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P A R T   I I I

**Staff  
Reports**

## 1. ECONOMIC GROWTH

### LONG SWINGS IN ECONOMIC GROWTH IN THE UNITED STATES

The purposes of this study are to describe the characteristics of the long swings of economic growth in their various aspects, to determine how nearly uniform they were from occasion to occasion, to help discover whether they arose from systematic or accidental causes, and to use the results to throw light on the causes of growth and instability in economic life.

Evidence has been developed, in the course of the study, that the observed long swings in the U.S. economy have been the joint outcome of waves in the rate of growth of the stock of resources—of both labor and reproducible capital—and in the intensity of resource utilization.<sup>1</sup> They may also have reflected waves in the productivity of resources when utilized at some standard degree of intensity, but we have not been able to separate the influence of changes in utilization rates from changes in productivity proper.

In this two-sided process, capital formation plays a key part. On the one side it contributes to the wave in the rate of growth of resources by providing larger additions to the stock of capital at some times than at others. On the other, it contributes to the generation of effective demand and so helps to determine the degree of intensity of resource utilization. Within total capital formation, the well-known long waves in building activity naturally attract particular attention, and on this account we have spent some time in establishing more precisely the behavior of this important sector.

The particular questions we have set ourselves may be described in these terms. Are the frequently observed long cycles in urban residential building also to be found in other

<sup>1</sup> See my contributions to the 38th, 39th, and 40th Annual Reports of the National Bureau; also my testimony in *Employment Growth and Price Levels*, Hearings Before the Joint Economic Committee, Part 2, 86th Congress, 1st Session, April 7-10, 1959, pp. 411-466; and "The Nature and Significance of Kuznets Cycles," *Economic Development and Cultural Change* (forthcoming, 1961).

branches of construction? If so, what have been their characteristics? And, finally, are the waves in the various sectors, such as they may be, sufficiently congruent so that long waves in the national aggregates of construction activity emerge? In this work I have been concentrating on United States experience, while Manuel Gottlieb has begun work on urban building fluctuations in foreign countries.

In these pages, I can do no more than present a few summary facts and conclusions concerning the period since the Civil War. The questions to which my work is addressed cannot, however, be properly answered without detailed consideration of the accuracy of the statistical evidence and of the behavior of individual sectors of construction. My full study, further, will review the evidence for construction waves before the Civil War, and compare the behavior of construction with that of other branches of investment. Finally, it will consider the relations among long waves in construction, the amplitude and duration of business cycles, and the long waves in other aspects of the economy.

The principal measures utilized in the study are based on the behavior of thirty-seven series selected from a larger number. The series selected differ widely with respect to the scope and type of construction activity they measure, and with respect to the unit of measurement, the nature of the underlying material on which they are based, and the period they cover. Nevertheless, they present a picture of long swings in aggregate construction and in its several sectors which will seem generally familiar to readers acquainted with the standard long-term building series that refer only to residential building or to total urban building. Chronologies of long-swing turning points show that troughs cluster in the late 1850's and early sixties, the late seventies, the late nineties, the period 1918-20, and in the early and mid-1930's. Peaks cluster in the early 1870's, the late eighties and early nineties, in the period 1909-13, and in the middle and late twenties. From the troughs of the 1930's, construction activity on the whole seems to have risen until very recent years in a long upswing which was,

however, broken in most cases by a severe decline during World War II.

That our chronologies mark off something in the nature of long swings appears from a classification of the durations and amplitudes of short specific cycles, that is, of the fluctuations associated with business cycles, according to whether the short specific cycles fell in an up-phase or a down-phase of a construction long swing. Average measures for one important series must suffice here as an example of our results (Table 1).

The figures show that short specific-cycle expansions in construction were much longer and much more vigorous during periods we have identified as long-cycle upswings than they were during periods identified as long-cycle downswings. Short specific-cycle contractions had opposite characteristics. Such an outcome emerges consistently in all the series in our sample. It is also true of the average measures for specific cycles in each long cycle,

TABLE 1  
AVERAGE DURATIONS AND AMPLITUDES OF SHORT SPECIFIC CYCLES IN CONSTRUCTION, CLASSIFIED BY PHASE OF LONG SWINGS, 1869-1959<sup>a</sup>  
(gross [new] construction in 1929 prices)

	Durations Years	Amplitudes	
		Total	Per Annum
Expansions during long upswings	3.12	36.5%	14.1%
Expansions during long downswings	1.00	9.4	9.4
Contractions during long upswings	1.36	4.7	3.7
Contractions during long downswings	2.38 (2.50) <sup>b</sup>	36.8 (32.4) <sup>b</sup>	16.0 (13.1) <sup>b</sup>

SOURCE OF UNDERLYING ANNUAL DATA: technical tables in Simon Kuznets, *Capital in the American Economy: Its Formation and Financing* (in press), extended from 1954 by me on the basis of similar sources and methods.

<sup>a</sup> The long-swing chronology for this series is as follows. Troughs: 1869 (initial or terminal date of series, not necessarily a long-swing turning point), 1899, 1920, 1933, 1944 (wartime turning point). Peaks: 1892, 1913, 1926, 1942 (wartime turning point), 1959 (initial or terminal date of series, not necessarily a long-swing turning point).

<sup>b</sup> Figures in parentheses exclude wartime movements.

not merely the average of all long cycles. It is evidence, therefore, that our chronologies do mark off successive long-cycle upswings and downswings which are significantly different from one another.

In general, the amplitude of the long swings is much larger than that of the specific cycles themselves. This is uniformly true of the long upswings, but it is not clearly true of the long-cycle downswings in the 1890's and the period before World War I. In these downswings, the amplitude of the largest of the short specific-cycle contractions was, in numerous series, of the same order of magnitude as that of the long downswing itself. Having regard to the crudities of the data, therefore, it is probably right to say only that in these periods the fluctuations in aggregate construction consisted of a series of business cycle movements around an essentially flat trend. This, in turn, suggests that we should characterize the long swings in aggregate construction as consisting of long and vigorous upsurges of activity interrupted by protracted periods in which aggregate construction either declined or failed to rise significantly—due allowance having been made for business cycle fluctuations.

Indirect confirmation of the reality of long cycles in aggregate construction is provided by the behavior of labor-force data. We proceed from the following hypothesis. If construction activity has developed in a series of long surges followed by protracted periods of pronounced retardation or decline, it is reasonable to suppose that this would have left a mark on the growth of the industry's labor force. We should not expect that in a secularly growing industry such as construction, the number of men who seek a livelihood in it will actually decline during slumps. This qualification is particularly applicable if depression in construction was accompanied—as it was—by slackening of growth in nonagricultural industry generally. If the slumps in construction were especially long and pronounced, however, it is reasonable to expect that the rate of growth of workers attached to construction would have declined during periods of slack activity and that the share of construction in the total labor force would have shrunk.

We test these expectations against the figures in Table 2, and find that the behavior of the construction labor force was perfectly consistent with the expectations formed on the hypothesis that there were successive long cycles in aggregate construction. The rate of growth of the construction labor force, whether measured in numbers or as a percentage of its previous level, rises and falls from decade to decade in an unbroken alternation since the 1870's, and so does the share which the labor force in construction bears to total manpower. The decades of rapid and slow growth in manpower correspond perfectly with those of boom and slump in construction, as suggested by direct estimates of such activity.

Various direct measures of construction activity and those of manpower attached to construction are, therefore, broadly consistent, and both point to the existence of long waves in total construction. Neither set of data settles the question whether the slumps of the long cycles always included a substantial decline in the actual level of construction work, and the indications are that in the 1890's and 1910's there was no substantial long-cycle decline apart from the effects of World War I in the latter period. Closer study of the data may show that the same was true even in the 1870's. The evidence does suggest, however, that retardations in growth were severe and protracted and that, at least in this sense, roughly congruent long waves in construction were characteristic of all the major sectors of the industry, with the exception of shipbuilding.

If the postulated long cycles in the national aggregate of construction are indeed real phenomena, they pose questions about the economy at large and not merely about the construction industry. Long cycles in residential building, the first sector in which these waves drew attention, have often been attributed to characteristics of the building industry, of the real estate market, and of structures themselves which make the response of supply to excess or deficient demand unusually slow. So far as residential housing is

concerned, however, the relevant markets are local. Cobweb theories depending on lagged supply responses may serve to explain long waves in local building. By themselves, however, they do not suffice to explain why building cycles in individual communities run together to form long waves in the national total of residential building. Similar considerations also apply to waves in the national totals for other sectors and, a fortiori, to the general aggregate of all construction. Cobweb theories based solely on supply responses in construction might explain long waves in the plant expansion of particular industries, but would not suffice to explain those waves in the national total of nonresidential building. And so also for regional waves in transportation and public utility construction and their corresponding national totals. Finally, whatever the basis for the sectoral waves, supply responses in the building industry, which are presumably somewhat different in each sector, cannot alone account for the fact that the sectoral waves have, to some degree, run together and formed national waves in aggregate construction. The partial unification of local, regional, and in-

dustrial construction movements implies the existence of a set of common causes which must presumably be sought in an interaction between construction activity and the economy at large. If this is so, the question of long cycles in construction merges with that of possible long swings in other facets of economic life and with the demographic changes that may be associated with them.

MOSES ABRAMOVITZ

### LONG SWINGS IN THE GROWTH OF POPULATION AND LABOR FORCE

The purposes of this study, which is conceived within the broader framework of Abramovitz' investigation 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. A first draft of a report dealing with long swings in American labor force growth was completed

TABLE 2  
MANPOWER ATTACHED TO CONSTRUCTION AT CENSUS DATES, 1870-1950<sup>a</sup>

Year	Number Attached to Construction (000)	Change Since Preceding Census		Percentage Share of Construction in Total Labor Force
		Number (000)	Per Cent	
1870	752	—	—	5.8
1880	830	78	10.4	4.8
1890	1445	615	74.1	6.1
1900	1663	218	15.1	5.7
1910	2297	634	38.1	6.2
1920	2167	-130	- 5.7	5.2
1930	3030 <sup>b</sup>	863	39.8	6.2
1940	3117 <sup>c</sup>	88	2.9	5.8
1950	3743	526	20.0	6.2

SOURCE: 1870-1940—Daniel Carson, "Changes in the Industrial Composition of Manpower since the Civil War," *Studies in Income and Wealth* 11, New York, NBER, 1949, pp. 46-134. 1950—Harold Barger, *Distribution's Place in the American Economy Since 1869*, Princeton University Press for NBER, 1955, Table 1.

<sup>a</sup> Gainful workers, aged 10+, 1870-1930 labor force, aged 14+, 1940-50.

<sup>b</sup> Number of gainful workers 14+ in 1930 was 3,029,000, and this is the figure used in comparisons with 1940.

<sup>c</sup> This figure reflects an adjustment of 391,000 workers to allow in part for Census treatment of public emergency workers, which results in a large overstatement of the number properly attached to construction.

this year. It considers their industrial, spatial, occupational, and demographic characteristics; analyzes these changes into their demographic and nondemographic sources (migration and participation rate change) at the national and regional levels; and, finally, speculates on the causes of the swings. A revision, taking advantage of the comments of the staff and of more refined calculations now being completed, will be started soon. It is hoped that this will be completed by midyear.

In the population segment of the study, it was decided to focus on the recent swing in the birth rate, because of the widespread interest in this subject. A paper is now in preparation in which the American baby boom is considered in historical perspective. The paper takes up long swings in the fertility of the total white population, foreign-born white, rural white, and urban native white.

RICHARD A. EASTERLIN

#### ECONOMIC GROWTH OF THE SOVIET UNION

The focus of this study, which has been supported by a grant from the Rockefeller Foundation, is on the economic performance of the Soviet Union as reflected in the statistical record.

The latest report, *Soviet Statistics of Physical Output of Industrial Commodities: Their Compilation and Quality*, by Gregory Grossman, was published in 1960. *Freight Transportation in the Soviet Union: A Comparison with*

*the United States*, by Ernest W. Williams, Jr., was published in 1959, and *Some Observations on Soviet Industrial Growth*, by G. Warren Nutter, appeared in 1957.

My monograph, *Growth of Industrial Production in the Soviet Union*, went to press in March.

"Transportation in the Soviet Union," by Ernest W. Williams, Jr., with the assistance of George Novak and Holland Hunter, has been submitted to the Board. Its chapter titles are:

- I. The Composition of Soviet Transportation
- II. Soviet Railroad Traffic
- III. Factors Affecting Soviet Railroad Traffic
- IV. An Analysis of Soviet Railway Operation
- V. Conclusions

Reports on Soviet agricultural output by George Kuznets and on agricultural inputs and productivity by D. Gale Johnson are in preparation. A manuscript on small-scale industry, by Adam Kaufman, is being revised.

Work has begun on a summary volume integrating the findings on economic growth in the several sectors of the Soviet economy that have been covered by the project.

G. WARREN NUTTER

#### OTHER STUDIES

For additional reports concerned with aspects of economic growth, see the list of publications and studies in progress in Part II. A new study of tax policies for economic growth is also reported there.

## 2. NATIONAL INCOME, CONSUMPTION, AND CAPITAL FORMATION

#### CONSUMERS' BUYING PLANS

A manuscript is now in preparation on the relations between purchases of durable goods by consumers and their purchase plans and other expectations—a project supported by grants from the Reim Foundation and the Consumers Union as well as by other funds of the National Bureau. Drafts have been completed for the first six of the chapters listed below:

- I. Introduction
- II. Plan Fulfillment for Individual Commodities
- III. Factors Associated with Plan Fulfillment for Individual Commodities
- IV. Aggregate Relations Between Buying Intentions and Purchases
- V. Attitudes and Expectations
- VI. Multivariate Analysis of Purchases
- VII. Summary and Conclusions

A striking empirical result is illustrated in Table 3, taken from the material prepared for Chapter IV of the manuscript. The table relates the dollar level of reported buying intentions to average actual purchases by households in each of three groups, selected at random within the total sample, to which differently worded questionnaires were submitted. Some were asked to report relatively firm buying intentions for the next twelve months (group A), and others to report their intentions, including both firm and more contingent plans, for the next six months (group B) and for the next twelve months (group C). The differences in the degree of plan fulfillment between the three groups are related to differences in the restrictiveness of the questions. For all three groups, however, the average amount of

actual purchases rises steadily with the level of previously reported intentions, though the averages tend to fall off at very high levels of intentions.

It is evident that average purchases are closely associated with average intentions to buy, though the relationship is by no means one-for-one. These results require further testing, since both buying intentions and actual purchases could be similarly influenced by more fundamental determinants of behavior. The apparently strong relation between the two might simply reflect, for instance, the tendency of young married consumers or high-income families both to project and to make relatively heavy purchases. Cross-classification of the data does, in fact, show that both intentions and purchases are systematically related to income level and life-cycle status. However, when the analysis is extended to behavior within homogeneous income and life-cycle subgroups, the correlation between intentions and purchases is almost as high, on the average, as for the sample as a whole (Table 4). Further, the relationship between buying intentions and purchases appears to be somewhat stronger than that between either income or life-cycle status and purchases, or between both of these variables combined and purchases.

The results confirm the predictive power, in cross sections, of information on buying intentions. They leave the question why purchases should be more strongly related to buying intentions than to these other variables. The reason seems to be that the traditional factors found to be of importance in household purchasing essentially explain average or aggregate behavior of groups, but account for only a small part of the variance among individual households. Thus households with identical need patterns and income status will vary their purchases according to their certainty of future income, debt-carrying capacity, availability of outside financial aid in case of difficulty, expectation of acquiring desired items from friends or relatives, and a host of other variables. It would scarcely be feasible to isolate each of these idiosyncratic combinations in order to explain individual behavior, nor is it necessarily desirable. But a survey of con-

TABLE 3

PURCHASE OF CONSUMER DURABLES BY HOUSEHOLDS, APRIL-OCTOBER 1958, IN RELATION TO LEVELS OF BUYING INTENTIONS REPORTED IN APRIL 1958  
(current dollars)

<i>Scale of Reported Buying Intentions</i>	<i>Average Amount of Actual Purchases by Households in Each of Three Groups<sup>a</sup></i>		
	A	B	C
0	390	380	300
300	550	460	340
600	620	560	522
900	850	690	590
1,200	930	850	710
1,500	1,040	1,050	840
1,800	1,130	1,110	950
2,100	1,210	1,070	980
2,400	1,310	1,110	950
2,700	1,010	1,150	950
All	500	490	490

<sup>a</sup> Dollar amounts were constructed from data on intentions to buy and on purchases of sixteen major consumer durable goods. All items except automobiles were assigned price weights of \$300; automobiles were assigned dollar amounts in multiples of \$300, depending on the price class of intended or actual purchases. Thus the aggregates represent relatively crude dollar totals.

sumers' buying intentions goes a long way toward setting apart precisely those special circumstances, or combinations of circumstances, that result in such a variety of casual relationships underlying individual purchase decisions. It is for this reason that buying intentions constitute so powerful a variable in the analysis of cross-sectional data bearing on the market for consumer durable goods.

F. THOMAS JUSTER

#### INVESTMENT IN EDUCATION

This study, financed by a grant from the Carnegie Corporation of New York, is concerned with some economic aspects of education and other investments in people. The

initial chapters of a revised manuscript, dealing with the theory of investment in people, have been completed. I am now working on a chapter which considers the effect of education on the relation between age and earnings, and will present some of the results here.

The basic data give the incomes of persons classified by age, education, and some other variables at a given moment in time. Average net earnings (i.e., wages and salaries minus educational outlays) in each educational class start at low levels in the late teens and early twenties, rise throughout most age classes, reach a peak in the 45-54 age class, and then decline. The rate of increase tends to decline continuously with age, so that all the age-earn-

TABLE 4  
RELATION BETWEEN CONSUMER DURABLE GOODS PURCHASES AND BUYING INTENTIONS  
FOR HOUSEHOLDS CLASSIFIED BY INCOME AND LIFE-CYCLE STATUS

<i>Income and Life-Cycle Class<sup>b</sup></i>	Sample Size	<i>Regression Data<sup>a</sup></i>		
		Slope Coefficient	Standard Error	Square of Correlation Coefficient
Under 35, married				
Less than \$5,000	122	+ .339	(± .075)	.143
\$5,000-9,999	814	+ .303	(± .029)	.116
\$10,000-over	264	+ .268	(± .054)	.084
35-44, married				
Less than \$5,000	45	+ .295	(± .115)	.127
\$5,000-9,999	543	+ .405	(± .037)	.182
\$10,000-over	461	+ .307	(± .041)	.110
45-64, married				
Less than \$5,000	56	+ .026	(± .137)	.001
\$5,000-9,999	370	+ .274	(± .047)	.084
\$10,000-over	347	+ .253	(± .044)	.086
65 and over, married				
All incomes	85	+ .092	(± .092)	.012
Unmarried, all ages and incomes	307	+ .300	(± .043)	.137
Total	3,407	+ .317	(± .014)	.124

NOTE: The group analyzed here is the one designated as group C in Table 2; similar results were found for the other groups.

<sup>a</sup> Regressions computed from equation of the form  $Y = b_0 + b_1X + u$ , where  $Y$  is durable goods purchases and  $X$  is durable goods buying intentions.

<sup>b</sup> Age classes pertain to the head of household.

ings profiles are concave in appearance. While this general pattern is common to all education classes, higher ones experience a sharper and more retarded rate of increase, especially at the younger ages. These differences in the profiles are consistent with the theory developed in the earlier chapters, for it is shown there that education and other investments in people tend to make age-earnings profiles steeper and more concave.

The relation between education, age, and the present value of future earnings is also studied in this chapter. The shape of the curve relating present values to age depends on the interest rate used to discount earnings. If a very low discount rate is used, present values would tend to decline with age because the number of earning periods remaining would decline with age; if a very high rate is used, present values would tend to reach a peak at the same age as earnings. With the discount rates used in this study (between 5 and 10 per cent), present values rise to the late thirties and then gradually decline. The rate of increase is positively correlated with education, essentially because the rates of increase in earnings and education are positively correlated. The age at which present values reach a peak might be called the "economic prime of life." Some calculations indicate that the secular decline in mortality and morbidity rates substantially delayed the average person's economic prime, just as it presumably delayed his physical prime.

The rate of change with age in the present value of earnings measures the amount of depreciation that must be subtracted from reported earnings to convert them into "permanent" or "perpetual" earnings. Since these rates are negative until the late thirties and positive thereafter, reported earnings underestimate perpetual earnings during the first twenty years of labor force participation, and overestimate them during the last twenty-five years. The negative depreciation terms are less than the positive ones, so that reported earnings averaged over the whole period of labor force participation are greater than perpetual earnings averaged over the same period.

GARY S. BECKER

## THE CHANGING POSITION OF PHILANTHROPY IN THE AMERICAN ECONOMY

During the last three decades great changes have taken place in the extent and financing of activities traditionally considered philanthropic. Since it is not a market-place activity, philanthropy has remained a rather dark corner in the national accounts.

One of the first objectives of this three-year study—financed under a grant from the Russell Sage Foundation—is to develop data which will indicate the changing position of philanthropy in the American economy. Estimates are being prepared for each of four principal sectors: domestic and foreign private philanthropy, domestic and foreign public philanthropy.

This fourfold division presents a broad concept of philanthropy. The word literally means "love of mankind." More particularly, philanthropy is giving money away outside the family for purposes traditionally considered philanthropic; that is, the money (or goods) is given away without an immediate or definite *quid pro quo*. Two examples may suffice to indicate the need for a broad definition of philanthropy in order to study its changing position since the late 1920's. At that time, provision for the aged was made through a variety of local private and local public philanthropic agencies, as well as by family and relatives. Although some of these still function, increasing reliance is placed on Old-Age Assistance, a federal-state program established by the Social Security Act of 1935 and subsequent amendments.

A second illustration is the provision for aid to people in many parts of the world for improvement in agriculture, sanitation, house-keeping, and public health through foreign aid programs financed by federal taxes. These types of philanthropic activities have been carried on by church missionaries for more than a century. The fact that some of these activities are now provided by technical assistance programs under the supervision of the Department of State does not, in our opinion, require that they be removed from the broad category of philanthropic activities.

Between 1929 and 1959 the portion of gross national product devoted to private domestic philanthropy increased slightly, possibly from about 2 per cent to about 3 per cent. More precise estimates will be completed during 1961. Examination of consumer expenditure survey data indicates that the amount of personal giving to persons outside the family unit — giving not subject to deduction from income in computing tax liability — is probably as large as the giving from persons to institutions for which deductions are permitted. Moreover, analysis of giving patterns contained in consumer expenditure surveys suggests that age may be more directly related to family giving than income. Corporate giving, which does not require the consent of the shareholders, averages about 1 per cent of corporate earnings before taxes; the federal tax law permits a maximum of 5 per cent. Examinations are in process of the effect of profitability, dividend policy, and employment as factors that may explain the variation among corporations in their contributions per unit of earnings. Moreover, compilations from corporate tax returns probably understate corporate support of philanthropic endeavors both as to expenditures not classified under contributions and as to paid time of corporate executives and personnel devoted to all manner of fund-raising drives. The data for this first sector, private domestic philanthropy, are being developed by Ralph L. Nelson.

Foreign private philanthropy takes only about one-sixth of 1 per cent of GNP during the entire three decades and shows a slight downward trend.

Although private philanthropy, both domestic and foreign, has shown little growth in relation to GNP during the three decades, the growth has been very rapid in domestic public philanthropy. According to the compilation of social welfare expenditures under public programs by Mrs. Ida C. Merriam<sup>1</sup> the grand total has risen from \$4 billion to \$50 billion during the thirty years under study. Although we shall not include all of these activities or their full

<sup>1</sup>*Social Security Bulletin*, November 1960, pp. 37-44.

amounts, the Merriam compilations provide an indication of the great magnitude of domestic public philanthropy. In relation to GNP, the rise has been from 4.2 per cent to 10.7 per cent. No adjustments that we will make in her data will eliminate the basic fact that the great growth in philanthropy since the late 1920's has been in domestic public philanthropy.

From foreign public philanthropy, we shall exclude military aid, a rather poorly defined term in the federal accounts. This means an exclusion of \$48 billion from the total of \$111 billion of foreign aid since 1940. (Foreign aid between 1929 and 1941 was negligible in amount.) This \$63 billion of civilian aid to the peoples of many nations of the world represented 2.5 per cent of GNP in the period 1941-45 (fiscal years), 2.0 per cent mid-1945 through calendar year 1950, and 0.5 per cent since 1950.

In summary, our incomplete figures seem to indicate that private and public philanthropy has grown from less than 7 per cent of GNP at the end of the 1920's to less than 15 per cent of GNP now. Our rough estimate of the final figure for 1959 is in the neighborhood of 10 to 12 per cent of GNP. If subsequent study supports this estimate, we seem to be working toward two general conclusions: (1) Despite a sharp rise in the standard of living, the American people are not devoting a much higher share of GNP to private philanthropy than they were thirty years ago. (2) The growth of public philanthropy, however, has been so rapid during the thirty years that the grand total of public and private philanthropy probably exceeds the scriptural one-tenth.

In cooperation with the Merrill Center for Economics, we are planning a conference on economic aspects of philanthropy for the week of June 26-30, 1961. The focus of the conference will be on policy regarding philanthropy. What, for example, is the appropriate "division of labor" among government, the market, and private philanthropy in meeting human needs most effectively? Have the appropriate lines of division changed; do they continue to change; in what direction should they change? Five papers are being prepared for this confer-

ence, and it is hoped that they and a draft of the discussion may be issued as a conference report. These proceedings would be an adjunct to the volume on the changing position of philanthropy in the American economy.

FRANK G. DICKINSON

## NATIONAL WEALTH AND NATIONAL BALANCE SHEETS

Four manuscripts in this field have been completed and are nearing publication. The purpose of these studies is to provide rough estimates—close estimations would require much larger resources and probably the cooperation of the federal government—of national wealth and financial assets and liabilities, and thus of national balance sheets, for each year of the postwar period, providing a continuation of similar estimates available for the period before 1950. Three of these studies also attempt some interpretation of the figures. The second, in particular, tries to use some of the figures, together with supplementary data primarily taken from sample inquiries, to shed light on the influence of changes in the general price level and in prices of different categories of assets on the net worth of different sectors in the economy and of different groups of households.

### 1. THE NATIONAL WEALTH OF THE UNITED STATES DURING THE POSTWAR PERIOD

A slightly revised and substantially abbreviated version of this manuscript, incorporating suggestions made by the staff reading committee, has been submitted to the Board of Directors. The coverage of the report is indicated by the chapter headings.

1. Summary of Findings
2. Scope and Character of Estimates
3. The Elementary Algebra of National Wealth Estimation
4. The Growth of Total National Wealth
5. Changes in the Structure of National Wealth
6. The Reliability of the Estimates
7. Some International Comparisons

While the emphasis in the report is on developments during the postwar period, sufficient data for the preceding half-century are included to place these postwar developments in historical perspective, and the discussion attempts to point out to what extent they diverge from the longer-term trends that have been observed in the fifty to one hundred years before.

The derivation of the estimates is explained in detail in the appendixes to the study.

### 2. THE INFLUENCE OF PRICE CHANGES ON NET WORTH

This report, which seeks to investigate the effect of changes in the level of prices of current output and assets on the net worth of different sectors in the economy and different groups of households, was originally prepared, with the assistance of Robert E. Lipsey, at the request of the Joint Economic Committee. Lipsey has added material derived from the sample of balance sheets collected from a panel of Consumers Union members. This material, which refers to 1958 or early 1959, is considerably more up to date than any data on the balance sheets of households that were available when the original draft of this report was prepared. It is expected that the revised manuscript will be submitted to the Directors soon.

### 3. THE NATIONAL BALANCE SHEET AND THE POSITION OF HOUSING IN IT

This study, which benefited from a grant by the Research and Educational Trust Fund of the Mortgage Bankers Association, is made up of two parts. The first, written by myself, provides a description and discussion of the national balance sheet of the United States and of seven main sectors (nonfarm households, agriculture, unincorporated business, nonfinancial corporations, finance, state and local governments, federal government) for each of the years from 1945 through 1958, tied in with the national balance sheets for selected benchmark years before World War II (1939, 1929, 1912, and 1900) from *A Study of Saving in*

*the United States.* In this part the stock of residential buildings and residential mortgage debt is treated exactly like any other item in the balance sheet.

The second part of the report, written by Robert Lipsey, discusses in greater detail the position of residential real estate and residential mortgage debt in the national balance sheet. One chapter, on housing as a component of national wealth, presents new annual estimates for the postwar years of the distribution of the housing stock between owner and renter occupancy. It also discusses the place of residential real estate and its components in national wealth during the postwar period and for the preceding five decades. Another chapter examines the amount and distribution among mortgagees and mortgagors of residential mortgage debt and its components, and of flows of mortgage funds. A third chapter utilizes cross-section data on household balance sheets from sample surveys to study the characteristics of owners of residential real estate and mortgage debtors and to relate home ownership and mortgage characteristics to the asset structure of household balance sheets. The manuscript of this study was submitted to a staff reading committee early in 1961.

#### 4. STATISTICS OF NATIONAL BALANCE SHEETS AND FUND FLOWS

Extensive tables have been prepared which underlie the preceding two reports and the summary volume of the postwar capital markets study. It is intended to make them available either as a separate document or, preferably, as appendixes to the volumes on national wealth and balance sheets (1 and 3 above). The tables consist of annual balance sheets and flow-of-funds statements for seven main sectors and about a dozen subsectors of the financial sector for 1945-58, and of holdings and flow-of-funds statements for about forty categories of assets and liabilities. An attempt has been made to annotate the tables sufficiently so that users can trace the estimates back to the original sources. These tables are somewhat more detailed than the statistics of the Federal Reserve Board's flow-of-funds accounts, particularly for tangible assets, for

which no stock figures are given in the Board's accounts. While our estimates differ in many details from the Federal Reserve Board's figures, the two sets are basically comparable.

RAYMOND W. GOLDSMITH

#### THE MOBILITY OF CAPITAL IN MANUFACTURING INDUSTRIES

The isolation and measurement of the determinants of the allocation of capital among American manufacturing industries, and the rates of return on capital, are the chief objects of this study. A manuscript has been completed and submitted for review by the staff. The study presents basic tables on capital, both corporate and total, and on corporate rates of return in over one hundred "three-digit" industries since the origin of the detailed industry classification of corporate income tax returns (1938). The text comprises the following chapters:

- I. Introduction and Summary
- II. The Flow of Investment and the Pattern of Rates of Return
- III. Competition and the Rate of Return
- IV. The Rate of Investment
- V. Labor and Capital

GEORGE J. STIGLER

#### AGRICULTURAL PRODUCTIVITY

A preliminary paper based on my study of the sources of growth in the productivity of U.S. agriculture (outlined in last year's Annual Report) was presented at the annual meeting of the American Farm Economic Association in August under the title "Measuring Inputs in Agriculture: A Critical Survey." This paper has been published in the Proceedings issue (December 1960) of the *Journal of Farm Economics*. At the same time, several sections of a larger manuscript, dealing mainly with capital measurement problems, were completed and distributed to staff members. I am working now on a chapter on the changing quality of labor in agriculture, as reflected in the education, age structure, and other characteristics of the farm work force. A first draft of the larger manuscript should become available during the summer of 1961.

ZVI GRILICHES

### 3. BUSINESS CYCLES

#### THE POSTWAR BUSINESS CYCLE

Certain analyses connected with our study of the general features of business cycles in the postwar period have been carried out. One of these, completed last year, involved the preparation of measures of the amplitude of cyclical swings in employment by industry and occupational groups, together with measures of secular shifts in their relative importance. Such shifts seem to have accounted, in part, for the greater stability in total employment that has characterized the postwar period compared with prewar, and they seem destined to exercise an even greater stabilizing influence in the future.

Another analysis, completed with the aid of our IBM-704 computer program, has extended measures of cyclical behavior of about seventy-five important economic processes through 1958. These provide estimates of cyclical amplitude, rates of growth and decline, and cyclical patterns that are comparable with measures compiled for prewar cycles. They make it possible to analyze systematically the stable and the changing features of business cycles over several decades.

In the course of our studies we are attempting to draw generalizations that cut across prewar and postwar experience and which can be useful in judging new developments. The following generalizations about business cycle expansions illustrate some of the findings:

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

2. Despite the slower pace after mild contractions, recovery to the previous peak levels has been accomplished sooner.

3. Nearly every business expansion has carried output, employment, and profits beyond the level reached at the preceding peak. More rapidly growing sectors regain the preceding peak levels sooner; slower-growing sectors reach it later.

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. Such advances, however, have not infrequently been followed by sharp declines.

The results of the studies mentioned above, and others, will probably be issued in a series of short papers.

ARTHUR F. BURNS  
GEOFFREY H. MOORE

#### STATISTICAL INDICATORS

A new list of twenty-six business cycle indicators was issued in December 1960 in a brochure entitled *The National Bureau's Research on Indicators of Cyclical Revivals and Recessions*. A full description of the new list, with cyclical measures and monthly data through 1958, appears in *Business Cycle Indicators*, Vols. I and II. This is the third such list published by the Bureau, the first two appearing in 1938 and 1950, respectively.

The changes in these lists (Table 5) constitute an interesting commentary on (a) the advance in our statistical information since the 1930's, (b) the extension of our knowledge of business cycle phenomena, and (c) the stable and the shifting cyclical relations among economic processes. Among the important indicators that could not have been listed in 1938 because they had not yet been constructed are the quarterly figures on gross national product, net change in business inventories, total corporate profits, and plant and equipment expenditures. Unemployment figures were of course being discussed, but no comprehensive monthly series existed. Factory payroll data were available, but not monthly figures on total personal income. In some cases, where a series had only recently been started, the historical record of its performance was not sufficient to warrant listing it.

Even since 1950, the additions to our cur-

**TABLE 5**  
**EVOLUTION OF THE NATIONAL BUREAU'S LISTS OF BUSINESS CYCLE INDICATORS**

	1960 List	1950 List	1938 List <sup>a</sup>
<i>Leading Group</i>			
Sensitive employment and unemployment indicators			
Average workweek, mfg.	✓	✓	✓
Accession rate, mfg.	✓		
Layoff rate, mfg.	✓		
New investment commitments			
Housing starts	✓		
Residential constr. contracts, fl. sp.		✓	✓
Comm. and indus. bldg. contracts, fl. sp.	✓	✓	
Industrial bldg. contracts, fl. sp.			✓
New orders, dur. goods mfg. indus.	✓	✓	
Net change in no. of operating businesses	✓		
New corporations, no.		✓	
Inventory investment and sensitive commodity prices			
Change in business inventories	✓		
Spot market price index, indus. materials	✓		
Spot market price index, indus. mat. and foodstuffs		✓	
Bradstreet's wholesale price index			✓
Profits, business failures, and stock prices			
Bus. failures, liabilities	✓	✓	✓
Corporate profits	✓	<sup>b</sup>	
Railroad operating income			✓
Common stock price index, indus., rails, and util., S & P	✓		
Common stock price index, indus., DJ		✓	✓
<i>Roughly Coincident Group</i>			
Employment and unemployment			
Nonagr. employment, establishment survey	✓	✓	
Factory employment, total			✓
Factory employment, machinery			✓
Unemployment rate, percentage of labor force	✓		
Unemployment, total number		✓	
Production			
Industrial production index, FRB	✓	✓	✓
Industrial production index, SS Co.			✓
Business activity index, AT & T			✓
Gross national product, in current \$	✓	✓	
Gross national product, in constant \$	✓		
Railroad freight ton-miles			✓
Freight carloadings		✓	
Paper production			✓
Steel ingot production			✓
Pig iron production			✓
Automobile production, passenger cars			✓
Automobile production, trucks			✓
Inner-tube production			✓
Income and trade			
Personal income	✓	<sup>c</sup>	
Bank debits outside NYC	✓	✓	
Bank clearings outside NYC			✓
Sales by retail stores	✓	<sup>c</sup>	
Department store sales			✓
Wholesale prices			
Wholesale price index, ex. farm prod, and foods	✓	✓	
<i>Lagging Group</i>			
Plant and equipment expenditures	✓		
Wage and salary cost per unit of output, mfg.	✓		
Manufacturers' inventories	✓	✓	
Consumer instalment debt	✓	✓	
Bank interest rates on business loans	✓	✓	

<sup>a</sup> The 1938 list was not originally classified in three timing groups. The series were arrayed according to their average lead or lag at business cycle troughs.

<sup>b</sup> Classified (1950) in the roughly coincident group.

<sup>c</sup> Classified (1950) in the lagging group.

rently available statistical series are noteworthy. The net change in the population of business enterprises, or the excess of business births over business discontinuances, is now estimated on a quarterly basis; formerly it was annual or semiannual. The unemployment rate, or percentage of the labor force that is unemployed, is published each month in seasonally adjusted form. Gross national product adjusted for changes in the price level is now available each quarter. Quarterly anticipations of plant and equipment expenditures are issued as well as estimates of past expenditures.

The successive changes in our lists also reflect extensions in our knowledge of business cycle processes. Evans' and Zarnowitz' work on new incorporations and changes in the business population, Haberler's on consumer instalment debt, Bry's on the workweek and labor turnover, Abramovitz' and Stanback's on inventories, Zarnowitz' on new orders, Hultgren's on profits and labor costs, Barger's and Creamer's on personal income, are among the studies that have been relied upon to support the selection of indicators for these lists. They have provided both a carefully compiled historical record, in many cases covering individual industries as well as national aggregates, and an economic rationale for the cyclical behavior of the processes involved.

Despite these changes in the available statistics and in knowledge of cyclical relations, there is a substantial element of similarity among the lists. Conceivably this might reflect mere inertia in the construction of the lists — a reluctance to change. Although this insidious element may be present, the important fact is that cyclical relations themselves are slow to change. The 1938 study was based on cyclical measures extending through 1933. The 1950 study used data for one additional business cycle, 1933-38, but took into account behavior at peaks as well as at troughs, whereas the 1938 study concentrated on the latter. With the changes in economic and governmental institutions wrought during the thirties and during World War II, and with the changes in governmental economic policy growing out of the Employment Act of 1946, the continuing validity, in substantial measure, of the

results of the 1938 and 1950 studies is a token of the stability of the cyclical relations among economic processes.

As related in last year's report, and expanded upon in *Business Cycle Indicators*, the record through 1958 shows that the 1950 list of indicators performed about as consistently since World War II as it did before the war. Three series in the 1950 list have been reclassified and one has been dropped on the basis of the subsequent record and a re-evaluation of the earlier one: corporate profits was shifted from the roughly coincident to the leading group, personal income and retail sales were shifted from the lagging to the roughly coincident group, and freight carloadings was dropped. These are marginal, not drastic, shifts — a basis for the present classification existed even in the prewar record, but the evidence was slighter and the decisions went the other way. The other changes between the 1950 and the 1960 lists represent improved or newly constructed statistical series or the measurement of economic processes that had not previously been included.

The experiment in measuring the severity of recessions at their outset, described in *Measuring Recessions* (1958), was resumed last September. The month of May 1960 was tentatively selected as the business cycle peak, and the percentage changes in substantially the same set of indicators used for this purpose in 1957-58 were computed from May to August, May to September, May to October, and so on. The initial results suggested a relatively mild contraction in terms of the magnitude of the decline from the peak, and subsequent data through February 1961 have continued to suggest this.<sup>1</sup>

Although this result is encouraging, and the method has survived a certain amount of testing (i.e., in 1953-54 and 1957-58), the preliminary indications derived by this method should not be relied upon indefinitely. They

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<sup>1</sup> See my statement in *Current Economic Situation and Short-Run Outlook*, Hearings of the Joint Economic Committee, 86th Congress, 2nd Session, December 7-8, 1960, pp. 92-107. The report *Measuring Recessions* is reprinted in *Business Cycle Indicators*, Chapter 5.

should be re-examined periodically as new data become available, and the conclusion revised should that be necessary. What happens during the first few months of a business cycle contraction cannot possibly determine what will happen through to the end, unless it proves extremely short. The movements of leading indicators may foreshadow, in a rough and approximate way, the changes in business activity a few months ahead, but new policies and events can alter what is initially indicated, especially in the more distant future.

GEOFFREY H. MOORE

### MONEY AND BANKING

The manuscript of the proposed volume by Anna Schwartz and myself on the historical background of the stock of money in the United States was completely rewritten this year. It is now undergoing final checking and revision before circulation to the Directors. A summary chapter remains to be added. The second proposed volume, in which the cyclical and secular behavior of the stock of money is analyzed statistically, is still in first-draft form. The complete rewriting of this volume is the major task for the current year.

It may be of interest to report here on some continuing experiments to improve the demand function for money developed in *The Demand for Money: Some Theoretical and Empirical Results* (Occasional Paper 68, 1959). That function, it will be recalled, related the quantity of money demanded per capita to expected real income per capita and expected prices. Expected real income and prices were calculated as an exponentially weighted average of past measured real income and prices, and were designed to be estimates of hypothetical "permanent" income and prices. The function, initially fitted to cycle averages for the period 1878-1954, fitted extremely well even when applied to individual years. It accounted alike for the secular decline in income velocity and for the positive

conformity of income velocity to the business cycle.<sup>2</sup>

Despite the generally good fit, however, there was a growing discrepancy, in the final years of the period covered, between the actual stock of money and the stock as computed from our demand equation: the computed stock was growing decidedly faster than the actual stock. This discrepancy has become even wider for the years since 1954, sufficiently so to call for a thorough re-examination of our function.

One striking feature about the discrepancy is that it is present only in the postwar level of income velocity, not in its cyclical movements. Our statistical relation continues to reproduce the cyclical movements in velocity with a high degree of fidelity. The discrepancy therefore does not raise any doubts about the importance of the distinction between measured and permanent magnitudes in accounting for the positive conformity of income velocity.

The underlying problem is that whereas from the Civil War to World War II velocity tended to fall, over the postwar period it has risen sharply. This phenomenon has attracted much attention, and numerous explanations have been suggested. The most plausible attribute the postwar rise in velocity to the rise in interest rates, or to expectations of inflation, or to the growth of savings and loan shares and other substitutes for money, or to some combination of all three factors. It may be that these factors account for some part of the postwar rise in velocity. However, an intensive examination of the evidence indicates that even all together they are likely at most to account for only a minor part of the discrepancy.

A more promising explanation that we are currently investigating is that the discrepancy reflects a very different factor, namely, the public's expectations about the likely degree of economic stability. This explanation has great appeal both on analytical grounds and in terms of its qualitative concordance with the experience of the past four decades. Given that money is held as a temporary abode for generalized purchasing power, the amount people will desire to hold must surely depend

<sup>2</sup> The following paragraphs are drawn from a paper that I read at a meeting of the American Philosophical Society on November 10, 1960, to be published under the title "The Demand for Money" in the *Transactions* of the Society.

on their expectations about future contingencies. If they anticipate a highly stable world, with minor fluctuations in income, employment, interest rates, and prices, they will feel much less of a need to retain relatively large amounts of their wealth in the form of money than if they anticipate considerable instability, involving wide fluctuations in income, employment, interest rates, and prices.

The explanation accords qualitatively with the behavior of velocity over the past four decades. The twenties, with their widespread belief that a "new era" had dawned, were times when, on this interpretation, people might have been expected to hold relatively low cash balances, and in fact velocity was high during this period relative to its long-period trend. The enormous increase in uncertainty after the 1929 crash was promptly accompanied by a pronounced decrease in velocity. While nominal money balances declined sharply as a result of the unfortunate policies followed by the monetary authorities, income fell still more sharply as a result of the reaction of the public, so that money balances rose sharply relative to income. Money balances remained high relative to income throughout the uncertain thirties, and fell only as the approach and then outbreak of war in Europe quieted fears of continued economic depression. After the United States entered the war, and even more, as the end of the war approached, expectations again shifted. The experience of the thirties combined with the recollection of the collapse of prices after World War I to instill widespread uncertainty about postwar experience. Money balances rose to an unprecedentedly high level relative to income. Finally, and here we come to the period that has attracted most attention, after the end of the war, as one recession after another turned out to be mild, fears of a great depression receded, confidence grew in the continuation of a high and relatively stable level of economic activity, and cash balances fell substantially relative to income. This postwar change in expectations must be about over, in the sense that a further increase in stability is not generally expected. Hence, if this interpretation is correct, the factors accounting for the postwar rise in velocity have

spent their force, and velocity may be expected to resume its long-period downward trend. Whether it does so will be a critical test of the interpretation.

This qualitative account suggests that changes in the public's expectations about economic instability were in the right direction to account for the major deviations of velocity from its historical relation to expected income. It leaves open, however, the question whether these changes in expectations could account for the magnitude of the observed deviations. In order to get some evidence on this point, we have been trying to supplement the qualitative analysis by a quantitative analysis. The results of our initial experiments are mixed. On one hand, the introduction of a measure of expected instability (an exponentially weighted average of the squared differences between measured and expected incomes), analogous to the measure of expected income, into a regression computed from cycle bases significantly improves the closeness of the relation. Moreover, when the computed equation is used to estimate the desired money stock year by year, it accounts, in a statistical sense, for a large part of the deviations since the early 1930's. However, the equation containing the measure of expected instability yields a decidedly poorer fit to the annual data prior to 1920 than the initial equation, so it cannot be regarded as at all satisfactory.

We have made further experiments with the same measure of instability but fitting the equation to annual data rather than to cycle bases. The results are again mixed. The measure accounts for a statistically significant part of the variability left unaccounted for by our earlier equation, but not for a large enough fraction to justify regarding the results as any strong confirmation of the hypothesis about the role of expected instability. Needless to say, the reason may be that the measure we have been using is not a good way to estimate expected instability. We are continuing our experiments with this measure and are also exploring other ways to estimate expected instability.

One consideration that justifies further exploration along these lines, and also suggests

ways to check any conclusions, is that expected instability may be supposed to affect a good many decisions other than cash-balance decisions.

A revised draft of Phillip Cagan's monograph on the determinants of the money supply in the United States since 1875 will shortly be submitted to a staff reading committee. Of the seven chapters in the monograph, five present the determinants: high-powered money, the currency ratio, and the reserve ratio; and examine their contributions to secular and cyclical variations in the stock of money. On the basis of these findings, a sixth chapter inquires whether the changes in the money stock were caused by or occurred independently of variations in prices and output. The concluding chapter summarizes the monograph.

MILTON FRIEDMAN

## COSTS AND PROFITS

A manuscript, "Cost, Prices, and Profit Margins: Their Cyclical Relations," was completed shortly after the close of the year. Chapters are:

1. Factors That Influence Profits
2. Manufacturing: Sales and Margins
3. Manufacturing: Price and Cost Factors
4. Railroads
5. Other Industries
6. Comparisons and Interpretations

## DATA FOR LARGE COMPANIES

Quarterly FTC-SEC estimates of sales and profit margins for twenty-two major groups of industries were used in the chapters on manufacturing. These figures are available only from the first quarter of 1947. As a supplement to and check on our conclusions from the postwar data, we were able to assemble data on twenty-two large industrial corporations which published quarterly sales and profit data during at least one business cycle in the interwar period. (The coincidence in the number of companies and groups is accidental.) In a broad way, changes were similar in

the margins of the companies and in those of the industries. In 92 per cent of the expansions in the sales of the various companies, there was a net rise in the profit margin. In 87 per cent of the expansions in the sales of the various manufacturing groups, there was also a net rise in margin. There was a net fall in margin during all of the company sales contractions and during 96 per cent of the group sales contractions.

Not only the net changes but the sequences of change in margins were similar. In both sets of data, for example, a rise followed by a decline was the most common sequence during expansion. In both, a straight fall was the most common sequence during contraction, though a fall with a later rise also frequently occurred.

## CHANGES DURING CYCLES IN QUANTITY SOLD

The foregoing remarks pertain to changes in the dollar amount of sales. Data on changes during cycles in quantity sold are more instructive. We therefore constructed indexes of quantity sold for seventeen manufacturing groups with available price data, by deflating their dollar sales by indexes of prices they received, and noted the dates of peaks and troughs in the quantity indexes thus computed. We divided each cycle in quantity sold into stages in the manner usual in NBER cycle studies.

During expansions of quantity sold, there was a net rise in cost (including not only labor but materials, etc.) in a narrow majority of instances, a net rise in prices received by the industries in a large majority, and a net rise in profit margins in an even larger majority (Table 6, I to V line). In contractions there was a net rise in costs, i.e., from V to IX, in a large majority of instances, a net rise in price in a somewhat smaller majority, and a net rise in margin in hardly any. These were postwar contractions; in prewar contractions of the more severe type prices received declined much more often.

Cost per unit seldom rose in the first segment of expansions, i.e., from I to II. Rising cost became more and more common from that segment to the second segment of contraction,

after which it became less and less common. Price rises became more and more prevalent from the first segment of expansion to the first of contraction, after which they became less and less prevalent. Rising margins were most frequent in the second segment of expansion; their frequency diminishing almost regularly to the second segment of contraction, after which they became more frequent.

#### NEW DATA ON LABOR COST

Table 6 shows not only total cost but also production-worker payroll cost per unit of product sold by the various manufacturing groups. The labor cost data suffer from several deficiencies, one of which is that aggregate payroll figures refer to establishments, while the data on quantity sold refer to corporations. This may be the reason why the figures on labor cost per unit of product sold do not show the same smooth wave of change that the other data do. Note the sharp dip in the fourth segment of expansion.

In *Changes in Labor Cost During Cycles in Production and Business* (Occasional Paper 74, 1960), labor cost per unit of product was examined in a small number of narrowly defined industries, with output figures based on physical data; both the labor and quantity data were virtually on an establishment basis. Here we use broad industrial groupings with quantity data estimated by price deflation. The labor cost per unit data in the paper show a steady increase in the frequency of rising labor cost during production cycles from the first segment of expansion to the second of contraction, followed by a steady decline. In both sets of data, however, labor cost per unit had a net fall in most expansions, 38 per cent there, 34 per cent here; and a net rise in most contractions, 91 per cent there, 79 per cent here.

#### MANUFACTURING VS. RAILROADS

Railroads are the only other industry for which we have found a way to make indexes

TABLE 6  
CHANGES IN LABOR COST AND TOTAL COST PER UNIT OF QUANTITY SOLD,  
PRICES RECEIVED, AND PROFIT MARGINS DURING CYCLES IN  
QUANTITY SOLD, 17 MANUFACTURING GROUPS, 1947-60

From Stage	To Stage	Number of Observations	Percentage of Observations with Rise in			
			Labor Cost <sup>a</sup>	Total Cost	Prices Received	Profit Margin
I	II	50	20	16	38	70
II	III	50	40	40	62	80
III	IV	50	66	62	74	64
IV	V	50	44	72	86	64
V	VI	37	95	86	89	57
VI	VII	37	76	92	76	14
VII	VIII	37	46	68	43	19
VIII	IX	37	49	54	38	30
I	V	53	34	55	77	81
V	IX	53	79	87	72	4

NOTE: Stage I is the initial trough quarter in quantity sold, V is the peak quarter, IX is the terminal trough quarter of a contraction. Intervening quarters are divided into three groups and data for the quarters assigned to each group are averaged to produce figures for II, III, IV and VI, VII, VIII. Dates of peaks and troughs vary from industry to industry. There are more observations on the last two lines than the others because some expansions and contractions were too short for division into five stages.

<sup>a</sup>Includes only wages of production workers.

of cost per unit and prices received. Expansions in quantity sold by manufacturers, and expansions in railway traffic, are both accompanied by net rises in margins. Contractions in both are accompanied by net declines. In manufacturing, however, rises in price are responsible for much of the cyclical rise in margins, while on railroads declines in cost are responsible for most of it. In both industries, rises in cost are responsible for much of the cyclical decline in margins.

#### MARGINS OF UTILITIES

Margins were computed for telephone companies and for electric utilities. Telephone companies have had only one decline in their annual physical volume of business — from 1930 to 1933 — as measured by the number of phone calls. In expansions of general business, the quantity of telephone service, like the quantity sold by most industries, increases; but telephone margins, at least in recent cycles, have tended to decline during such periods. In business contractions, when most

industries suffer declines in quantity, but telephone business merely grows at a retarded rate, telephone margins tend to rise. Electric utility margins tend to fall in expansions and rise in contractions of kilowatt hours sold.

#### COST ONLY LOOSELY RELATED TO PRICES IN SHORT RUN

Because the data for seventeen manufacturing groups represent a wide diversity of industries, the remainder of this report will be confined to them.

In most cases, stage-to-stage changes in cost are reflected in price changes in the same direction. But there are many exceptions. The percentage of cost increases reflected in price increases tends to rise as expansion proceeds. But the percentage of cost declines accompanied by price rises, although consistently lower, likewise tends to increase. In contraction, a smaller and smaller percentage of increases in cost is reflected in rising prices as contraction proceeds.

TABLE 7  
CONTRIBUTION OF PRICES RECEIVED AND COST TO NET CHANGE IN PROFIT  
MARGINS DURING EXPANSIONS AND CONTRACTIONS IN QUANTITY SOLD,  
17 MANUFACTURING GROUPS, 1947-60

	<i>Number of</i>	
	Expansions	Contractions
<i>With rise in margin, caused by</i>		
Rise in price and smaller percentage rise in cost	23	2
Rise in price and fall in cost	14	0
Fall in price and larger percentage fall in cost	6	0
Total	43	2
<i>With fall in margin, caused by</i>		
Rise in price and larger percentage rise in cost	4	36
Fall in price and rise in cost	2	8
Fall in price and smaller percentage fall in cost	4	7
Total	10	51
Grand Total	53	53

## RISING DEMAND MAKES RISING COST COMPATIBLE WITH RISING PROFIT

In expansions of quantity sold with rising prices, demand is obviously rising. This rise in demand often makes it possible even for manufacturers with rising cost to widen their profit margins. In expansions, the most frequent combination of net changes was a rise in cost, accompanied by a larger percentage increase in prices received, resulting in a rising margin (Table 7). In contrast, rises in cost during contractions were hardly ever accompanied by a proportionate rise in prices received.

As expansions of quantity sold proceed, falling cost becomes a less frequent factor and rising price a more frequent factor in widening margins. As contractions proceed, rising cost becomes a less frequent factor and falling price a more frequent factor in narrowing margins.

## DEMAND AT FIRST OUTRACES QUANTITY SOLD, WHICH LATER BEGINS TO CATCH UP

If the quantity of factory products supplied in response to rising demand expanded faster than it does, prices would not rise as fast as they do, and margins would not widen as much as they do. If the quantity supplied expanded fast enough, margins would not rise at all. In this sense, demand outraces quantity supplied in most expansions. Since the percentage of observations with rising margins falls from 80 in the second segment to 64 in the third and fourth, one must infer that in some cases quantity supplied begins to catch up in the later portion of expansions. Since margins continue to rise in 57 per cent of the first segments of contractions, one infers that quantity supplied in these cases is reduced by more than would be necessary to preserve the peak margins. The situation soon changes, however, and during the remainder of contractions quantity sold in most cases is not reduced fast enough to keep margins from falling.

## MARGINS WIDER AT PEAKS IN SALES THAN AT TROUGHS

The decline in margins during contractions in quantity sold is perhaps not surprising in

view of their high initial level. Even though margins have begun to fall in some industries as those industries approach their quantity peaks, margins are usually higher at the peak—i.e., just before the quantity sold begins to recede—than they were at the preceding trough—i.e., just before the quantity sold begins to revive. It would be difficult to explain recessions in terms of the level of profit margins at their inception.

THOR HULTGREN

## PRICE STATISTICS REVIEW COMMITTEE

The Committee, established in 1959 by the National Bureau at the request of the Bureau of the Budget, submitted its report in preliminary form on September 30, 1960, and in final form two months later after receiving the approval of the National Bureau's Board of Directors. The report, entitled *The Price Statistics of the Federal Government*, provides a review and appraisal of the main price series compiled by the government and makes recommendations for their improvement. Together with twelve Staff Papers, it is being published both as a document of the Joint Economic Committee of the Congress and as General Series 73 of the National Bureau.

In addition to a number of findings relevant to all of the main indexes, the report presents more specific criticisms and recommendations regarding each of them. The Consumer Price Index, in the view of the Committee, should approximate more closely to a constant-utility or welfare index as the concept appropriate to the main purposes, including wage escalation, for which this series is used. The report makes a number of suggestions concerning the treatment of new commodities, quality changes, and other problems with the aim of reducing the difference between the present index and an ideal welfare index. It further recommends that the index should be extended to cover single persons as well as families and rural nonfarm as well as urban workers, and that a more comprehensive index should be constructed for the entire population and not only for wage and salary workers.

The use of the Wholesale Price Index as an over-all economic measure has declined because of the absence of any clear definition of the universe of transactions to be covered and because of the development of other more specifically definable series, such as the Consumer Price Index and the implicit price deflators of the gross national product. At the same time, however, the detailed breakdown of wholesale price data by industries and commodities is increasingly demanded by government agencies, business, and other users. The Committee accordingly proposes that the structure by subclasses of the over-all index should be revised, on a basis more appropriate for economic analysis, to reflect the prices of a condensed input-output table for the commodity-producing industries. The Committee also expresses misgivings about the quality of the price data entering into the index and recommends, among other things, that prices should, where feasible, be collected from buyers so as to get more information on actual transactions prices.

With regard to the construction of the Indexes of Prices Received and Paid by Farmers, the Committee considers that the 1910-14 base prescribed by law is obsolete, and that the inclusion of interest and taxes per acre is inappropriate since they are not prices. The report recommends that the coverage of the indexes, particularly that of prices paid for living, should be increased, and that the indexes for farm as production units should be segregated from those for farms as consumer units.

In transmitting the report to the Subcommittee on Economic Statistics of the Joint Economic Committee of the U.S. Congress on January 24, 1961, Raymond T. Bowman, Assistant Director for Statistical Standards, Bureau of the Budget, stressed the need at this time for a thorough review of price statistics and their importance not only to the government but also to business, agriculture, labor, and the general public. He expressed the belief that the report "provides the expert guidance sought" and gave assurance that its recommendations would receive careful consideration by the Bureau of the Budget in

cooperation with the agencies of the government charged with the compilation of price statistics.

Hearings on the report and on the twelve staff papers that accompany it are to be held beginning May 1 by the Subcommittee on Economic Statistics of the Joint Economic Committee.

The Price Statistics Review Committee consisted of Dorothy S. Brady, University of Pennsylvania; Edward F. Denison, Committee for Economic Development; Irving B. Kravis, University of Pennsylvania; Philip J. McCarthy, Cornell University; Albert Rees, University of Chicago; Richard Ruggles, Yale University; Boris C. Swerling, Stanford University; and George J. Stigler, University of Chicago, chairman. Harry E. McAllister of Washington State University served as secretary.

The titles and authors of the staff papers accompanying the report are as follows:

1. An Index of Motor Freight Rates, Walter Y. Oi, David E. Lund, and Paul P. Bestock.
2. Alternative Retail Price Indexes for Selected Nondurable Goods, 1947-59, Albert Rees.
3. Hedonic Price Indexes for Automobiles: An Econometric Analysis of Quality Change, Zvi Griliches.
4. Sampling Considerations in the Construction of Price Indexes with Particular Reference to the United States Consumer Price Index, Philip J. McCarthy.
5. Index Numbers and the Seasonality of Quantities and Prices, Victor Zarnowitz.
6. Consumer Durables in an Index of Consumer Prices, Peter O. Steiner.
7. Cost of Living Indexes for Special Classes of Consumers, Eleanor M. Snyder.
8. Statistical Factors Affecting the Stability of the Wholesale and Consumers' Price Indexes, Harry E. McAllister.
9. A Study in Validity: BLS Wholesale Price Quotations, John Flueck.
10. Appraisal of Alternative Concepts and Measures of Agricultural Parity Prices and Incomes, Geoffrey Shepherd.

11. Unit Value Pricing of Prices Received by Farmers, Earl R. Swanson.
12. The Measurement and Economic Implications of the Inclusion of Indirect Taxes in the Consumers' Price Index, Reuben A. Kessel.

GEORGE J. STIGLER

**STATISTICAL FACTORS  
AFFECTING THE STABILITY  
OF THE WHOLESALE AND THE  
CONSUMER PRICE INDEXES**

The results of this investigation appear as Staff Paper 8 of *The Price Statistics of the Federal Government* (General Series 73, 1961). Three main topics were explored.

First, the effect of changes in coverage upon the stability of the Wholesale Price Index and the Consumer Price Index was examined. The coverage change in the CPI in the 1939 revision increased the sensitivity of the index. For the two cyclical swings experienced during 1935-39 the new index showed 20 per cent more amplitude in the first, and 40 per cent more in the second, than the old index. It appears reasonable to attribute this increased sensitivity to a shift to a collection of more-sensitive elements in the food and miscellaneous components and the decreased sample size of the food category.

Two major changes in the size of the WPI sample were explored, the 1931 revision when the sample was increased from 550 to 784 items and the 1952 revision when coverage increased from 900 to about 1,900. The first of these changes reduced the cyclical swings of the index to about 85 per cent of their former magnitude and the second to about 79 per cent. If one ignores the shift from 784 to 900 items, the combined effect of these two changes brought a reduction of about a third in the size of the swings in the WPI since 1926. Some of this change is owing to the changed structure of the economy and some to the "mechanical effect" of changing the size of the sample. Although the Bureau of Labor Statistics properly strives in its revisions to better reflect the structure of the economy, analysts, in comparing recent with earlier movements in the indexes, should be careful to recognize the effects of increased sample size.

The second part of the study considered the effect of the number of reporters on the frequency of price changes for items in the WPI classified by stage of processing. The number of price changes was found to vary directly with the number of firms reporting the price for a given commodity (Table 8). Since there are many one-reporter series in the WPI, a false rigidity is thereby imparted to the index.

**TABLE 8**  
**FREQUENCY AND AMPLITUDE OF PRICE CHANGES BY NUMBER OF  
REPORTERS AND ECONOMIC CLASSIFICATION**

<i>Economic Classification</i>	<i>Average Number of Price Changes per Month for Commodities</i>		<i>Amplitude of Price Change, Dec. 1953-Dec. 1956</i>
	<i>One Reporter</i>	<i>Two or More Reporters</i>	<i>Two or More Reporters</i>
Materials, nonfood	0.111	0.251	11.0%
Finished goods, consumer, food	0.197	0.379	2.2
Finished goods, consumer, nonfood	0.068	0.195	8.0
Finished goods, producer	0.076	0.214	16.4
All classifications	0.089	0.371	11.3%

SOURCE: *The Price Statistics of the Federal Government*, New York, NBER, 1961, Tables 2.8 and 2.9, pp. 391, 392.

It was also found that the number of price changes was not correlated with the amplitude of price changes by economic groupings. Finished goods, food, for example, showed the greatest average number of price changes per month but the lowest average price fluctuation for the four economic classifications considered.

The third section compared WPI data with Census Bureau and trade source data. On an individual item basis (6-digit WPI item compared with a 7-digit Census item), it appears that the Census data were far more sensitive to seasonal and cyclical change than their WPI counterparts. On the basis of data from trade sources, it appears that individual items bought by large companies undergo considerably more price variation than these same items as recorded in WPI data.

On the basis of these two types of evidence, the WPI price data seem to be unduly rigid in the short term and therefore understate the amplitude of short-run price movements.

HARRY E. McALLISTER

#### CONSTRUCTION OF QUALITY-SENSITIVE PRICE INDEXES

Concern about the validity of available price indexes for capital goods has led me to investigate a relatively old and straightforward method of adjusting for quality change. The purpose is to find out whether this method is feasible and operational, and whether the results would warrant its application in consideration of the extra costs involved.

It is standard practice in the construction of price indexes to adjust for those quality changes to which a price can be attached. For example, the appearance of automatic transmissions on the market at \$200 extra will not raise the price of automobiles in the conventional indexes (except those of the U.S. Department of Agriculture), even though eventually almost all cars are sold with this device and the base price incorporates it as "standard equipment." Only a few of the observed quality changes come, however, in discrete lumps with an attached price tag.

Most of the changes are gradual and are not priced separately. Many dimensions of quality change can nevertheless be quantified — e.g., horsepower, weight, or length of automobiles. A variety of models with different specifications are sold at different prices at the same time, and by using multiple regression techniques on these data one can derive implicit prices per unit of the chosen additional dimension of the commodity. Armed with these results, one can adjust the observed price per automobile for the changes that have occurred in its specification. There are many technical problems to be solved, but the main idea is quite simple: to derive implicit specification prices from cross-sectional data on the price of various models of the particular item and to use these results in pricing the changes through time in specifications of the item. Alternatively, by interpolation or extrapolation this procedure can be used to estimate what the price of a new combination of specifications, or qualities, of a particular commodity would have been in some period in which that particular combination was not available.

The first round of computations completed provides an analysis of passenger-car prices and specifications for a sample limited to four-door American passenger sedans. The main dimensions used were horsepower, weight, length, and "dummy" variables for such "qualities" as hardtops and V-8's. The prices used were the factories' delivered "suggested" retail (list) price and prices for used cars taken from industry "blue books," since, unfortunately, there are no published data on actual transaction prices for a wide range of models. The form of the equation used was semilogarithmic, the logarithm of price being related to the various specifications (in pounds, horsepower units, or inches). The periods covered were 1937, 1950, and 1954 through 1960.

For any one of these years, a limited number of specifications or dimensions explained a very large fraction of the variance of car prices as among different models. Owing to the high intercorrelation between some of these dimensions, there was some instability

in the implicit prices estimated for them. Also, there appears to have been a very substantial secular decline in the implicit price of some of these dimensions (e.g., horsepower). Thus estimates of actual price changes, after adjustments are made for quality changes, differ markedly depending on whether the estimates are based on beginning- or end-period weights. If quality changes are valued at their 1950 implicit prices, all of the apparent increase in car prices between 1950 and 1960 can be explained by quality improvements, the adjusted price index actually falling during 1950-60. Valued at 1960 implicit prices, the same quality changes account for a little over one-half of the apparent price increase over this period. Over the whole period since 1937, the Consumer Price Index may overestimate the rise in automobile prices by at least one-third. Since the CPI is a Laspeyres index, the appropriate quality adjustment should also be computed on base-period weights. If this is done, about three-fourths of the rise in automobile prices in the CPI since 1937 could be attributed to quality improvements.

A preliminary report on this study appears as Staff Paper 3 in *The Price Statistics of the Federal Government* (General Series 73, 1961). At a later date I plan to expand it into a larger manuscript by including material on the depreciation of automobiles and other aspects of the automobile market which fell outside the purview of the Price Statistics Review Committee.

A similar analysis of changing prices and specifications for farm tractors (wheel type) is currently in progress.

ZVI GRILICHES

#### APPLICATION OF ELECTRONIC COMPUTERS

Our activities in the field of computer applications are being supported by grants from the National Science Foundation and the International Business Machines Corporation. In the course of the past year, electronic computing was done for a variety of projects concerned with cyclical analysis. We proc-

essed a substantial number of monthly time series for the purpose of comparing interwar and postwar cyclical behavior. We also processed a large number of annual series for a study of the relations between business cycles and the flow of funds through the capital markets. For a study of consumers' buying plans we provided computations of multiple correlation measures, designed to link purchasing intentions and actual purchases to family characteristics and opinions about general economic conditions. Correlation analysis by electronic computer was also performed in connection with the construction of quality-sensitive price indexes for automobiles and agricultural equipment. In the field of international trade, our unit computed solutions of systems of simultaneous equations used in the estimation of international trade matrices.

With regard to our own program development, we can report completion of an IBM-704 program for a frequency-distribution analysis of ungrouped data and near completion of a similar program for grouped data. Juanita Johnson is preparing the latter program. These programs permit analysis of cyclical changes in the characteristics of distributions, from month to month, quarter to quarter, peak to trough, or during any other desired time interval. They can, of course, also be used for the construction and analysis of distributions pertaining to a single point in time.

We are presently engaged in developing a time-series charting program for the IBM-704 or 709. This will help break the charting bottleneck that has developed with the mass processing of time series. The charts are similar, in principle, to those available in the Shiskin-Eisenpress seasonal analysis program, except that we aim at improved scale control and at semilog charts with standardized scales to facilitate comparisons between series. The one-line arithmetic charting program is operative and can be used for rough analytic purposes, such as establishing presence of seasonality or unusual events, prior to electronic processing. The charting program is being written by Richard Kilgore.

In the course of the last few months we

wrote a number of supplementary programs. As a supplement to regression analysis, for instance, we wrote a program for computing "calculated values" and "residuals." Also, we adapted the Census Bureau's time-series decomposition program so that the measures for time-series components, smoothing terms, and so on can be derived from series which require no seasonal adjustment or have already been adjusted.

Three papers describe some of these results: "Applications of Electronic Computers to Business Cycle Research," presented before the Annual Meeting of the American Statistical Association at Stanford University (1960 *Proceedings of the Business and Economics Statistics Section*); "Electronic Data Processing for Research in Economics and Marketing," presented at a conference of the Society of Business Advisory Professions; and "Use of Electronic Computers in Forecasting," in *Sales Management*.

We are drafting a Technical Paper that will review the major electronic computing programs for cyclical analysis, explain their objectives, illustrate their applications to micro- and macroeconomic problems, and describe their technical characteristics, such as computer identification, input requirements, options, output format, availability of program decks, and so forth. We believe

that such a compendium would be a useful tool for anybody working in the field of business cycle analysis.

Some informal sessions on applications of electronic computers to economic analysis were arranged with the professional staff of the National Industrial Conference Board, the professional staff of the Middle Atlantic Region Division of the Bureau of Labor Statistics, and with individuals in government agencies, universities, and business concerns who use electronic computers in economic and allied analyses.

GERHARD BRY

CHARLOTTE BOSCHAN

#### OTHER STUDIES

The manuscript on "Postwar Cycles in Manufacturers' Inventories," by T. M. Stanback, Jr., will shortly be ready for review by the Board. Victor Zarnowitz' monograph, "Orders and Production in Manufacturing Industries: A Cyclical Analysis," is to be completed this summer. Ruth Mack's report on "Materials Purchasing and Business Fluctuation" is being revised by the author.

For other reports on business cycles, published or in process, see Part II. See also Sections 4 and 5, below.

## 4. FINANCIAL INSTITUTIONS AND PROCESSES

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

This study of the economics of pensions, directed by Roger F. Murray, is now in its third year and some of the major areas of investigation have been fully explored. There remains the task of integrating the findings, some of which are discussed below, into a comprehensive view of the economic implications of the present and prospective pension structure. It is hoped that a draft manuscript will be ready for limited circulation and criticism by

the end of this summer. The research is being supported by grants from the Maurice and Laura Falk Foundation and from the Life Insurance Association of America.

One of the major questions with which the study is concerned is this: What difference does it make, in economic terms, whether public or private pension programs take over an increasing share of responsibility for providing retirement benefits in the years ahead? This broad question can be approached most effectively on the basis of a distinction between the economic effects of transfer payments (redistributive effects), which predominate in

most of the public programs, and the economic effects of accumulations (saving effects), which predominate in the programs for the employees of government and private industry. A logical sequence for the development of the study, therefore, is (1) an examination of the present and prospective pension structure, (2) an analysis of the redistributions of income which take place through different programs, (3) the implications for aggregate saving in the economy, and (4) the impact on investment and the capital markets of fund accumulations. Reports on these sections of the study follow.

### THE PENSION STRUCTURE

In last year's Annual Report, data were presented on trends in vesting over a decade as determined from an analysis of the plans in our sample of 124 large companies. The results were summarized by a measure of the likelihood of workers of given age and years of service to have earned a vested pension right (i.e., the average chance, weighted by number of workers covered, of leaving employment with a vested right). During the past year, we have extended this type of analysis to a more refined breakdown of plans in our sample by developing a similar measure for "pattern" plans — those adopted by some of the international unions and negotiated, with only slight variations, with individual companies or groups of companies — and "conventional" plans. Also the firms have been subdivided into fourteen industry groups. The results suggest some tentative conclusions:

1. At the start of our period (or rather the earliest triennium for which our data are reasonably complete), 1950-52, there was virtually no vesting in pattern plans, while vesting after a given age, years of service, or, more frequently, a combination of the two did exist in conventional plans. Thus, for example, the vesting likelihoods for workers aged 40-44 with fifteen to nineteen years of service were 0 per cent for pattern plans and 15.8 per cent for conventional plans.

2. Over the next three-year period, 1953-55, vesting increased strongly in pattern plans, but remained virtually unchanged in conven-

tional plans. Again for the same age and years of service category, the likelihoods were 49.0 per cent and 13.7 per cent for pattern and conventional plans respectively.

3. For the most recent period, 1956-59, we observe a further strengthening of the vesting provisions of pattern plans, and some growth of vesting in conventional plans. The vesting probabilities for the same category as above were 59.5 per cent and 25.9 per cent respectively.

4. Wide variations in the strength of vesting exist, of course, in the plans of firms in different industries, one of the major explanatory factors being the relative importance of pattern or conventional plans in the industry. As an example of this disparity, in 1956-59 the vesting likelihood for a worker between 40 and 44 years of age with fifteen to nineteen years of service was as follows for a few industries:

Food and kindred products	10.4%
Chemical and allied products	67.4
Rubber products	74.8
Primary metals	0.8
Public utilities	1.7

All our findings on vesting likelihoods are subject to revision, and, it should be added, summarizing the results by a single age-and-years-of-service category furnishes an imperfect insight into the trends. It should be remembered that our sample covers only the plans of 124 large companies and does not include profit-sharing plans with retirement features, multiemployer plans, or plans administered solely by unions.

DANIEL M. HOLLAND

### REDISTRIBUTIVE EFFECTS

The effects of transfer payments through the operations of tax-supported programs have been analyzed by John J. Carroll in a study of the gain-loss patterns by income groups. He finds the net effect to be a modest increase in consumption for the year 1957, but notes certain trends that suggest that this effect may disappear by 1970. The Civil Service, State and Local Government, Veterans, and Rail-

road Retirement Systems are included in the study, together with the Old-Age and Survivors Insurance and the Old-Age Assistance Programs, but the economic effects of OASI are overwhelming in their influence. The future course of developments in this program is not readily predictable, with the result that the projection of future economic effects cannot be made with confidence.

In the field of private pension programs, primary consideration has been given to fund accumulations, into which currently flow about three-quarters of the combined total of contributions and interest earnings. In the years ahead, however, benefit payments are likely to increase rapidly. Hence the transfer payments (income redistributions) associated with private plans will be of increasing significance. We are exploring, with the aid of Thomas E. White, the problem of calculating the gain-loss patterns created by private plans. Because benefit payments are supplemental to OASI benefits, it appears likely that the redistributive effects will differ markedly from those of tax-supported programs.

In both public and private programs, it is difficult to determine where the costs ultimately come to rest under various circumstances. Are they in effect shifted back to the employee, or forward to the consumer in the form of higher prices, or do they rest on the employer? While it is difficult to generalize, particularly in the case of private plans, some specific assumptions must be made in order to visualize the pattern of gains and losses in various income groups.

ROGER F. MURRAY

#### THE IMPACT ON AGGREGATE SAVING

This impact can be thought of in terms of the effect on the saving of three groups: individuals, businesses, and government. For the first group, we have analyzed the personal saving of a sample of Consumers Union subscribers (more fully described in the Annual Report for 1960, p. 46). This analysis is nearly completed and a tentative report has been drafted for review and study. The findings from the later questionnaire confirmed those described in last

year's Annual Report. For the second two groups, we have no evidence to offer, but the final manuscript will include a discussion of the range of possible effects.

In brief, the work so far points to the following conclusion: the net increase in national saving is probably a high proportion of the growth in pension funds. The evidence for this conclusion is that employers' and employees' contributions do not on the whole substitute for other forms of personal saving (though under certain circumstances they may), and the reduction in federal income tax revenues from the exemption of pension contributions and fund earnings leads to other taxes that possibly reduce corporate saving by only a modest fraction of the growth in pension funds.

Our survey of Consumers Union subscribers provided data on the ratio of total wealth to income for each household. This ratio can be used to estimate a household's average saving in the past (on the assumption that inherited wealth is small and distributed more or less at random among households). In some ways, the ratio provides more revealing information than the usual ratio of current saving to income, which we rely upon primarily in the analysis. To our knowledge, wealth-income ratios have not been used before in the analysis of saving behavior, and we are experimenting with them to see what they can contribute to this study as well as to others of a similar kind.

PHILLIP CAGAN

#### CAPITAL MARKET INFLUENCES

Pension programs which produce accumulations for investment through the capital markets generate additional funds for the long-term financing of all types of economic activity. However, the trend of investment policy has been strongly toward financing business expansion and private construction. With limited need for liquidity or shiftability of assets, long-term yield becomes the primary, indeed almost exclusive, objective of portfolio management. The direct obligations of federal, state, and local governments offer relatively little appeal for these purposes, with consequent implica-

tions for the financing problems and borrowing costs of all agencies of government.

The aggregate operations of trustee corporate pension funds have been tabulated by the Securities and Exchange Commission for some years, but little information has been available on the noninsured plans of nonprofit organizations or the portfolios of union and jointly administered multiemployer plans. We are making a comprehensive survey of portfolios in these types of plans to determine whether the nature of the organizations has an important influence on portfolio management policy.

It seems essential to recognize at every turn that the influences of pension plan accumulations on the capital markets are being felt along with numerous other influences in a dynamic, ever-changing market structure.

ROGER F. MURRAY

## CONSUMER FINANCE STUDY

The broad objective of this study, which is being supported by a general grant from several finance companies, is to assess the role played by consumer finance in the functioning of the economy of the United States. The study is under the direction of Robert P. Shay. Attention is centered on analysis of consumer behavior, the credit markets, and the economic and legislative forces affecting them. Five major projects are under way, and a subsidiary study of consumer credit and unemployment is nearing completion. A brief statement of work in process on each project follows.

### THE RATE STRUCTURE IN CONSUMER FINANCE

The study of the rates of charge paid by consumers in securing credit accommodation is being closely coordinated with that of the costs of extending credit by the various types of institutions engaged in supplying the service. However, most of the work under way on finance rates is devoted to automobile finance, while from necessity the study of costs was begun along broader institutional lines. In discussing rates of charge, the expression "finance

rate" has been adopted to denote the percentage rate per annum of finance charges to a declining credit balance. Thus finance rates may refer to consumer credit charges legally classed as interest, as well as those charges legally not so regarded under the common law time-price doctrine. We found it necessary to adopt the finance rate as our unit of measurement for two reasons: first, to convert consumer credit charges to a common unit of measurement, in an industry which quotes its charges in many different ways; second, to have a measure closely geared to comparison with rates in other credit sectors. In short, the annual percentage rate of charge for finance on a declining credit balance provides a convenient tool for economic analysis in our study.

The work of the past year on new automobile finance has been devoted to establishing bench marks for a statistical series measuring levels of automobile finance rates annually between 1935 and 1960. Also, an analysis of the structure of new automobile finance rates by region, type of lender, state legal ceiling, maturity, size of loan, monthly payment size, and certain borrower characteristics has been undertaken for the years 1954 and 1955.

Two bodies of existing sample data have been utilized to provide bench-mark estimates for 1935, 1936-38, and 1954-55. The Federal Trade Commission *Report on Motor Vehicle Industry* (1939) provided finance-rate data for the eastern half of the United States in the first two periods and the Federal Reserve study *Financing New Car Purchases* (1957) supplied the 1954-55 sample data. In order to bring these estimates up to date, sample data were collected from four large national sales finance companies for 1958 and 1959. In general, the results show a substantial decline in the average level of finance rates between 1935 and 1936-38, a further decline to 1954-55, and a rise back to approximately the 1936-38 level by 1958-59.

In analysis of the structure of finance rates in 1954-55, median rates were found to vary significantly when classified by type of lender, state legal ceiling groups, region, maturity, loan size, and monthly payment size. Further investigation of other factors associated with

finance rates is under way. An Occasional Paper presenting the broad results of this phase of the study is planned.

Measures of dealer participation in the customer finance charge are available from the 1935-38 data of the Federal Trade Commission *Report*. Although a comparable measure is not obtainable from the 1954-55 data, the 1958-59 data from four national sales finance companies will permit a relevant comparison with the four large company segment of the earlier period.

Some analysis will be devoted to used-car finance rates in 1935-38 and 1958-59. In addition, an effort will be made to collect sample data on finance rates for other consumer durable goods.

Two other analyses have been started. One is an attempt to measure the association between customer finance rate levels, trade-in overvaluation, and dealer new automobile cost-price margins. The hypothesis under investigation is that the height of the customer finance rate, as a source of dealer income, is associated with narrowed dealer profit margins through overvaluation of the trade-in. The other analysis is concerned with the degree of consumer knowledge of the finance-rate level and its relation to behavior patterns suggested by response to a survey question. This latter work has been pursued jointly with F. T. Juster and is described in his section of this report.

ROBERT P. SHAY

#### THE COST STRUCTURE IN CONSUMER FINANCE

The study of consumer credit costs is designed (1) to provide background information for the interpretation of the level and changes in finance charges, and (2) to provide an overall picture of the cost components of consumer credit. Information on costs is being collected and analyzed for five types of institutions engaged in consumer credit activities: commercial banks, consumer finance companies, sales finance companies, credit unions, and department stores.

Work is in progress on the collection and processing of data. Cost information on con-

sumer credit operations and related activities, obtained from published reports and directly from individual companies, is being adapted to a standard accounting framework that will permit comparisons of the cost structure of different types of operations and different types of credit. The development of information for credit unions and consumer finance companies is nearing completion. Preliminary work has been started on information for sales finance companies and commercial banks. Collection of information for department stores will be started when processing of data from financial institutions has been completed.

PAUL SMITH

#### ECONOMIC ASPECTS OF STATE LEGISLATION AFFECTING CONSUMER FINANCE

The growth and development of state retail instalment lending statutes are being studied with respect to the economics of the firm, the industry, and the consuming public. These regulations have increased both in number and in complexity. One important development in recent years has been the spread of legal maximum rates applied to retail instalment financing. Empirical work is in process aimed at assessing the relation between legal rate ceilings and actual finance rates in new and used automobile financing.

To deal with other aspects of regulatory problems, a questionnaire is nearly ready for circulation among selected financing agencies and state supervisory authorities. It seeks to determine attitudes on the following topics: method of computing financing charges, desirability of quoting effective annual rates, prepayment refunds, deferment and renewal practices, and delinquency or default charges.

Writing is well under way on a chapter dealing with the effects of rate regulation and rate statement on competition in the consumer finance industry. This chapter draws primarily from the literature and secondarily from data now being collected by the National Bureau. It provides a complement to the chapters which will discuss the direct effects of legislation on rates.

WALLACE P. MORS

Several exploratory investigations bearing on the use of credit by consumers were carried out during 1960.

1. Using data from Goldsmith's *Study of Saving in the United States* and his later figures, we are attempting to ascertain whether or not consumer spending has in recent years become relatively more variable, hence more of an autonomous factor in the flow of expenditures. Annual data provide some support for the hypothesis of increased variability relative to other sectors. For example, contrasting consumer spending on household durables and autos with business spending on producer durables, we find that the variance in percentage changes from year to year has increased by a factor of three for consumers and declined by a factor of two for business in a comparison of the periods 1897-1916 and 1947-58. In these periods the same pattern is shown by the variance in annual percentage change for residential construction and private business construction.

More precise quantification of these patterns is still in process, including a statistical examination of the variance in national income from one year to the next. The objective is to measure the fraction of this variance attributable to consumer activity, to business investment activity, and to government. We expect to examine the patterns of change during business cycles with the same object in mind—to find out whether the contribution of the credit-using consumption sector has become relatively more important for the explanation of business cycle movements.

2. Another exploratory investigation is concerned with an appropriate measure of the imputed income accruing to households as a result of their ownership of consumer durables. Existing measures impute the equivalent of rental income to owners of houses, but ignore the element of income implicit in the ownership of other durable goods. It appears that there are rental markets for practically all consumer durables, and for many nondurable items also. The difficulty is that these are highly imperfect markets, hence a good meas-

ure of rental equivalent is hard to obtain for many items. Other possibilities exist in addition to rental data. For example, we have rather precise knowledge of instalment credit finance rates for these goods, and it can be argued that the market returns (from ownership) of consumer durables are at least as high as the finance rates actually paid by instalment credit users. We contemplate making an empirical estimate of imputed income from consumer durables, or perhaps several alternative measures that use conceptually different kinds of data.

3. As a joint effort with the finance rate study, we have begun an analysis of survey data designed to throw light on the question of consumer knowledge of finance rates and consumer sensitivity to variations in rates. Respondents to this survey constitute a sample of households among member-subscribers to Consumers Union of the U.S., the product testing and rating organization. The member-subscribers are relatively young, most have college degrees, and they are probably among the most cost-conscious and choice-conscious of American consumers.

On the question of consumer knowledge of finance charges, we have data on the interest rate these households reported paying on instalment purchases. We also have enough data to compute the actual finance charges and finance rates involved in the transaction, since information was obtained on price paid, amount borrowed, size of monthly payments, and duration of contract.

Preliminary analysis suggests that these materials will provide some insight into consumer knowledge about the level of finance rates and the relation of finance rates to loan size. The behavior of finance rates for different loan-size classes suggests that households are aware of the fact that it usually costs more to borrow small amounts of money than large amounts. The information on households that did not report the finance charge is of interest, since it shows that this happened more frequently when loan sizes were small than when they were large, and more frequently when the computed finance rate was high than when it

was low. Additional research on these matters is in process.

The question of consumer sensitivity to variations in interest rates is being investigated by means of an experimental design embodying hypothetical questions about credit transactions. We split the original sample into sixteen random subgroups, sending each group a set of alternative finance plans involving a credit transaction of specified size and purpose. The alternatives given any one subgroup generally implied the same finance rate, but involved choices about down payment, contract length, and monthly payments. Each subgroup has a matching counterpart, identical in all respects except finance rate.<sup>1</sup> It is thus possible to compare the choice patterns among two sets of hypothetical alternatives identical in all respects except finance rate.

For each alternative financing arrangement listed, respondents could either indicate a preference or specify that the particular plan was unacceptable to them. The proportion of households offered a particular set of financing arrangements who said they would reject *all* the alternatives is of particular interest, since a comparison of this fraction for a set of alternatives carrying a 16 per cent finance rate with that for an identical set carrying a 4 per cent rate provides us with a way of estimating interest elasticity. In every case a larger fraction of households said they would reject all specified financing arrangements when the implicit finance rate was high than when it was low, although the differences are not very large. Further, differences in the fraction of households rejecting specific alternatives within the set—as distinct from rejecting all alternatives—are also consistent with the hypothesis of some interest rate sensitivity. Additional work is now in process on these data.

F. THOMAS JUSTER

<sup>1</sup> At least one other characteristic of the finance plan must also be slightly different, since one cannot change only the finance rate without some alteration in monthly payments, down payment, or contract length.

## FACTORS BEARING UPON SOURCES OF FUNDS AND THEIR ULTIMATE USE BY CONSUMER LENDERS

During the past year efforts have been focused on the gathering of data on the sources of funds of consumer lending agencies. Specific data-gathering enterprises are listed and briefly described below.

1. Directly placed commercial paper. We have asked issuers of this paper for monthly outstandings, 1953 to date, classified by type of lender, as follows:

- Banks
- Insurance companies
- Investment companies
- Pension funds
- Brokers, dealers, and investment banking firms
- Other financial holders, (real estate dealers, factors, holding companies, etc.)
- Nonfinancial corporations
- Foreign holders
- All other (individuals, foundations, hospitals, educational institutions, civic and religious organizations, etc.)

Usable figures have been received from seven of the issuers, and we hope to enlist the cooperation of others. Professor John M. Chapman of Columbia University has assisted us in obtaining these data.

2. Insurance company loans to finance companies. It is well known that a major portion of the long-term funds of finance companies is supplied by insurance companies. We are developing precise estimates of the nature and importance of this type of financing. How many insurance companies and finance companies are involved? What have been the trends in recent years?

To answer these and other questions we have collected information contained in *Corporate Holdings of Insurance Companies*, published annually by United Statistical Associates. We have found about 540 insurance company holders of finance company securities at the end of 1958; the par value of their bond and note holdings was about \$3¼ billion. Information is being secured that will provide estimates of outstandings and change

in outstandings for 1951-52 and 1957-58.

3. Extension of Professor Chapman's sample to 1959. All seventy firms in this sample of sales finance and small-loan companies have been asked to extend the financial data they have furnished (now available for 1946-58) to 1959. Most have complied, and the data have been analyzed. However, some problems remain—cases of no response, ambiguous data, inconsistencies with earlier years, mergers, and so forth. We hope to complete this project in the near future.

4. Investment company holdings of finance company securities. Although investment companies (including both open- and closed-end types) are not major sources of finance company funds at present, we have decided to spend some time studying them. Our initial efforts have been limited to investment company holdings as of the end of 1958. Portfolios of nearly all regulated investment companies have been analyzed for holdings of finance company securities, and the data recorded. The same process will be followed for other years back to 1952, and for 1959.

5. In addition to supplying the commercial paper data described above, four large sales finance companies were asked to furnish monthly data on other aspects of their financial operations. These refer primarily to bank

borrowings (and open credit lines) and long-term debt, but also to their management of cash balances.

RICHARD T. SELDEN

#### THE PATTERN OF CREDIT AND EXPENDITURE ADJUSTMENT TO UNEMPLOYMENT

This study is based on about 1,800 questionnaire interviews with unemployed persons applying for unemployment compensation. The surveys were conducted under the auspices of the Bureau of Employment Security in six states between 1954 and 1958. During the past year the information contained in these surveys has been utilized in a variety of ways to shed light on the general question of what techniques of adjustment to the reduction in net family income accompanying unemployment are most commonly resorted to, and what factors tend to influence this priority pattern. Table 9 indicates the nine most common techniques used by the whole sample. It may be noted that the priority pattern is not materially affected whether importance is defined in terms of frequency of use by unemployed persons or in terms of the aggregate dollar volume which the adjustment represented for all who used it.

This priority pattern was examined for con-

TABLE 9

TECHNIQUES OF ADJUSTMENT TO UNEMPLOYMENT RANKED BY (1) FREQUENCY OF USE AND (2) TOTAL DOLLAR VOLUME REPRESENTED BY ADJUSTMENT

Technique Used	Percentage of All Cases (1,836) Who Used Technique		Total Amount in Dollars Represented by Each Adjustive Technique	
	Percentage	Rank	Amount	Rank
Decrease savings and checking accounts	40.1	1	225,897	2
Borrow money	29.7	2	234,009	1
Decrease food expenditure	25.9	3	62,400	3
Liquidate life insurance	24.9	4	8,675	6
Decrease amount spent on auto operation	8.9	5	8,723	5
Permit delinquency on rent	7.4	6	9,285	4
Permit delinquency on auto purchase during survey year	6.5	7	4,280	8
Decrease liquor expenditures	5.2	8	6,044	7
Decrease tobacco expenditures	2.8	9	1,285	9

sistency when the sample was broken into subgroups by such variables as age, occupation, earner status, expectation of early re-employment, change in liquid assets during the year, percentage change in income during the year in which unemployment occurred, predictability of unemployment ahead of time, and state in which the surveys were made. While there was some interesting variation, the degree to which the priority patterns—however the sample was classified or subdivided—adhered to the general pattern shown in Table 9 was the single most striking conclusion.

The fact that by far the most important types of adjustment to unemployment were drawing down liquid assets and borrowing money is of considerable significance in interpreting the unemployment situation and its consequences. These adjustments help to maintain current purchasing power. In this respect the immediate consequences are similar to those of the so-called built-in stabilizers that offset declines in money income—unemployment compensation payments and reductions in personal income tax liability. Furthermore, these ways of helping to meet a serious situation tend to reinforce one another. For example, credit is likely to be more readily available if some regular source of income, such as unemployment compensation, exists. And unemployment compensation, in turn, helps to preserve, for a longer period, a family's liquid assets.

The priority pattern considered above has also been considered in connection with the duration of unemployment. In general, the techniques which appear to be utilized more frequently the longer the period of unemployment include delinquencies on rent, appliances, and automobile payments; borrowing on life insurance and on mortgages; selling cars and allowing them to be repossessed; and decreasing expenditures on liquor, tobacco, and automobile operation. Only mortgage delinquencies appear to show up more frequently in the earliest part of periods of unemployment.

Techniques which appear to be relied on in a basically unpatterned way with respect to the duration of unemployment include delinquen-

cies on major home improvement payments and hospital payment; acquiring personal loans; and decreases in expenditures for food, motion pictures and other forms of recreation, and newspapers and magazines.

In addition to studying the priority pattern for specific methods of adjustment, a good deal of attention has been devoted to the more general question of the relative importance of decreasing expenditures of all sorts, drawing down liquid assets, and incurring debt of all types which constitute the major types of adjustment available. While the results of this analysis are still being studied, it seems clear that the presence of liquid assets is of vital significance. Almost half of the sample increased debt during the survey year, and of those who did not, most had liquid assets to utilize instead.

The "representativeness" of the sample was tested in a variety of ways. It was found that the typical household budgets by income group before unemployment in this sample were very similar to house budgets by income group for the entire population. More generally, it was found that the distribution of cases in the unemployment sample classified by age, income class, marital status, and occupation was sufficiently broad and diffused so as to avoid the possibility that the sample was biased initially.

The computations are now drawing to a close and a manuscript will be available shortly.

PHILIP A. KLEIN

## INTEREST RATES

Thought about the role of interest and money goes back in history as far as any speculation regarding economic phenomena. Yet the theory of interest still remains subject to sharp debate, and judgments of experts vary from pole to pole regarding the influence of interest rates on economic activity. The answers to many unresolved questions in this area are central to the development of wise monetary policies, to achieving sound procedures for debt management, to the formulation of the investment programs of financial institutions,

and to many other issues of practical necessity.

No single study can do more than move us somewhat closer to the goal of solving these problems. However, a wealth of data gathered by governmental agencies, the National Bureau, and others since World War II should facilitate an empirical analysis of interest rates that would have been entirely impossible in earlier times. The Life Insurance Association of America has provided a grant to the National Bureau for a two- to three-year study of this kind. The project will benefit from the advice and guidance of an Advisory Committee chaired by W. Braddock Hickman, Federal Reserve Bank of Cleveland. The following have agreed to serve on the Committee:

Lester V. Chandler, Princeton University  
W. A. Clarke, W. A. Clarke Mortgage Company

George T. Conklin, Jr., Guardian Life Insurance Company of America

Milton Friedman, University of Chicago

Raymond W. Goldsmith, National Bureau of Economic Research

John G. Gurley, Brookings Institution

Sidney Homer, Salomon Brothers & Hutzler

Norris Johnson, First National City Bank of New York

Robert G. Link, Federal Reserve Bank of New York

Roger F. Murray, National Bureau of Economic Research

James J. O'Leary, Life Insurance Association of America

Roy L. Reiersen, Bankers Trust Company

Eli Shapiro, Massachusetts Institute of Technology

Henry C. Wallich, Yale University

Ralph A. Young, Board of Governors of the Federal Reserve System

C. Richard Youngdahl, Aubrey G. Lanston & Co. Inc.

The focus of the study is not on further data gathering, but on interpretation and analysis. Although the specific nature of the jobs to be done has not yet been fully defined, exploratory work suggests the desirability of five major substudies.

1. One of these studies will cover a considerable historical period, and will utilize the general methods of cyclical analysis which the National Bureau has developed. This procedure will facilitate analysis of the behavior of various rates during business cycles, and reveal such secular or structural changes as may have occurred. Comparisons will be made not only between the behavior of different rates but also between these and related series, such as free reserves, money supply, debt issues, industrial production, and so forth. The cyclical sequence of changes in crucial variables and the stability or variation in their cyclical behavior with the passage of time should give important clues regarding the validity of conflicting views about the determinants of interest rates in general.

2. The second approach, made simultaneously, will be a much more intensive study of the behavior of different rates in a fairly short but recent period, possibly beginning with the Treasury-Federal Reserve Accord of March 1951.

In both (1) and (2) the types of security and corresponding interest rates studied would be broken down according to the following major criteria:

Risk

Term to maturity

New versus seasoned issues

Coupon rate and call features

Type of asset:

Treasury obligation, state and local government securities, corporate debt, mortgages, equities, obligations of intermediaries

Allowance would have to be made for tax status and rights values. A special feature of these studies will be an attempt to learn how much linkage exists between the markets for securities of the varied characteristics suggested by these categories.

3. There are two markets of major importance about which far too little is known and on which the interest rate study may require further specific work, including data gathering. One of these is the mortgage market. Discussion of long-term interest rates often concentrates attention upon bonds and equities almost

to the exclusion of the mortgage market. As the National Bureau's studies of the postwar capital markets show, however, the volume of residential mortgage debt outstanding increased twice as much in the decade ending 1955 as did the volume of corporate bonds, and this increase was four times as great as the total net sales of corporate stocks. The volume of mortgages on multifamily and commercial properties is also important, amounting to nearly 40 per cent of that on one- to four-family residences at the end of 1959. Better information on interest rates in this field is sorely needed.

4. The second market in which study must be made in order to provide background for a general analysis of interest rates is that of private placements. The volume of issues marketed in this way during recent years amounts to approximately half of all corporate bond issues. There are important advantages to both borrower and lender which suggest the probability of continued growth in the volume of private placements. Data on the volume of these issues acquired by major life insurance companies since 1946 have been compiled by the Life Insurance Association of America. The Association also has some data on yields. However, the many dimensions in which terms vary make translation into an interest rate equivalent extremely difficult, and one task will be to find how far any systematization of returns is possible. It will be necessary also to seek information on private placements with a variety of lenders, including pension funds.

5. Many studies are being conducted all over the country, as well as in other countries, concerning important elements in any general explanation of interest rates. These include Friedman's work on the demand for money, work by Shapiro and Duesenberry on the demand for funds by major sectors, the work of Gurley and Shaw on money and finance, the continuing study on the capital markets directed by Raymond Goldsmith for the National Bureau, the studies initiated by the Commission on Money and Credit in this country and the Radcliffe Commission in Britain, and a large number of other investi-

gations. It now appears that an attempt to bring together the main results of these studies and integrate them with our own work under (1) to (4) above should make possible hypotheses regarding the general theory of interest rates that would grow out of empirical observation. Hopefully these hypotheses would make theory more operational by stating it in terms that could be more readily subject to empirical testing than past interest theory has been. But there are many problems to overcome in such an effort, and only the progress of the project itself can tell how much may be possible.

An important preliminary task is the preparation of appropriate series for cyclical and other analysis. Since available rate series are not always homogeneous with respect to term or other features, some rectification may be required. Corrections may have to be made for seasonal fluctuations in several or all series in view of the recent suggestions made by Frank Morris and others that such seasonals appear to be fairly pronounced and regular in the postwar period. Corrections will be made in some series to allow for after-tax yields in order to examine term and other structure in the most appropriate way.

We have been granted part-time leave from Swarthmore College, beginning with the spring semester of 1961, in order to conduct this study. Reuben Kessel of the University of Chicago will join the project in the autumn as a Research Associate.

JOSEPH W. CONARD

WILLIAM H. BROWN, JR.

## THE QUALITY OF CREDIT IN BOOMS AND DEPRESSIONS

These studies, financed for the past several years by a grant from the Merrill Foundation for Financial Knowledge, constitute pioneering efforts in the collection and analysis of data bearing on the *qualitative*, as distinct from the quantitative, aspects of the credit structure. Qualitative features of credit include on the one side the characteristics of loans (e.g., maturities and loan-to-value ratios) and of borrowers (e.g., size, age, and financial con-

dition of borrowing business concerns, and the income and occupation of consumer borrowers); and on the other side, actual loan experience—delinquency, foreclosure, repossession, and loss. The question whether an ebb and flow in the quality of credit accompanies the well-known cyclical fluctuations in its quantity, and, if so, how quality changes are related to the business cycle, is the central concern of the study. But the sheer improvement of available knowledge of the qualitative characteristics of credit is itself an important objective.

Although the comparatively mild recessions of the postwar years have not revealed any serious deterioration of credit quality as judged by delinquency, repossession, and foreclosure and loss rates, several of the studies indicate that concern for the quality of debts is called for. Tendencies for conditions of boom to generate credit extensions of declining soundness—in terms of longer maturities, higher percentages of value loaned, and weakening financial and other characteristics of borrowers—are evident. These tendencies are of greater import in view of the fact that the over-all ratios of indebtedness and mandatory principal and interest payments to income, wealth, and other measures of capacity to bear debt have continued to creep up, albeit slowly, in several sectors of our economy. Examples of these rising ratios appear in the state and local government sector, in agriculture, and for households.

A brief résumé of the status of each part of the program and of progress made during 1960 follows.

#### CONSUMER CREDIT QUALITY

The draft manuscript on this subject by Geoffrey Moore and Philip Klein is being subjected to considerable revision, partly to take account of data on instalment borrower characteristics not previously available.

#### CREDIT QUALITY IN AGRICULTURE

During the year the previously compiled and cross-tabulated data (see the Annual Report

for 1959, p. 58), covering the experience of the Springfield District Federal Land Bank with mortgage loans made on different qualities of farm land, and at different loan-to-value ratios, were put on punch cards and subjected to computer analysis. Interpretation of the results is currently going forward. George Brinegar is responsible for this study, as also for the previously reported study of experience with short- and intermediate-term loans made by the Production Credit Associations of the Springfield District (see Annual Report for 1959, p. 59).

#### BANK LOAN QUALITY

Albert Wojnilower completed revision of his draft manuscript, "Changes in the Quality of Business Loans of Commercial Banks," and presented it as his doctoral dissertation at Columbia University. He is currently preparing an Occasional Paper for publication by the National Bureau. This study is based largely on bank examination data covering sixty banks, generously made available to the National Bureau by the Federal Reserve Banks of New York, Philadelphia, and Atlanta. Some of the major conclusions follow:

1. The incidence of examiner criticism in 1957, which averaged 1.3 per cent of the business loans of all sixty banks, varied considerably according to the industry and size of the borrower. Within most industries, loans to smaller borrowers incurred criticism more frequently than loans to larger firms. These differentials in criticism rates resembled those shown by other measures of loan quality, such as loan loss rates and credit ratings. Various data suggest that the ordering of the industry-size groups in terms of loan quality may remain fairly stable over time.

2. Banks apparently lend to a larger proportion of all business firms in those industry-size groups in which criticism rates are lower, and to a smaller proportion of firms in those groups in which the incidence of criticism is higher.

3. As cyclical upswings progress, the composition of loans by industry of borrower appears to shift in the direction of greater

risk, while the size distribution shifts toward higher quality as the loan share of the generally riskier small borrowers contracts. The process seems to be reversed at times of cyclical decline and in the early stages of recovery.

4. Changes over time in loan quality *within* industry-size classes were analyzed by means of historical balance-sheet data available for borrowers with loans outstanding in 1957. Loan quality as measured by the financial ratios of these borrowers apparently showed little over-all change in 1954, declined in 1955, rose in 1956, and fell once more in 1957.

5. Changes in the credit standards of the banks over this period were inferred by comparing the financial ratios of new borrowers in any given year with those of other borrowers in the same industry-size class. Credit standards apparently eased in 1954 and 1955, tightened in 1956, and eased again in 1957.

6. Annual changes in the aggregate criticism rate from 1947 to 1957 were found to be quite consistent with those in other indicators of loan quality, such as credit ratings and business failures and discontinuances (both lagged by one year). The only definite divergence occurred in 1957, when it appears that examiner standards, defined narrowly in terms of borrower financial ratios, may have become less stringent.

7. A quarterly "diffusion" index was constructed, giving the percentage of banks examined in each quarter that showed decreases in the criticism rate from the last previous examination. The index undergoes sharp cyclical movements during 1948-57, suggesting that the quality of bank credit, as viewed by bank examiners, declined in the later stages of the business expansions of 1949-53 and 1954-57, and rose toward the end of the contractions of 1948-49 and 1953-54.

#### TRADE CREDIT QUALITY

This study was added to the program late in 1959, on the hypothesis that developments in trade credit may portend changes in the quality of the total credit fabric that cannot be detected so clearly or promptly in the credit

extended by financial institutions. Martin Seiden has been conducting this study. A draft is nearing completion. One of several pioneering features of the study is a thoroughgoing analysis of the data regarding corporations as derived from the *Source Book of the Statistics of Income*. This analysis seeks to ascertain both the quantity and flow of payables and receivables among corporations of differing size and industry class, and the differential behavior of selected financial ratios employed as measures of credit quality.

#### STATE AND LOCAL SECURITY ISSUES

The large growth in bond financing by states and municipalities in the postwar years, and the likelihood that credit-financed state and local expenditures will rise to still greater heights in the decade ahead, make important the question of the soundness of this substantial sector of the credit structure. A study of the quality of such securities was therefore added to the credit quality program during 1959.

Roland Robinson, in his *Postwar Market for State and Local Government Securities* (1960), found relatively little evidence of postwar deterioration as judged by the quality ratings given new issues by rating agencies, although the ratios of debt and debt service to state and local tax revenues appeared to be growing at all state and local levels. The analysis of the quality ratings of state and local securities has now been carried forward through 1959, by use of the detailed data collected since 1956 by the Investment Bankers Association of America. Table 10 presents these new data as they bear on the quality of new issues during 1957-59, together with comparable data for earlier postwar years from Robinson's study.

It will be observed that the percentage of new issues (by dollar amounts) falling below the top four rating classes (Ba or below—often considered to be of "subinvestment grade") has not increased in recent years. The percentage of issues rated in the top two grades has varied considerably from year to year, but there is no evident downward drift

or cyclical movement. Quarter-by-quarter analysis of the 1957-59 issues similarly shows no significant variations.

Robinson remarked in his study on the increasing proportion of state and local financing being carried on by means of revenue bonds, rather than full faith and credit instruments. Since revenue bonds are generally considered less safely secured than general obligations, this trend suggests some possible quality deterioration. As Table 10 shows, this generally high proportion of revenue-type obligations continued during the years 1957-59. The proportion did not, however, grow higher than in the earlier years of the 1950's.

The bottom section of the table presents the 1957-59 data of parallel type, with per-

centages based on the number instead of the dollar value of issues. (There are no similar data for earlier years.) Comparison with the percentages based on dollar amounts shows that the smaller issues tend to have lower ratings, or no rating at all. There is a rise in the proportion of lower-rated offerings from 1957 to 1959, but the changes are not great. It is of interest, however, that about 60 per cent of the number of 1957-59 issues was unrated by the agencies.

Further analyses, to include the relations between changing volume of issues, ratings, and yields, are contemplated.

The Federal Deposit Insurance Corporation undertook this past year to assess the quality of the state and municipal securities held in

TABLE 10  
DATA BEARING ON THE QUALITY OF POSTWAR STATE AND MUNICIPAL BOND ISSUES

Year of Issue	Percentage Distribution of Rated Bonds				Unrated Bonds as Percentage of Total Issues	Revenue Bonds as Percentage of Total Issues
	Aaa or Aa	A	Baa or Below	Ba or Below		
BASED ON DOLLAR AMOUNT OF ISSUES						
1946	30.3	47.6	22.0	2.8	n.a.	17.1
1947	66.6	20.2	13.0	1.4	n.a.	16.4
1948	57.1	31.2	11.6	1.1	n.a.	18.4
1949	39.6	38.3	22.1	2.0	n.a.	22.8
1950	53.8	32.6	13.5	1.5	n.a.	16.2
1951	58.4	28.6	13.1	1.5	n.a.	22.3
1952	44.7	42.5	12.7	2.1	n.a.	33.3
1953	56.3	32.1	11.6	.6	n.a.	28.2
1954	49.4	38.1	12.5	1.5	n.a.	46.2
1955	51.8	35.0	13.2	1.0	n.a.	29.0
1956	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1957 <sup>a</sup>	49.5	38.9	11.5	.5	25.8	28.4
1958 <sup>a</sup>	52.5	35.0	12.5	1.7	18.6	23.9
1959 <sup>a</sup>	42.4	41.9	15.7	.9	18.3	31.9
BASED ON NUMBER OF ISSUES						
1957 <sup>a</sup>	35.6	43.1	21.3	1.9	62.5	10.9
1958 <sup>a</sup>	33.6	42.6	23.8	2.1	59.4	12.7
1959 <sup>a</sup>	31.4	42.1	26.5	2.3	57.4	12.6

SOURCE: Years 1946-55 from Robinson, *Postwar Market for State and Local Government Securities*, pp. 66, 204; years 1957-59 from tabulations of the Investment Bankers Association of America. Columns do not add to exactly 100 per cent because of rounding.

n.a.=not available.

<sup>a</sup>Underwritten issues only; excludes private placements of very small amounts.

the portfolios of state nonmember banks, for whose examination the FDIC has primary responsibility. Bank examination data gathered in 1958 and 1959 were used for this purpose. The results of the FDIC study are not yet available, but it is hoped that in due course they may be utilized in our study.

#### THE QUALITY OF CORPORATE BONDS

There has been no general study of the quality of corporate bonds since the National Bureau's Corporate Bond Project, the qualitative results of which appeared in Hickman's *Corporate Bond Quality and Investor Experience* (1958). This covered corporate issues through 1943. In view of the resumption of corporate bond financing on a large scale in the postwar years, it becomes of interest whether any quality deterioration in this sector of the credit structure has occurred, such as the earlier study indicated had occurred in the 1920's.

While no extensive study of postwar cor-

porate bonds has been possible within the resources of the program, a survey of available data was launched last summer. Data showing the amounts of new corporate bond issues in each of the top four rating grades month by month from 1951 through 1959 were tabulated from *Moody's Bond Surveys*. These show some upward drift in the proportions rated in the top two grades. But the fact that these data cover only bonds of "investment grade," and exclude small and convertible issues, makes this evidence of doubtful value.

A more complete analysis was made possible by use of the monthly listings of new bond offerings published by Standard and Poor's. The listed issues of the years 1946-59 were classified by rated vs. unrated, by public offerings vs. private placements, by rating grades for rated issues, and by whether or not the securities carried a convertibility feature. Some summary results of interest from the standpoint of quality are presented in Table 11.

TABLE 11  
DATA BEARING ON THE QUALITY OF  
DOMESTIC CORPORATE BOND ISSUES, 1946-59  
(Percentages of dollar amounts of issues)

Year of Issue	Rated Issues in "Subinvestment" Grades <sup>a</sup>		All Listed Issues in Convertible Form		Rated Convertible Issues in Subinvestment Grades	
	By Dollar Amount	By Number of Issues	By Dollar Amount	By Number of Issues	By Dollar Amount	By Number of Issues
1946	2.2	11.4	0.1	0.8	...	...
1947	0.5	3.2	0.7	2.0	10.7	50.0
1948	1.1	3.2	0.8	2.3	14.6	50.0
1949	0.8	1.6	0.9	2.4	26.8	25.0
1950	2.8	4.9	1.7	2.4	96.1	75.0
1951	3.0	5.4	1.8	3.6	94.3	80.0
1952	1.8	5.8	7.5	6.5	13.1	63.6
1953	1.4	4.8	12.7	5.5	5.1	40.0
1954	2.7	5.7	2.1	5.6	90.3	71.4
1955	7.2	16.3	17.0	18.5	15.8	56.0
1956	5.7	12.0	9.2	15.0	23.5	60.9
1957	3.5	9.7	12.3	13.3	17.2	50.0
1958	3.1	9.0	14.5	11.6	15.2	66.7
1959	12.6	25.3	15.0	26.6	63.9	80.0

SOURCE: Standard and Poor's monthly listings of new security issues.  
<sup>a</sup>Subinvestment grades are B1 and below.

There has been an appreciable rise in recent years in the percentages (both by dollar amount and number of issues) of new corporate bonds which did not reach "investment grade" (the top four ratings). All during the latter 1950's the percentages are substantially higher than in the earlier postwar years, and in 1959 there was a very sharp rise in this percentage. On the other hand, percentages of subinvestment ratings in recent years are generally below the corresponding percentages for the years covered by Hickman's study.

An interesting development of recent years has been the growth of corporate bond issues carrying privileges of convertibility into equity securities. These are normally "subordinated" to other outstanding debt of the issuing corporation, and their market appeal frequently rests more on the speculative value of the conversion feature than upon their strength as fixed-interest obligations. As Table 11 shows, convertible bonds rose from negligible percentages of issues in the early years following the war to substantial percentages, both by number and dollar amounts, in recent years. As the right-hand columns of the table show, moreover, very substantial proportions of the numbers and amounts of rated convertible issues failed to reach investment grade in the more recent years, when such issues have been popular. In addition, substantial proportions of convertible issues were not rated by rating agencies. This growth of relatively lower-quality convertible issues has been perhaps the notable feature of the postwar market for new corporate bonds that suggests a decrease in over-all quality of corporate securities.

#### THE QUALITY OF RESIDENTIAL MORTGAGE LOANS

The mortgage indebtedness of American households rose from about \$27 billion at the end of 1945 to roughly \$144 billion at the end of 1958. This wholly unprecedented rise of house mortgage debt has been accompanied by a sharp increase in the typical maturity of loans and a substantial decrease in the typical borrower's initial equity in the mortgaged dwelling.

Additional data on the amounts and terms of urban housing mortgages, and on lenders' experience with regard to delinquency, foreclosure, and loss, were secured during the past year. On the whole, they show only moderate increases in unfavorable lender experience, despite the tremendous growth in lending and the relaxation in terms. The combination of the inflation in land and housing prices, the growth of population, and the relative stability of the American economy during these years can no doubt be jointly credited with this fact.

On the hypothesis that mortgage delinquency may nevertheless show sensitivity to changing economic conditions, the detailed quarterly data on delinquency rates by region and class of loan (conventional, FHA, and VA) compiled since 1953 by the Mortgage Bankers Association of America were analyzed in detail. Correlation between changing delinquency rates in various regions and changes in income and employment in these regions shows, in fact, little evidence of sensitivity of house-mortgage delinquency to economic conditions during recent years. Analysis of data on the quality of house mortgage debt is continuing.

#### SUMMARY VOLUME

A volume that will bring together the major findings of the quality of credit studies is in course of preparation. Instead of summarizing each special study, it will attempt systematically to cover both quantitative and qualitative postwar credit developments in each major economic sector (household, agriculture, business, and government). An important part of the volume will be the measurement of changes in the relations between sectoral indebtedness and various measures of each sector's capacity to carry and service their debts.

JAMES S. EARLEY

#### RISKS AND RETURNS IN SMALL-BUSINESS FINANCING

This study was begun in 1958 as part of the Federal Reserve inquiry into the financing problems of small business. A preliminary

report was published in *Financing Small Business*, Report to the Committee on Banking and Currency and the Committees on Small Business, 85th Congress, 2nd Session, Washington, 1958, Part I. The final report, which is nearly completed, includes analysis of special tabulations made by Robert Morris Associates; Dun and Bradstreet, Inc.; and the bank examination departments of three Federal Reserve Banks. Some of the principal conclusions are:

1. Small-sized firms as a group typically experience a greater incidence of financial difficulty than do large firms. This is evidenced by loan experience of several types.

2. Agencies engaged in rating business firms and their obligations in terms of a composite credit appraisal, examiners engaged in appraising the loan portfolios of banks, and firms engaged in rating marketable debt obligations generally recognize in their appraisals the somewhat larger hazards of small business relative to large business enterprise.

3. Measures of credit standing, such as commonly used financial ratios (current ratio, working capital to assets, net worth to debt), typically show a less satisfactory financial condition for small business firms as a group compared with firms of intermediate size. The improvement in these ratios with size of firm frequently does not persist up to the very largest size groups, however.

4. Both the credit ratings and the individual financial ratios are useful in indicating the likelihood of subsequent financial difficulty and losses to lenders. This suggests that methods of determining creditworthiness commonly used by lenders have a considerable basis in experience, and therefore that allocation of loan funds can be accomplished rationally without discrimination on the basis of the size of the borrowing firm, except insofar as size has a direct bearing on risk or cost factors.

5. The evidence on the predictability of the incidence of credit losses (not in terms of individual companies but in terms of broad groups), together with the evidence that loss experience as a whole has been greater for small-sized firms, suggests that lenders deliberately adopt somewhat lower credit standards

in lending to small firms than would be required to obtain as few losses relatively as they obtain on loans to large firms.

6. During the economic expansion of 1954-57, the creditworthiness (though not the profitability) of both small and large firms, on the whole, deteriorated. It is not clear whether the deterioration was greater for small firms than for large.

7. The only data available to show changes in use of bank loans, trade credit, and other debt during 1955-57 for firms classified both by size and creditworthiness indicate (a) that firms with better financial ratios increased their use of credit more than other firms, and (b) that small firms with good financial ratios increased their use of credit more than any other group. It appears that creditworthiness as reflected in various financial ratios is definitely associated with ability to obtain credit. The less satisfactory level of small firms' ratios, on the average, and their deterioration during a period of business expansion and tight money, therefore, may well be factors that adversely affect the utilization of credit by small business during such periods.

8. Higher loss rates on loans to small business relative to large business are probably one of the factors that cause higher interest rates on bank loans to small business. However, loss-rate differentials do not account entirely for differences in rates of interest earned on loans to different-sized businesses. Thus net returns before expenses (gross interest earnings less losses) are typically higher for small business loans than for loans to large business. The differential may reflect higher costs per dollar of loan because of smaller average size of loan, but further research will be needed to provide a firm basis for this observation.

GEOFFREY H. MOORE  
THOMAS R. ATKINSON

#### POSTWAR CAPITAL MARKETS

This project, which has been supported in part by grants from the Life Insurance Association of America and the Commission on Money and Credit, is in its final stages. One of the in-

stitutional monographs planned for this study was published last year (Roland I. Robinson, *Postwar Market for State and Local Government Securities*), and another is in press (Saul B. Klamman, *The Postwar Residential Mortgage Market*). The manuscript on "The Market for Corporate Securities and Loans," by Eli Shapiro, is being revised and is expected to be completed this summer. The proposed Technical Paper by Shapiro and David Meiselman on "Corporate Fund Flows: Annual and Quarterly Estimates" has been submitted to the Director of Research. George Hanc's report, "The United States Savings Bond Program," has recently been submitted to the Directors. Morris Mendelson reports below on the study of the market for Treasury securities. The plan of publishing a continuation for the postwar period of the estimates of saving in *A Study of Saving in the United States* has been abandoned.

The summary report on the study, prepared jointly for the Commission on Money and Credit and the National Bureau by me with the assistance of Robert Lipsey and Rachel Floersheim, was almost completed in first draft by the end of the year and will be ready to go to the staff reading committee in the spring of 1961. The chapter headings indicate the content of the report.

- I. Scope and Functions of the Capital Market in the American Economy
- II. A Framework for Capital Market Analysis
- III. The National Financing Task: The Volume of Gross Capital Expenditures
- IV. Internal and External Financing
- V. The Main Sectors of the Capital Market During the Postwar Period
  1. The Market as a Whole
  2. The Market for Treasury Securities
  3. The Market for State and Local Government Securities
  4. The Market for Residential Mortgages
  5. The Market for Corporate Bonds
  6. The Market for Corporate Stocks

## VI. Cyclical Movements in the Postwar Capital Market

RAYMOND W. GOLDSMITH

### THE PRIVATE DEMAND FOR MARKETABLE TREASURY SECURITIES

Recent years have witnessed a considerable ferment of intellectual interest in financial markets, and especially in the market for Treasury securities. The perplexing problems faced by the Treasury and the substantial amount of experimentation in the marketing of its securities have stimulated numerous studies. These have covered almost all phases examined in the original draft of the manuscript on the market for Treasury securities by Roland Robinson and myself. If the new studies had differed only in analytical orientation or emphasis, they might have required only acknowledgment. But many of them, though not meeting the need for a comprehensive examination of the market as a whole, are based on information hitherto unavailable or on an intensive exploitation of hitherto unused data. This kind of research has to be taken more fully into account than is possible with available resources. Under the circumstances a more constrained and feasible goal has been set.

Instead of attempting a comprehensive examination of the market, I shall focus on the private demand for marketable Treasury securities. The studies will take as data the demand by U.S. Government Investment Accounts, Federal Reserve System, and dealers. The first two sources of demand are intrinsically different in nature from that of other sectors because of the overriding influence of public policy considerations. Dealer activity has recently been the subject of an intensive scrutiny in *A Study of the Dealer Market for Federal Government Securities* (Government Printing Office, 1960), produced for the Joint Economic Committee. Furthermore, dealer activity is essentially trading-oriented rather than investment-oriented. To be sure, the participation of many other transactors can hardly be described as strictly investment-oriented, but nevertheless it is predominantly so.

The completed study, as now planned, will consist of (1) a summary of the background against which private demand for securities is to be discussed, (2) an examination of the investment behavior of the individual private sectors, (3) an examination of the relative role played by the various private sectors in the Treasury market. I plan to investigate the investment preferences of the various private sectors and the responsiveness of these sectors to changes in the yields of competitive securities and in the term structure of rates. On the basis of this analysis, I plan to develop an explanation of the changes in the relative roles of the several private sectors as reflected in aggregate statistics.

MORRIS MENDELSON

### THE INDIVIDUAL INCOME TAX

During the past several years, a series of studies of the individual income tax, conducted under the direction of Lawrence H. Seltzer, have been undertaken. They are intended to furnish a statistical and analytical account of United States experience since the beginning of the income tax. Two of the studies — Seltzer's *Interest as a Source of Personal Income and Tax Revenues* (1955) and C. Harry Kahn's *Personal Deductions in the Federal Income Tax* (1960) — have been published. Daniel M. Holland's manuscript on "Dividends Under the Income Tax" will soon go to press. Kahn is now revising his manuscript on the tax treatment of entrepreneurial income (i.e., unincorporated business and professional income) for submission to the Board of Directors; he reports on this study below. Seltzer expects to complete his work on personal exemptions within the next few months. Some of the questions treated in this study are discussed in the following section. Further work on the tax treatment of wages and salaries and of capital gains is under consideration.

### PERSONAL EXEMPTIONS

If the personal exemptions were confined to the lower-income groups, as was long the practice in Great Britain, the same amount of revenue could be raised with substantially

lower-bracket rates of tax. The most cogent reason for not so limiting the exemptions is to take account of varying family responsibilities at all income levels. At the lower end of the income scale, the same income that might support a single person in tolerable comfort could leave a larger family well below the poverty line. But differences in family responsibilities create variations in economic well-being at every income level. The young bachelor with an income of \$5,000 a year is relatively affluent compared to a married man with three or four children and the same income. By providing allowances for dependents at all income levels, the law may be said to seek a more equitable tax treatment for persons with equal incomes but unequal family responsibilities.

Nevertheless, two kinds of objections have been raised from time to time against personal exemptions for dependents. One holds that the support of dependents is an optional form of consumption from which the taxpayer derives substantial satisfactions, and for which, therefore, he is not entitled to tax concessions.<sup>2</sup> Allowances for dependents are, however, now nearly universal in graduated income taxes (though they are not made in the flat-rate payroll income taxes levied by the Federal Social Security Act and by many American cities), and their accepted objective is to distinguish between persons with equal incomes but unequal family responsibilities at all levels of income.

The second type of objection to personal exemptions for dependents is not directed at the principle of dependent allowances as such, but at the greater tax-reducing value of the exemptions to those with larger incomes than to those with smaller. Under present law the \$2,400 of personal exemptions of a four-exemptions family is worth \$480 of tax reduction if the exempted amount would otherwise

<sup>2</sup>See Henry C. Simon, *Personal Income Taxation*, Chicago, University of Chicago Press, 1938, Chapter VI, and Gary S. Becker, "An Economic Analysis of Fertility," in *Demographic and Economic Change in Developed Countries*, Princeton University Press for National Bureau of Economic Research, 1960, pp. 210 ff.

be subject to the first-bracket rate of 20 per cent, but is worth \$1,200 to a similar-sized family with larger income that would otherwise be subjected to a bracket rate of 50 per cent on the exempted amount. To equalize the tax-reducing value of these allowances at all levels of income, it has often been proposed that a per capita tax credit be substituted for the per capita personal exemptions. In 1948, President Truman proposed the replacement of the \$500 per capita exemption by a \$40 per capita tax credit, estimating that the latter would be the tax equivalent of a per capita exemption of something more than \$700 at the bottom of the income scale and would concentrate 93 per cent of its benefits among individuals with incomes under \$5,000 (Annual Report of the Secretary of the Treasury, 1948, pp. 302, 319).

A persuasive consideration against equalizing the tax-reducing value of the dependent allowances at all levels of income is that the allowances appropriate at lower levels of income do not adequately differentiate between taxpayers with small and larger families at higher levels of income. For example, the allowance that may be appropriate to differentiate between the taxpaying ability of a couple with four children and an adjusted gross income of \$5,000 from that of a bachelor or childless couple with the same amount of income may well be deemed too small to reflect the differences in taxpaying ability between those with small and larger families at income levels of \$10,000 or \$20,000 or more. In other words, the question is not whether those with larger incomes are properly entitled to larger exemptions as against those with smaller incomes, but whether, at a given income level, say \$10,000, the difference in taxpaying ability between a one-person or two-person family and a six-person family is adequately recognized by an allowance that may be appropriate at a \$5,000 level of income. The demands of what may be called vertical equity are met by the graduated scale of effective tax rates which take the desired account of differences in taxpaying ability resulting from differences in income. The demands of what might be called horizontal equity — the smaller taxpaying abil-

ity at every level of income of those with larger families as opposed to those with smaller — would be inadequately met, it may be argued, by equal allowances for dependents at all levels of income.

This type of consideration would support graduating the exemptions for dependents upward with incomes, perhaps establishing them as percentages of income, with upper and lower limits. The objective would not be to reduce the tax burden on larger incomes as compared with smaller ones, but to redistribute the tax burden at each income level in favor of those with larger families. Although the personal exemptions would be made larger for taxpayers with larger incomes than for those with smaller ones, the relative tax burdens on incomes of different size could be maintained substantially unchanged by appropriate adjustments in the bracket rates. What each upper-income group as a whole appeared to gain from the larger exemptions would be nullified by appropriate increases in bracket rates, but taxpayers with larger families in each upper income group would gain relative to those with smaller families in each group.

The adoption of income-splitting for married couples filing joint returns, and of an exemption for each dependent equal to that for each taxpayer, has had the practical effect of moving somewhat in this direction in the United States. The difference in tax liability in 1960 between a single person and a married couple with two dependent children, assuming the standard deduction, was \$398 at \$5,000 adjusted gross income, \$724 at \$10,000, \$4,310 at \$20,000, \$5,918 at \$40,000, \$14,736 at \$100,000, and so on. As between childless married couples and couples with dependent children, however, the difference in tax liability in the middle- and upper-income ranges has remained relatively small. The tax liability of a married couple with two dependent children in 1960 was less than that of a childless married couple by only \$240 at \$5,000 of adjusted gross income, \$264 at \$10,000, \$408 at \$20,000, \$636 at \$40,000, and \$866 at \$100,000.

LAWRENCE H. SELTZER

## ENTREPRENEURIAL INCOME

My manuscript on "The Tax Treatment of Entrepreneurial Income in the Individual Income Tax" has been submitted to a staff reading committee, and I am now making a number of revisions to take account of the committee's suggestions. The study in its present form falls into three parts: (1) entrepreneurial income of the self-employed as a source of personal and taxable income, (2) the size and pattern of income on returns with entrepreneurial profit and loss, and (3) tax liability on entrepreneurial income.

To gain a comprehensive view it is frequently useful to present an aggregate entrepreneurial net income figure, but for most purposes a breakdown of the data between sole proprietors and partners and between net profit and net loss returns is desirable. Wherever possible, I have done so. Thus four separate average effective and average marginal rates of tax have been computed for each of the years 1952-58: for returns with net profits

by sole proprietors and by partners, and for returns with net losses by sole proprietors and by partners. For the latter group of returns, average rates of tax imply that the government shares in the reported losses in the same sense as, for the former group, the rates show that the government shares in net profits. A further breakdown of effective and marginal rates by farm and nonfarm profits and losses would be very desirable. With the available data, however, only a tentative estimate of marginal and effective rates on farm and nonfarm net profits of sole proprietors for 1954 and 1958 has been possible.

C. HARRY KAHN

## OTHER STUDIES

Richard T. Selden has revised his manuscript on "The Postwar Rise in Monetary Velocity: A Sectoral Analysis," and it will shortly be ready for review by the Board. For a list of additional studies, published or in progress, on financial institutions and processes, see Part II.

## 5. INTERNATIONAL ECONOMIC RELATIONS

### THE UNITED STATES IN A CHANGING WORLD ECONOMY

The large balance-of-payments deficits of the last several years have subjected the United States to an unfamiliar constraint. Questions are raised about its ability to pursue some of its major foreign policy objectives, such as the reciprocal reduction of trade barriers and the provision of economic aid to help meet the challenge in the less developed countries. New problems arise also with respect to the balance-of-payments effects of domestic policies. Thus monetary and fiscal measures aimed at countering recession or stimulating long-term growth now are being framed with an eye to their external repercussions as well as to their internal benefits.

The balance-of-payments constraint, operating through changes in a country's reserves, tends to increase with the size and persistence

of a deficit. In the case of the United States, the problem is also related to the role of the dollar as a reserve medium for other currencies. In earlier years the need of other countries to strengthen their reserve positions gave the United States great leeway to run a deficit in its international payments, as it did from 1950 to 1956, and indeed a deficit could be considered appropriate to the circumstances at that time. But with their further rapid growth since 1957, foreign holdings of dollar reserves have become a new element of constraint, reinforced by the greatly increased propensity of private capital to flow from one financial center to another in response to differences in yields or in hope of speculative gain.

The severity of the balance-of-payments constraint depends also upon the state of expectations both as affecting official policies and attitudes and as influencing the behavior of the

private sector. An understanding of the nature and implications of the changes which have occurred may therefore contribute both to the formation of appropriate policies and to the avoidance of exaggerated public reactions. With the assistance of a grant from the Rockefeller Foundation, the National Bureau has embarked on a major investigation to add to knowledge in this field.

Some initial and tentative results of this study, given as a personal contribution in a paper to the American Economic Association last December, show the nature and extent of the disturbances which the United States has experienced in its balance of payments over the last six years, resulting from the strengthened competitive position of other countries, notably in the American market for consumer manufactures, from the shrinkage of foreign outlets for certain United States exports, such as coal and petroleum, and from the rise in American private investments abroad. It is also noted that the deficits have been swollen by cyclical and other temporary fluctuations in 1958 and 1959 and by a sharp rise in the outflow of private funds during 1960. When account is taken of the impact of these various disturbances and of the favorable development of United States trade in other respects, its competitive position and capacity to adjust to external change seem much stronger than would appear from the size of the reported deficits alone.

As long as the balance-of-payments constraint continues in its present severity, however, the United States faces an awkward dilemma in reconciling the requirements of its internal and external position. The situation therefore calls for a consideration of policies that would strengthen the balance of payments and thereby enlarge the room for operation of other policies. It also points to the need for considering ways to render the international payments system in general less vulnerable to strains in trade and to the increased mobility of private funds.

The National Bureau's study will concentrate on changes in the international economic and financial position of the United States and on adjustments to these changes, and will seek

in this way, as well as through the consideration of alternative means of action, to strengthen the basis for the development of appropriate policies to meet both short-run and long-run problems.

HAL B. LARY

#### FOREIGN TRADE AND BUSINESS CYCLES

This project aims at increasing information on foreign trade and understanding of the general business cycle by studying cyclical fluctuations in exports, imports, and trade balances. It is supported by a grant from the National Science Foundation. A first report, *Trade Balances during Business Cycles: U.S. and Britain since 1880*, was published in May 1959 as Occasional Paper 67. The second, *American Exports During Business Cycles, 1879-1959*, published as Occasional Paper 76 in April 1961, deals with the swings in U.S. exports during cycles in world trade and domestic business. It points out, for instance, on the basis of historical experience, what has since been confirmed—that the export decline of 1958 was a normal cyclical swing rather than a sign of structural weakness of the American economy.

How the findings about variations in the total value of United States exports can be explained in terms of underlying price and quantity movements is one of the subjects on which investigation is continuing.

A distinction between "real" variations and those due to rising or falling prices is clearly necessary for an appraisal of exports. But the price data available for this purpose leave much to be desired. The construction of price indexes for foreign trade presents some special problems. One is that the commodity composition of exports and imports changes a great deal more swiftly than that of output or consumption, thus aggravating the usual weighting problems. Further, most price indexes for exports and imports are based on unit values, i.e., values traded divided by the corresponding quantities. They thus reflect not only price changes but also changes in qualities or specifications of the goods included.

For earlier years, when a large part of exports consisted of relatively homogenous, staple commodities, this latter difficulty is not as serious as for recent ones, when highly differentiated manufactured goods play the greatest role. Also for the earlier years 1879-1923, for which no data at all were available until recently, new indexes based on a large number of commodity groups and on quoted prices as well as unit values have been prepared by Robert Lipsey.

For later years, the only available export price indexes are those compiled by the Department of Commerce on the basis of unit values. With the expansion in importance of finished manufactures, the proportion of total exports directly represented in these indexes has gradually diminished. At present only about one-fifth of the latter group is covered directly, and we are not certain whether the sample is representative.

The situation is thus the reverse of the usual one: the data for earlier years command more confidence than those for later ones. The latter need therefore to be tested for reliability in view of the importance of information on movements in export prices. One approach to this problem is to investigate the cyclical behavior of the indexes.

We therefore have analyzed export prices and quantities for the full period 1879-1959. The results are favorable in that the cyclical behavior of export prices, and also of the quantities derived from them, makes a good deal of sense. For instance, the price index of total exports, 1921-58, moves in good conformity to domestic business cycles, falling more or rising less in each business contraction than in the preceding and following expansions. The index also conforms to cycles in world trade, though the latter do not conform perfectly to American business cycles.

The quantity index which is obtained by deflating export values with the price index conforms well to cycles in world trade, but poorly to domestic business cycles. This again is as expected.

Even the weakest of the price indexes for commodity groups, that for finished manu-

factures, has tended to conform to business cycles here since 1945. Its cyclical patterns are regular, rising from stage to stage of expansions, falling or remaining constant between contraction stages. The story it tells is well worth noting. Prices of finished manufactures have increased vigorously in each expansion since 1945, but have shown a significant decline solely in the recession of 1949. They remained virtually constant in 1954, perhaps because of the continued growth of world trade which accompanied the recession of that year in the United States. There is no such explanation for the failure of these prices to decline in 1958, when world trade also took a plunge. Since 1958, prices of finished manufactures have again risen steadily, and the last (tentative) figure for the third quarter of 1960 puts them some 5 per cent above their peak in the 1954-58 cycle.

These tests of cyclical conformity and similar ones on timing do not, of course, remove the possibility of upward, or downward, bias in the indexes, and questions remain about their cyclical amplitudes and long-run trends. The results obtained nevertheless indicate that the price and quantity indexes are useful for purposes of studying cyclical behavior.

I shall soon submit a full report on the cyclical behavior of export prices and quantities, and expect thereafter to treat U.S. imports in similar fashion.

ILSE MINTZ

#### OTHER STUDIES

Herbert B. Woolley's comprehensive draft on the structure of world trade and payments has been reviewed by the staff committee and is now being revised. As parts of the same project, Herman F. Karreman's study on *Methods for Improving World Transportation Accounts Applied to 1950-53* has been published as Technical Paper 15, and Walther P. Michael is completing his draft on "International Capital Movements, 1950-54."

Robert Lipsey will soon complete revision of his manuscript on trends in United States export and import prices and quantities since

1879. It will be submitted to the Board of Directors for approval within the next few months.

The study by Alan T. Peacock and Jack

Wiseman on *The Growth of Government Expenditures in the United Kingdom, 1890-1955* is in press and will be issued as General Series 72.