up to World War II.

One way of getting at the determinants of monetary velocity is to correlate it with various factors such as interest rates, money substitutes, and per capita income for the economy as a whole. Through such correlation analysis one can obtain an aggregate function relating velocity to three or four measurable variables.

Another approach to the problem is to examine sectoral velocity estimates. The merits of a sectoral velocity analysis are these: (1) where velocity differs among sectors due to differences in preferences, a simple reweighting of sectors may lead to aggregate velocity changes that would not be predicted by any feasible aggregate function; and (2) it is reasonable to suppose that responses to the various velocity determinants differ among sectors, and a sectoral approach can greatly improve our understanding of the way in which these determinants affect aggregate velocity.

There are five principal bodies of data on sector velocities. They are listed below, together with the associated sectors:

1. National Income Accounts. Sectors: federal government and rest of the economy, quarterly and annually.
2. Statistics of Income. Sectors: all corporations by census industries and asset size classes, annually.
3. Federal Trade Commission-Securities and Exchange Commission Quarterly Financial Reports for Manufacturing Corporations. Sectors: all manufacturing corporations by broad industry groups and asset size classes, quarterly.
4. Federal Reserve bank debits data. Sectors: New York City, six other centers, and 337 other reporting centers, monthly.
5. Federal Reserve Flow of Funds Accounts. Sectors: consumer, corporate, noncorporate, farm, federal government, state and local government, banking insurance, other investors, and rest of the world, annually.

Of these the flow of funds accounts are particularly useful since they are both fairly detailed and comprehensive in scope. Accordingly, I have computed sector velocities from these accounts for the period 1946-56 in the hope that they might shed light on the factors responsible for the postwar rise in aggregate velocity.

Although the study has not been completed, a few general findings may be noted. (1) The observed postwar rise in aggregate velocity is approximately the same whether measured by deposit turnover, income velocity, or a third measure computed from flow of funds data, total nonfinancial turnover. It follows that these velocity rises cannot be attributed to vertical integration, stock market activity, or other factors which have differential effects on the various velocity measures. (2) Although the postwar rise in velocity conceivably could have resulted from shifts in the relative importance of high- and low-velocity sectors, the facts contradict this hypothesis. There have been sizable short run shifts of this sort, but little net change over the entire period. (3) The postwar velocity rise could have been concentrated in one or a few sectors, with velocity in the other sectors remaining stable or even declining. However, the facts indicate that velocity rose in all sectors, save one, at about the same rate as aggregate velocity. The ex-

ceptional sector is corporate business, whose velocity rose at a slower rate. (4) Since velocity rose in all sectors, it seems reasonable to conclude that one or more general factors were at work affecting all sectors in much the same way. This points to such factors as higher interest rates, improved techniques in administering cash balances, and growth of money substitutes as the most likely explanations of the postwar velocity rise.

Work is continuing along several lines. I expect to examine velocity in the business sector by means of the FTC-SEC quarterly reports. In addition, I shall use the flow of funds accounts to study the changes in debt and other magnitudes that have accompanied higher velocity.

RICHARD T. SELDEN

CAPITAL FINANCING: SOURCES OF FUNDS

This study is concerned with variations between companies in financing patterns and with changes in methods of financing employed by individual companies over time. The general conclusions of the study were indicated in last year's annual report. These conclusions were based on data for a heterogeneous group of 168 manufacturing companies for the period 1946-55 and for two relatively homogeneous groups of companies for the period 1921-53. The latter consisted of seventeen steel companies and twenty-four petroleum companies.

During the year, data for the steel and petroleum companies were extended through 1957. In addition, a number of hypotheses regarding the reasons for variations between companies in financing patterns were examined. Attention was given particularly to the relation between the stability of earnings and debt-equity ratios and to the relation between the ratio of long-term debt and equity on the one hand and the relative volume of short-term debt on the other.

I expect to complete a manuscript during 1959.

MICHAEL GORT

POSTWAR CAPITAL MARKETS

Work on this subject, which started in 1955 under a grant from the Life Insurance Association of America, is now sufficiently advanced to bring completion in sight.

One of the four main studies, that dealing with the market for nonfarm mortgages by Saul B. Klaman, is completed in manuscript and parts of it have already been published or sent to press. Of the second study, one part dealing with the market for state and local government securities by Roland I. Robinson, has been approved for publication by the Directors and is now in press. Another part dealing with the market for Treasury securities other than savings bonds has been completed by Robinson and Morris Mendelson. Another section of this study, George Hanc's report on the savings bond program, will soon be completed. The third major study, Eli Shapiro's examination of the market for corporate securities and loans, is expected to be completed in manuscript by the middle of the year. The statistics of the quarterly flow of funds through the capital market for the years 1953 to 1955, which constitute the fourth study, have been constructed by Morris Mendelson. His manuscript explaining their derivation is now finished, and he expects to prepare an Occasional Paper analyzing some aspects of the figures. The basic statistical work has also been completed on two complementary studies devoted to the statistics of saving and national wealth during the postwar period and considerable progress has been made on a third similar study dealing with national balance sheets (see Section 2, above). Drafts of one or two Occasional Papers making available at least the main statistical results and a brief discussion of them may be completed by the middle of 1959.

Some detail about the status of these studies is presented below by their authors.

RAYMOND W. GOLDSMITH

The Market for Corporate Securities and Loans

David Meiselman and I completed a corporate sources and uses of funds statement for 1950-

55 for six broad subsectors of the corporate universe: (1) manufacturing, (2) mining, (3) communications, (4) gas and electric utilities, (5) railroad, and (6) miscellaneous, including trade, service and other. In addition, a similar series was prepared quarterly for 1953 through 1955 to tie in with the quarterly flow-of-funds estimates described above.

The data and concepts employed to derive the corporate flow of funds information conform closely to, but do not completely agree with, the treatment of the corporate business sector by the Federal Reserve Board in its flow of funds data. The major difference is our substitution of Interstate Commerce Commission for the Internal Revenue Service data used by the Board. At the present time, the Board's published data are on an annual and quarterly basis but do not show any industry detail.

Our data tie into a series, ending in 1950, compiled by John C. Dawson of Grinnell College, which is designed to conform with the Federal Reserve Board's concepts and totals. Splicing our series to the Dawson data, we have derived a record of corporate sources and uses of funds for the six sub-sectors of the corporate universe back to 1931. A draft of a technical paper explaining the procedure used in deriving the estimates of corporate fund flows is now being revised.

I am pressing to complete a preliminary manuscript of the monograph "Corporate Securities and Loans" as rapidly as possible. The proposed table of contents will include the following chapters:

1. Introduction
2. Corporate Uses of Funds
3. Corporate Sources of Funds
4. Security Holdings
5. The Direct Placement Market
6. The Public Offering Market
7. The Secondary Market
8. Interest Rate Movements and Fund Flows
9. Summary and Conclusions

A summary of some of the findings derived from our examination of corporate sources and uses of funds follows.

In the ten years after the war, corporate capital expenditures amounted to almost $230 billion. The vast bulk of these expenditures was for gross fixed investment.[4] The annual average change in inventories (after elimination of valuation changes) for the decade was less than $5 billion. Net working capital, of which inventory is a component, increased on the average by roughly the same amount.

By far the major source of funds used to finance these capital expenditures was internal funds, which constituted almost 83 per cent of the total sources accounted for and over 75 per cent of the total uses. The most important type of external funds was the net issue of securities. This was true of every single year without exception. And finally, the most important type of security was bonds.

Corporate fixed investment was already rising when the postwar decade opened. The rise slowed down early in the decade but expenditures continued to drift upward. The upward drift was neither even nor uninterrupted, but by 1955 fixed investment was proceeding at the rate of $24.5 billion per year, compared with a rate of $13.7 billion per year in 1946.

Not all of the industry groups shared in the general upward drift in fixed investment. Only the communications industry reached the decadal peak of fixed investment in 1955. In both manufacturing and mining and the gas and electric industries, investment in 1953 exceeded that of 1955. The highest level of fixed investment in the railway industry — $1.5 billion — was achieved as early as 1951.

The pattern of investment in inventories is quite different from that in durable producers goods. First, there is no discernible upward drift. Second, inventory investment is significant in only two industry groups, manufacturing and mining, and trade-services.

A comparison of all corporate fixed investment and all corporate internal funds discloses a certain similarity in the movement of these series, although the latter was much more volatile. However, the similarity is to some extent the result of offsetting sectoral movements. There were no inverse movements of flows of inside funds and fixed investment in

[4] Before deduction of depreciation. In addition to new plant and equipment expenditures, fixed investment includes "other capital expenditures," a flow of funds concept that covers corporate purchases of residential land and structures, used equipment purchases from the Federal Government, and dealers' margins on new security issues.

the manufacturing and mining industries, while there were a few such inverse movements in the railroad, trade-service, communications, and gas and electric industries respectively. Inverse changes in inside funds and fixed investment occurred much more frequently when fixed investment was falling than when it was rising. A relationship between inside funds and fixed investment is more evident in the last three years of the decade than in the preceding seven.

In all industries except gas and electric and communications, inside funds at one time or another in the decade supplied more funds than were needed for fixed investment. This occurred most frequently in the middle years of the decade and most strikingly in the manufacturing and mining industries. The latter was the only industry in which inside funds exceeded fixed investment for the decade as a whole. Inside funds were of decreasing relative importance in the railroad, trade-service, communications, and gas and electric industries in that order.

The all-corporate flow of external funds is almost completely dominated by the flow in the manufacturing and mining industries. In general, the external funds flows of the other industries did not exhibit the great year-to-year variations that characterized the external funds flows of manufacturing and mining.

Long term funds were generally a more important source of funds than short term sources. A second characteristic of long term borrowing, at least for the corporate universe in the postwar decade, was that it was a relatively more stable source of funds than either net short term borrowing or decreases in liquid assets. The movements of external funds thus rarely reflected changes in long term borrowing, but were almost always dominated by the movements of the other two components. By far the most erratic source was decreases in liquid assets.

These characteristics of the corporate universe do not hold without exception for the industrial components. Net long term borrowing clearly dominated the external funds of the communications and gas and electric industries, not only in terms of level but also of changes. In the other three industries the influence of changes in long term borrowing on fluctuations in external funds was much smaller. Borrowing by the various industries rarely expanded and contracted in unison. Except for the recession years of 1949 and 1954, at least one industry was out of step with the others in every year of the decade.

A paper on "The Corporate Demands on the Capital Market in the Postwar Period" was read at the meetings of the American Finance Association in Chicago, December 1958. A paper on the total assets and portfolio composition of personal trust funds from 1952-1955 was published in the March issue of the *Journal of Finance.*

ELI SHAPIRO

Postwar Mortgage Market

My active participation in the Postwar Capital Market project was virtually concluded in 1958 with the completion of my manuscript on "The Postwar Mortgage Market." The material is now being reviewed by a staff reading committee and by investment officers of financial institutions interviewed during the course of the study. Hopefully, a revised manuscript, based on comments received by readers, will be ready by mid-1959.

As it now appears in mimeographed form, the manuscript consists of eight chapters.

1. Introduction and Summary of Findings
2. An Overview of Mortgage Market Changes in the Post World War II Decade
3. Elements in the Changing Postwar Mortgage Market
4. The Postwar Pattern of Mortgage Interest Rates
5. The Flow of Funds into Mortgage Markets
6. Mortgage Lending Policies of Financial Intermediaries
7. Mortgage Market Techniques and Characteristics
8. The Postwar Rise of Mortgage Companies

It is likely that the revised manuscript will include two brief appendixes on the derivation of data on conventional mortgage interest rates, and on a mail survey of savings and loan association mortgage operations. An appendix on gross mortgage flows data also is being considered.

In addition to the completion of my main monograph on "The Postwar Mortgage Market," two supplementary studies were published (in 1958 and early 1959). These were the *Volume of Mortgage Debt in the Postwar Decade* (Technical Paper 13), and *The Postwar Rise of Mortgage Companies* (Occasional Paper 60).

SAUL B. KLAMAN

State and Local Government Securities Market

The manuscript "The Postwar Market for State and Local Government Securities" described in the 37th Annual Report has been approved for publication by the Directors, the revisions suggested by them have been completed, and the manuscript is in press.

ROLAND I. ROBINSON

The Market for Treasury Securities

Our study of the market for Treasury securities begun by Roland Robinson in 1955 was interrupted so that study of the state and local government securities market might be completed. A new draft manuscript, based mainly on the research conducted earlier, has now been prepared. It contains the following chapters:

1. Introduction and Summary
2. Treasury Financing Techniques
3. Dealer Organization
4. Investors in Treasury Obligations
5. Informal Underwriting of Treasury Financing
6. The Secondary Market in Operation
7. Interest Rate Development in the Treasury Market
8. A Comparison of Treasury Market and Other Yields

The manuscript is now being circulated for informal review.

ROLAND I. ROBINSON
MORRIS MENDELSON

United States Savings Bond Program, 1946-58

The manuscript on the postwar savings bond program is well under way and should be completed this spring. On the basis of suggestions from a number of reviewers, an earlier version, which was presented as a doctoral dissertation at Columbia University, has been extensively revised. The original study has been condensed and refocused in accordance with the objectives of the Postwar Capital Markets Study.

The scope and plan of the revised study is suggested by the following tentative chapter headings:

1. Significance of the Savings Bond Program
2. Pattern of Savings Bond Holdings
3. Postwar Behavior of Savings Bond Holders
4. Economic Effects of the Savings Bond Program
5. Savings Bond Program and Federal Debt Management

GEORGE HANC

THE INDIVIDUAL INCOME TAX

This project began as a simple statistical history, but it soon became evident that considerable analysis and exposition of various aspects of changes in the law and in the amounts, sources, and distribution of personal income since 1913 were essential to a proper interpretation of the figures and to due perspective with regard to various issues of public policy concerning the income tax. We were led, therefore, to a number of separate though related studies, some now completed and others in process, which we plan ultimately to summarize in a single volume.

My monograph on interest income (*Interest as a Source of Personal Income and Tax Revenue,* Occasional Paper 53) was published in 1955. The manuscript of another study, of personal deductions (by C. Harry Kahn) has been approved by the Directors and will soon go to press. The draft of another, on dividend income (by Daniel M. Holland), will shortly be submitted to the Board. A draft of my manuscript on the personal exemptions is undergoing some refinement before review by the staff. Progress has also been made on studies of capital gains and losses, entrepreneurial income (reported on below), rents and royalties, wages and salaries, estates and trusts, the relations and differences between income for tax purposes and personal income, and the rate structure.

Few persons adequately appreciate the cen-

Table 24

INDIVIDUAL INCOME TAX REVENUE CONTRIBUTED BY FIRST BRACKET RATE, 1955

	(dollar figures in thousands)
1. Total taxable income on taxable returns	$127,889,249
2. Total income tax liability before tax credits	29,956,709
3. Tax liability from first bracket rate (20% of line 1)	25,577,850
4. Proportion of total tax liability contributed by first bracket rate (line 3÷line 2)	85.4%
5. Total income tax liability after tax credits	$ 29,613,722

Note: "Taxable income" is income actually subjected to the income tax rates — after personal exemptions and deductions. Does not include fiduciary returns.

Source: *Statistics of Income, 1955.*

tral importance of the personal exemptions and the first bracket tax rate in the present-day individual income tax. These two elements largely govern the proportion of the population and of total individual income covered by the tax, its total revenue yield, and the effective tax rates of most persons. Some striking aspects of their dominating influence are briefly indicated in the following paragraphs, which summarize some of the findings of our study of the personal exemptions.

1. Primarily because of radical reductions in the personal exemptions and a huge increase in personal incomes, taxable returns now cover 70 per cent of the population, including dependents, and 84 per cent of the total of individual incomes, as compared with less than 5 and 30 per cent, respectively, in most years before 1940. If the personal exemptions had remained at their 1929 levels, we estimate that the amount of taxable income reported in 1955 would have been smaller by some $58 billion, or about 45 per cent less than that actually reported, and that total income tax liability would have been reduced by about $12 billion or 41 per cent.

2. Even seemingly modest increases in the level of the per capita exemptions would cause sizable reductions in tax revenue. If the per capita exemption had been $700 instead of $600 in 1955, income tax revenue would have been cut $2.5 billion, or 8.4 per cent; and if the per capita exemption had been $800, individual income tax revenues would have been reduced by about $5 billion or 16.7 per cent.

3. Slightly more than 71 per cent of all individual returns with income tax liability in 1955 were subject only to the first bracket rate of 20 per cent (Table 24), and about 85 per cent of the total income tax liability, before tax credits, came from the first bracket rate (Table 25).

Table 25

TAXABLE INDIVIDUAL RETURNS FALLING WHOLLY WITHIN FIRST BRACKET, 1955

	No. of returns
A. Classes of taxable returns falling wholly within first bracket	
1. Joint returns with taxable income of $4,000 or less	21,176,559
2. Single person returns with taxable income of $2,000 or less	10,406,317
3. Head of household returns with taxable income of $2,000 or less	344,709
4. Total of taxable individual returns falling wholly within first bracket	31,917,585
B. Total number of individual returns with taxable income	44,689,065
C. Proportion of all individual returns with taxable income falling wholly within first bracket (line 4÷line B)	71.4%

Note: Taxable returns include only those with income tax liability after tax credits, not those with liability only for self-employment tax. "Taxable income" is income actually subjected to the income tax rates—after personal exemptions and deductions.

Source: *Statistics of Income, 1955.*

4. For the great mass of taxpayers whose incomes fall altogether in the first bracket, as well as for those in the next few brackets, the personal exemptions cause a brisk graduation of effective tax rates (tax liability divided by adjusted gross income). They do this by placing a zero rate, in effect, on the amount of adjusted gross income equal to the personal exemptions, leaving only the balance subject to the bracket rates. The exemptions bar from the bracket rates all but a few dollars of the income of a man near the bottom of the income scale, while leaving increasing amounts subject to tax rates of 20 per cent or more as the income scale is ascended. In consequence, the effective tax rates start at a tiny fraction of 1 per cent of adjusted gross income and move upward at a lively pace through the first bracket despite the flat 20 per cent rate applicable to all *taxable income* in this bracket. An effective tax rate of 20 per cent of *adjusted gross income* is not reached until the income level is substantial — about $9,000 for a single person, nearly $16,000 for a married couple, and about $19,000 for a couple with two dependent children. A four-exemption family is not subject to an effective tax rate as high as 10 per cent until its adjusted gross income reaches $6,000, but a single person is subject to this effective rate at about $1,500.

5. From a strictly revenue standpoint, the elaborate graduation of bracket rates ranging up to 91 per cent is of relatively minor importance. All the bracket rates beyond the first accounted for less than 15 per cent of the total income tax liability in 1955. In fact, total income tax liability in 1955 amounted to only 23.2 per cent of aggregate *taxable income* — only a little more than 3 percentage points greater than would have resulted from a flat proportional rate of 20 per cent.

LAWRENCE H. SELTZER

Entrepreneurial Income

The completion of my report on the taxation of entrepreneurial income under the personal income tax was temporarily delayed because of some further revisions of my monograph on "Personal Deductions in the Individual Income Tax." These revisions are now completed and the manuscript is being prepared for press.

The study of entrepreneurial income (income from proprietorships and partnerships) examines its relative importance as a source of personal and taxable income; its coverage on tax returns since 1939 by farm and nonfarm components; and the share of tax liability borne by entrepreneurial income. In addition, we have examined the distributions of tax returns of entrepreneurs by size of entrepreneurial profit (loss) and by size of the total income (adjusted gross income) of entrepreneurs. From the available tax return distributions for 1944-1954 we were able to construct distributions of profits (losses) by own size and by size of total income. It was also possible to compute the total income of those reporting entrepreneurial income. However, the data are available only for sole proprietors and partners separately and cannot easily be combined since some tax returns report income from both types of business. The proportion of returns with entrepreneurial income from both sole proprietor and partnership appears to be greater in the higher income brackets.

From these statistics two developments may be observed:

1. Tax returns with entrepreneurial income show a steady decline since 1945 in the proportion of total income obtained from entrepreneurial effort. For returns with income from sole proprietorship, the decline has been from two-thirds in 1945 to one-half in 1955. A similar decline has taken place in the relative share of partnership profit in the total income of partners.

2. The distribution of both types of receipts before taxes, when arrayed by size of receipts, has become more concentrated (i.e., more unequal) since 1945. This is particularly true of the sole proprietor group, possibly because of the decline in farm income between 1945 and 1954. The concentration ratio (Gini coefficient) for partners has risen from .69 to .73; that for sole proprietors from .67 to .84 over the period 1945-1954.

C. HARRY KAHN

Dividends

My report on dividends under the personal income tax, 1918-1953 — a proposed occasional paper—is being mimeographed for submission to the Directors. It covers four major topics:

1. The importance of dividends in taxable income, both in the aggregate and by income classes.
2. The relation between dividends on tax returns and aggregate personal dividend receipts, and especially the difference between these two dividend totals.
3. The amount and relative importance of the tax liability attributable to dividend receipts, the effective rate of tax on dividends compared with other sources of income, etc.
4. The "double" taxation of dividends, and the effect in this context of the various special tax provisions that have applied to dividends.

DANIEL M. HOLLAND

OTHER STUDIES

Six reports dealing with financial institutions and processes were published: *Federal Lending and Loan Insurance,* by R. J. Saulnier, Harold G. Halcrow, and Neil H. Jacoby; *Financial Intermediaries in the American Economy since 1900,* by Raymond W. Goldsmith; *Corporate Bond Quality and Investor Experience,* by W. Braddock Hickman; *International Financial Transactions and Business Cycles,* by Oskar Morgenstern; *The Demand for Currency Relative to Total Money Supply,* by Phillip Cagan, Occasional Paper 62; *City Expenditures in the United States,* by Harvey E. Brazer, Occasional Paper 66.

Mr. Brazer expects to return shortly to his study of trends in state and local government expenditures, described in last year's Annual Report. The third and final volume in Hickman's corporate bond study, is being prepared for press. Leo Grebler's study of governmental credit policies for housing, "Housing Issues in Economic Stabilization Policy," will shortly be submitted to the Board. Wilson Payne's manuscript, "Industrial Demands on the Money Market" is being revised.

Other studies of financial institutions and processes are reported in Sections 2, 3 and 5.

5. INTERNATIONAL ECONOMIC RELATIONS

FOREIGN TRADE AND BUSINESS CYCLES

My study is part of the National Bureau's systematic investigation of business cycles. Its object is to measure and explain what happens to the trade balance, exports, imports, and the terms of trade, during business fluctuations.

The first report, *Trade Balances during Business Cycles: The American and British Experience, 1879-1955,* has just been published. Its three main sections deal with the United States trade balance, the British trade balance, and world cycles.

Another paper, on United States exports, will shortly be ready for staff review. It analyzes the fluctuations in the value of United States exports, 1882-1958, during domestic and world cycles and compares them to simultaneous fluctuations in world trade. Some of the findings and their application to recent events are presented in Table 26. The large rise and steep decline of exports between 1954 and 1958 have been regarded as major factors in the business expansion and recession of these years. Are such swings typical for exports? Our measures show that they have risen and fallen with domestic business since 1921, in contrast to the period before World War I. Thus the direction of their movements in the latest cycle was to be expected. The amplitude of the swing, however, is a different matter. A rate of growth of 3 per cent per quarter and a rate of decline of 6 per cent are unheard of, except for 1929-1937. The unusual character of these swings in exports, which are to be attributed mostly to the Suez crisis and its aftermath, appears even more clearly when we compare movements over parts of cycle phases. In the first half of the expansion, 1954-1956,

the export rise was normal, its rate equal to the average of the five expansions covered, 1921-58. In the second half, 1956-57, however, exports grew seven times as fast as the five-cycle average and faster than in any individual expansion except 1933-37 when they recovered from the collapse of the Great Depression. The steep decline in the first half of the recent recession is the counterpart of the unusual rise. Normally exports fall hardly at all in this stage of the cycle. After a more normal level was regained, the further drop in exports in the later part of the recession, though still larger than average, was not of unusual dimensions. The similar, though more moderate, deviations of world trade from its average pattern indicate that the forces which caused the exceptional flow and ebb of United States exports were world-wide.

The main topics of the study from which these measures are taken are the shift of exports and world imports from nonconformity to conformity to United States business cycles; the inverse effect of the later stages of business expansion and earlier stages of business contraction on exports; the high and rising degree of parallelism between United States exports and world imports; the timing of export turns and the combined impact of world and domestic cycles on exports.

The last step will be to finish the study of export prices and quantities and of exports by commodity classes for which a large part of the work has been done. Adjustment of the analysis for my revision of the world chronology is more or less completed and part of the analysis has been extended to 1958.

We have explored also the possibility of developing diffusion indexes of world trade. Such indexes are measures of the proportion

Table 26

MEASURES OF CHANGE IN THE VALUE OF UNITED STATES EXPORTS AND IN WORLD IMPORTS DURING U. S. BUSINESS CYCLES, 1882-1958

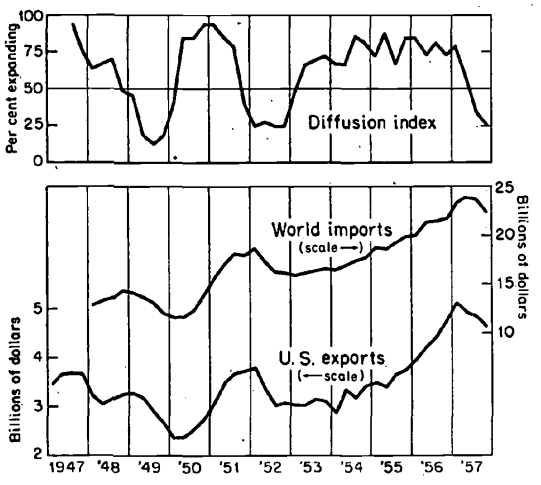
	1882-1913		*1921-1958*		*1954-1958*	
	United States Exports	*World Imports*	*United States Exports*	*World Imports*	*United States Exports*	*World Imports*
Number of U. S. business expansions covered	9	9	5	5	1	1
Number of U. S. business contractions covered	9	9	6	6	1	1
Av. total % change during U. S. business						
Expansion	+7.6	+7.9	+17.8	+18.5	+40.0	+30.1
Contraction	+4.9	+2.9	−7.8	−3.1	−19.3	−11.4
Av. quarterly % rate of change during U. S. business						
Expansion	+1.05	+1.00	+1.86	+1.97	+3.33	+2.52
Contraction	+0.76	+0.49	−1.8	−0.71	−6.42	−3.81
First half expansion	+2.18	+0.74	+3.23	+3.28	+3.23	+2.42
Second half expansion	−0.08	+1.26	+0.49	+0.66	+3.43	+2.60
First half contraction	+3.28	+1.20	−0.55	−0.77	−7.53	−5.07
Second half contraction	−1.75	−0.21	−3.15	−0.65	−5.33	−2.53
Index of conformity to U. S. business						
Expansion	+33	+56	+100	+100		
Contraction	−11	−56	+71	+14		
Full cycle	+6	+18	+82	+45		

Note: The 1929-37 cycle is included in the conformity indexes, but excluded from other measures. Data from 1933 to 1938 are in dollars of 1930 parity, otherwise in current dollars. Exports 1950-58 exclude military grant-aid shipments. World imports exclude United States imports.

Source: Exports, Department of Commerce. World imports, 1882-1938, NBER; 1948-58, United Nations.

Chart 6

PERCENTAGE OF COUNTRIES WITH RISE IN IMPORTS (DIFFUSION INDEX); VALUE OF WORLD IMPORTS AND OF U. S. EXPORTS



Diffusion index and value of world imports exclude U. S. imports.

Source: *Diffusion index,* NBER, see text. *World ex U. S. imports,* United Nations and Dept. of Commerce; seasonal adjustment by NBER. *U. S. exports,* Dept. of Commerce. Grant-aid shipments are excluded; seasonal adjustment by NBER.

of components of an economic aggregate undergoing expansion during a given time interval. They are valuable because they indicate the scope of fluctuations and, moreover, because their movements tend to lead those in measures of aggregates and thus can be of assistance in identifying their cyclical turns.

Our preliminary index of the diffusion of changes in world trade covers 33 countries. It is based on comparisons of an individual country's imports in a given quarter with its imports in the same quarter of the preceding year and is plotted in the middle of the interval between the two quarters compared (see Chart 6).

The index traces very clearly the two postwar peak to peak cycles found in the total value of world imports. But it not only affirms what we know from the world import series. It also provides new information by telling us how widespread changes in foreign trade have been. In about half of the quarters observed more than three-fourths of the countries moved in step either upward or downward. The rising trend of trade may account for part of the high degree of consonance in expansions, but on the other hand it makes the wide scope of contractions the more remarkable. In the second quarter of 1958, for example, about three-fourths of the countries reduced their imports.

These findings agree with those we obtained for a much longer period, 1880 to 1938, from indexes based on year to year changes. They are discussed in the forthcoming trade balance study.

With regard to the timing of the turns in the diffusion index, the chart shows leads at peaks and troughs of world imports and United States exports. But the value of these leads is impaired by the fact that the index as presently constructed is always six months out of date. This deficiency will be avoided by the new seasonally adjusted index of quarter to quarter changes which we are planning to construct and which should be a useful indicator of the movements of foreign trade.

ILSE MINTZ

INDEXES OF UNITED STATES FOREIGN TRADE SINCE 1879

We have completed the computation of price, quantity, and value indexes covering the years 1879-1923 for 168 classes of commodities spanning the whole range of exports and imports. We are now engaged in combining these minor class indexes into indexes for larger groups and for total exports and imports.

The text of the report will include a summary of long-term trends in the volume of trade and its composition, in the terms of trade, and in price and quantity relationships among various types of exports and imports. This will bring together the results of our new computations for 1879-1923 and the later work of the Department of Commerce and other investigators. Other chapters will discuss the construction of our indexes, the nature of the data used, questions regarding the accuracy of the indexes and, where possible, comparisons of our results with those of others.

We have prepared most of the text for three appendixes which describe the commodity composition of each minor class, the derivation

and use of price data from sources other than the official Commerce and Navigation reports, and the methods by which we built up the major class and total indexes.

We expect to complete a first draft of this manuscript within the next few months.

ROBERT E. LIPSEY

STRUCTURE OF WORLD TRADE AND PAYMENTS

A list of preliminary reports of the study, which is being undertaken with the assistance of a grant from the Ford Foundation, was given in the 37th Annual Report. Robert M. Lichtenberg's report, *The Role of Middleman Transactions in World Trade,* has been published as Occasional Paper 64. Herman F. Karreman's paper on the "World Transportation Account, 1950-53," is being revised following staff review. Carmellah Moneta's paper on "The Estimation of Transportation Cost in International Trade Accounts" appeared in the *Journal of Political Economy* (February, 1959). Cornelius Dwyer has drafted several chapters of his report on international petroleum transactions. A more detailed report on Dwyer's study and a report by Walther Michael on his analysis of capital movements are given below.

Several chapters have been drafted of the monograph I am writing on the Structure of World Trade and Payments, which presents and analyzes our compilation of transactions between world areas for the years 1950-54. The monograph tentatively includes the following chapters:

1. The Radial Structure of Trade
2. The Composition of World Trade in Goods and Services, 1950-54
3. The Net Trading Relations of Countries, 1950-54
4. Attributes of a Hypothetical Model of International Economic Interdependence Indicated by Trading Experience, 1950-54
5. Year-to-Year Variations in the Pattern of Gross Trading
6. Year-to-Year Variations in the Pattern of Net Balances
7. The Problem of Projecting the Pattern of World Trade and Payments

Appendixes on the Construction of Accounts

In the analysis of the structure of world trade and payments for five years as a whole (Chapters 1 and 3), by employing partner records within a two-valued matrix of goods and services, I have succeeded in distinguishing the U.K. from the rest of the sterling area as a trading partner, the Continent from Continental overseas territories, and the U.S. from Canada in the two-valued record. Thus I have been able to set down two-valued matrixes for all types of transactions and the net accounts (like net goods, services, and transfers) which are more revealing than those previously published (e.g., in the *Supplement* to the *Review of Economics and Statistics,* February, 1958).

This record can be adjusted to redirect petroleum transactions through the U.S. and U.K., and when that is done it is seen that the net trading relations between economic centers and countries trading principally with them are, in general, strengthened. I believe (largely on the basis of Lichtenberg's analysis) that the further adjustment required to place the record on a true purchase-sales basis would tend to work in the same direction — of strengthening ties between centers and their affiliates at the expense of secondary trading relations between centers and affiliates of other centers.

I have observed that the pattern of net merchandise balances between areas, which Hilgerdt studied in his path-breaking *Network* study, while of considerable importance in setting the residual circular flow of multilateral settlements, is reversed in many respects by net services transactions, transfers, capital, and gold flows. One must take account of all types of transactions between world areas before one can arrive at the final pattern of multilateralism.

Having set down a record of transactions between world areas in such detail as to show the interesting relationships between centers and peripheral areas, I have worked out in Chapter 4 the mathematical properties of a model in which one can observe the economic interdependence of world areas. In the model the imports and exports of each world area except one — thought of as the U. S. — are determined as functions of certain parameters, namely, the level of imports of the exceptional

area, of the constants relating each area's imports to its exports, and the proportions in which countries distribute their purchases among supplying areas. At the outset the parameters are thought of as constants, but then the effect of altering each in turn is examined, and the effect of some combinations of variations are considered. It is observed in the model, among other features, that the level of world trade tends to be raised or lowered by changes in U. S. imports with an elasticity of around .8 or .9, that the level of world trade is enhanced by a displacement of U. S. exports in markets elsewhere unless that is accompanied by an expansion of U. S. capital exports, and that the level of world trade is reduced by an expansion of Western Europe's capital exports unless that is accompanied by an increase in its share of world markets.

In Chapter 5 I shall employ the model to analyze the year-to-year shifts in the structure of world trade from 1950-1954. The calculations for this analysis have been run and in general show that year-to-year changes in net balances and U. S. imports have been mainly "responsible" for changes in the trade of world areas, although over the period as a whole there have been significant changes in the level of world trade attributable to shifts in the directions of trade. Moreover with respect to net trade between world areas we see that the change in U. S. imports has little effect and that the swings in net balances of goods and services between world areas are largely attributable to changes in the direction of trade and changes in the over-all net balances of the different areas.

By employing the model analysis, I am also able to estimate goods and services transactions between the four world areas and for the world as a whole for years following 1950-54, viz., for 1955-57, basing the calculation upon estimates (a) of area net balances with the world, (b) the proportions in which areas distribute their imports among suppliers and (c) U. S. imports. These parameters for the system could be estimated quite closely on the basis of partial reports through 1957. Thus the model analysis provides a way of up-dating the study.

HERBERT B. WOOLLEY

International Oil Trade

The following is the outline of the study:

1. Summary
2. Introduction to the International Oil Trade
3. The Companies
4. The Countries
5. Prices
6. Petroleum in the Trade and Payments Accounts

Appendixes:

1. Methodology
2. Problems of Accounting for Petroleum in the Balance of Payments
3. Trade and Payments Tables
4. Oil Source Country Accounts

Chapters 2, 3, 4 and 5 are essentially completed except for some details and probable revisions.

Chapter 2 is an over-all look at the international oil trade — really a summary of what comes in the next three chapters.

Chapter 3 describes the history and salient characteristics of established international oil companies and their affiliates and the principal newcomers.

The next chapter discusses the oil source countries, refining and entrepot centers such as the Netherlands West Indies and Singapore and the role of the countries which own the major companies — U. S., U. K., the Netherlands and France.

The final form of Chapter 5 on prices has not been determined since the subject is somewhat controversial. It traces the history of efforts to achieve price stability in the industry in the U. S. and abroad, their side effects and the development of the present unstable situation. Relationships among prices in different parts of the world are also described but not in the detail of my earlier studies in this field, such as *Nuclear Energy and World Fuel Prices,* National Planning Association, 1958, and various reports to the Congress.

CORNELIUS J. DWYER

International Capital Movements, 1950-1954

A tentative outline of the study follows:

I. Introduction: Definition of capital
II. Procedure
    1. Description of sources and quality of the data.
    2. Construction of two-valued matrixes of the reported data.

3. Reconciliation of the data.
4. Criticism of the major shortcomings in reporting.
5. The construction of "functional" matrixes, i.e., by form of capital movement.
6. Grouping of countries by differing degree of economic development and trading interest.

III. Capital flows in relation to economic development (between groups of countries by degree of development)
1. Public capital, classified by form, and the purposes to which the funds were put.
2. Private capital, classified similarly.
3. The use of short-term capital for economic development. This analysis will be limited to certain countries where unusually large inflows of this kind occurred.
4. The relative roles of public and private capital: a summary.

IV. Causal factors in capital movements: The question of initiative, government vs. private, borrower vs. lender. One aspect of the question of initiative concerns "autonomous" vs. "balance of payments" movements.

The reconciliation of the data on world capital movements, 1950-54, was completed early in 1958. This led to the next step, the revamping of the world's capital transactions into "functional matrixes," i.e., by the various forms of capital flows, between areas grouped by similar degree of economic development. Within the framework of Woolley's three areas of main trading interests (vertical classification), which are also relevant to capital movements, I distinguished groups according to per capita income, percentage of the labor force in agriculture, and relative contribution by agriculture to the domestic product. The countries with high per capita incomes (and small agricultural sectors) represent, however, a heterogeneous group including the highly industrial countries as well as such agricultural exporters (but, due to high productivity, with small agricultural sectors) as Denmark, Australia, and New Zealand. The high per capita income countries were, therefore, divided into industrial net exporters and others.

This procedure yields four groups (horizontal classification): Group 1, the industrial net exporters, includes the U.S., U. K., seven countries of Western and Central Europe plus Italy, and Japan, an industrial net exporter although its per capita income would place it in a lower group. Group 2 includes the other advanced countries by the above criteria: Canada, the other Commonwealth countries of European settlement, Scandinavia, Iceland, Ireland, Israel, and Argentina, Chile, and Uruguay. Group 3 includes six Latin American countries, Southern Europe (excluding Italy), Eastern Europe, and Lebanon — all with a per capital income above $200 and generally an agricultural sector of 50 per cent indicating the existence of a considerable degree of subsistence agriculture. Group 4 includes all other countries, with per capita incomes below $200 and agricultural sectors of generally 70 per cent, including the European colonies in toto.

The analysis of portfolio investment transactions showed that $2.8 billion new issues were floated in foreign capital markets during the period, of which 96 per cent were supplied by the industrial net exporters (Group 1), 1.5 per cent by Group 2 (Canada), and 2.5 per cent by countries of Groups 3 and 4. The latter consist, however, entirely of purchases of IBRD bonds by central banks as investment of reserves, while the Canadian purchases also represent IBRD bonds floated in Canada or purchased in New York.

Of this capital 60 per cent was borrowed by Group 2, including 43 per cent by U. S.-oriented countries (Canada and Israel) from the U. S., 16 per cent by U. K.-oriented countries from the U. K. and the Continent (Switzerland), and 1 per cent by Continent-oriented countries (Scandinavia) from the Continent. Group 3 received only negligible amounts; in Group 4 only the Colonies (British 10 per cent, Congo 1 per cent) were receivers from their respective centers. The IBRD borrowed, however, 27 per cent of the total, and part of this capital was re-lent to Groups 3 and 4. In Group 1 the Continent and the U. S. borrowed from the Continent 2 per cent of the total.

Portfolio investment constituted only 18 per cent of American private long-term lending. Furthermore the flotations in the American market were made almost entirely by two countries of Group 2, Canada (62 per cent) and Israel (11 per cent), and the IBRD (26 per cent). The U. S. provided, therefore, almost no capital in this form — the traditional

form of social overhead capital — to the underdeveloped areas directly, and only one-fourth through the intermediary of the International Bank, whose loans are made, however, to a large degree for the development of utilities and transportation.

For the U. K. this form of investment constituted a larger share of its total private long-term outflow, approximately one-third, and of this 38 per cent went to the Colonies in Group 4, while 58 per cent went to Group 2, largely Commonwealth countries of European settlement, and 4 per cent was borrowed by the IBRD. The U. K. lent, therefore, approximately 40 per cent of its portfolio capital to underdeveloped areas (taking into consideration the indirect lending through the IBRD). If the Rhodesian Federation were grouped with the underdeveloped areas (it has been tentatively included in Group 2 based on data of Southern Rhodesia), almost three-fourths of British portfolio capital went to underdeveloped areas, albeit under European control. Swiss portfolio issues followed the British pattern.

The U. S. provided the bulk (77 per cent) of its private long-term lending in the form of direct investment including reinvested profits. In addition to an industry breakdown, I divided this form of U. S. capital into investment in the extraction of raw materials for export, and into all other industries. For this purpose the reported petroleum investment was broken down into extraction and refining and distribution facilities respectively, the latter largely for domestic consumption in the respective country. If Canada is excluded as a special case, U. S. direct investment in raw material producing industries constituted only 27.5 per cent of the total, while all other investment constituted 70.5 per cent (2 per cent not identifiable). For Groups 2 and 3 (excluding Canada) the extractive industries constitute approximately one-fourth of total investment, while in Group 4 they constitute 69 per cent, consisting of exploitation of new mining and petroleum sources in a few countries. U. S. petroleum investment, excluding Canada, in refining and distribution other than at the source of extraction exceeds the investment in extraction, for the total and also for Groups 1, 2, and 3.

WALTHER P. MICHAEL

OTHER STUDIES

International Financial Transactions and Business Cycles, by Oskar Morgenstern, and *Problems in International Economics,* a conference proceedings report, were published.

An exploratory report dealing with the need for and possibilities of research into the economic growth and structure of different countries is described in Section 1. A study of economic growth of the Soviet Union also appears in Section 1.