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NATIONAL BUREAU  
*report*



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### EDUCATION, WORK, AND THE DISTRIBUTION OF INCOME

In most industrial countries, child labor is a thing of the past. Legislation requiring school attendance is widespread, and the compulsory age for such attendance has been progressively raised. Until quite recently, few have questioned the merit of this trend. However, youthful discontent, manifested particularly in schools and on campuses, and a seemingly high level of youth unemployment, among other things, have prompted reassessment of schooling policies. Are we, in fact, overschooling our children? What impact has the lengthening of schooling had on family and working life? Are the activities that produce education efficiently organized, and are too few or too many resources allocated to these activities? These were some of the questions that Jacob Mincer, a member of the National Bureau's senior research staff, was asked to comment upon at a session of the President's Panel on Youth which met in Washington, D. C., in February 1972. His report, "Youth, Education, and Work," appears as the Supplement to this issue of the *National Bureau Report*.

"In education we are striving not to teach youth to make a living, but to make a life," the noted editor and author William Allen White once observed. While few would dispute this statement, preparation to make a living is, nevertheless, one of the major returns expected of education in general and the schooling experience in particular. Of course, many other factors — sex, age, race, location, motivation, et cetera — also influence the kind of living one makes and how one makes it.

For more than two decades, researchers at the National Bureau have been analyzing data bearing on such questions as who works and who doesn't

Youth,  
Education,  
and Work

and why. The results of their effort, as well as current investigations into the determinants of labor force participation, labor markets, and the distribution of income, are discussed below.

## DETERMINANTS OF LABOR FORCE PARTICIPATION

Classical economists postulated that people work less as wages increase because higher wages enable them to satisfy their needs with less effort. Clarence D. Long, among others, author of one of the first National Bureau publications devoted to an analysis of labor force participation, *The Labor Force Under Changing Income and Employment*, challenged this view, contending that the desire to secure the means for physical survival is but one of a wide variety of personal motives influencing an individual's decision to work. Some work to gratify an urge for consumption, while others work to achieve wealth, rank, or social status. Some work out of habit, boredom, or loneliness, or to avoid criticism for being lazy. Others work for enjoyment, or to earn social security benefits, or, in recent times, perhaps, to forestall the military draft by entering an essential occupation.

The external factors that may influence a person's decision to work are even more numerous. As Long indicated, they include the current level of remuneration; the incentive basis on which labor is paid (e.g., piece rates, overtime premium rates); the nonlabor income of labor; the hours and pace of a job; the jobs available in the neighborhood, occupation, or industry; the distribution of income among families and within families; the level and method of taxation; the amount of personal assets and their liquidity in time of need; the facilities for credit and the creditworthiness of an individual; the availability of social security and assistance payments for the aged, the sick, or the unemployed, or for other persons of marginal employability; the restrictions or penalties affecting the earnings of social security recipients; the presence of children and other dependents, which may compel some to work and tie others to the home so they cannot work; the living standard of the community; the individual's demographic characteristics (age, sex, color, nativity, marital status, and residence); physical and mental health; and the extent to which leisure activities such as sports, entertainment, and hobbies compete for one's time.

In sum, each person may have a different reason or combination of reasons for working. Everyone may go through stages in his life when new influences appear and others fade away. These motivations do not depend merely on the personality of the individual. They are likely to spring from many external factors — differing among persons and during the life of a given person — which not only influence his motivation to work (given his personality) but also alter his personality.

The many reasons for working and the factors that nourish them are the products of social and cultural forces, many of which are independent of or in direct contradiction to economic motivations. Nevertheless, if the factors affecting labor market participation can be uncovered, and particularly if the relationships can be quantified, a basis for refined estimates of labor force size, given data on population size and composition, will be available.

Why do People Work?

Social, Cultural, and Economic Motivation

For example, estimates of the potential output of the economy at full employment depend upon estimates of labor force participation as the economy approaches full employment. The concept of a balanced federal budget at full employment also requires an estimate of the labor force at full employment. Such estimates are of vital importance to long-term economic forecasts and economic planning.

### Economic Activity and Labor Force Participation

The labor force participation rate of a population is defined as the proportion of the population that is either employed or in search of employment in the labor market during a given period of time. The theoretical concept of a quantity of labor supplied by a given population and the empirical measurement of labor force participation are, however, distinct. The notion of a quantity of labor supplied by a given population is broad and ambiguous unless the purpose for which this labor is supplied is specified and the units in which the quantities are to be measured are defined. But labor force surveys are quite specific; they purport to measure the quantity of labor supplied for gainful employment or self-employment in the labor market. They measure this quantity by a simple count of people who are employed or in search of employment during a given short period. By this definition, the surveys focus on labor markets, on short periods of observation, and on the number of participants — without regard to the extent of participation in terms of hours of work or in terms of periods longer than the survey week.

Labor Force Surveys

One of the specific questions to which a substantial portion of the recent research on labor force participation has been directed is how, if at all, the size of the labor force responds to short-run changes in the level of economic activity. In the 1930's, W. S. Woytinsky announced the "additional worker" hypothesis, arguing that the size of the labor force is inversely related to the level of economic activity. According to this view, as a slack develops in the economy and primary breadwinners lose their jobs, other family members enter the labor market in an attempt to bolster sagging family income, thus increasing the number of unemployed and the size of the labor force. The "discouraged worker" theory offers a competing hypothesis, postulating a direct relationship between the level of economic activity and the labor force. The underlying explanation is that limited employment opportunities during depressed periods discourage entrance into the labor market of individuals who otherwise might seek jobs and also cause those who lose jobs to leave the labor market out of a sense of futility. Economists find each hypothesis plausible and consider that both responses may occur simultaneously. Perhaps Harvard Professor Otto Eckstein, a member of the National Bureau's Board of Directors, summed up the currently prevailing view when he noted in 1966 that "the supply of labor is positively elastic with respect to the availability of jobs."

Additional Worker Theory

Discouraged Worker Theory

The conceptual model underlying virtually all recent economic research on labor force participation was formulated by Jacob Mincer in the early 1960's. Mincer's model is based primarily upon the standard economic theory of consumption, according to which the consumption of a commodity is

## The Work/Leisure Paradox

affected both by changes in its relative price and by changes in income. The price change leads to a "substitution effect" as the rise in the relative price of a good causes the consumer to substitute other goods for it. A rise in income, on the other hand, causes the individual to increase his consumption of all "normal" goods. In the context of labor supply, the worker is the consumer, and the relevant good is leisure. A rise in the rate of compensation which the worker can obtain in the labor market has both a substitution and an income effect upon his consumption of leisure and, by the same token, upon the number of hours of work he offers for sale. A rise in the wage rate increases the (opportunity) cost of leisure and tends to cause the worker to wish to supply more labor to the market. At the same time, however, an increase in the wage rate produces an increase in income which tends to cause the worker to wish to purchase more leisure, thus reducing his hours in the labor market.

## Mincer's Innovations

To this point, Mincer's work reflects received labor supply theory. He goes on, however, to observe that labor supply cannot be analyzed solely in terms of demand for leisure, since the work-leisure dichotomy ignores other productive uses of time that are especially important in the case of married women and young people — the production of home goods and services, and investments in individual human capital through education and training. He also argues that the family rather than the individual is the appropriate unit for an analysis of labor supply. Thus, other things being equal (including family income), an increase in the market wage rate for one family member makes both the consumption of leisure and the production of home services by that individual more costly to the family, and will, as a matter of rational family decision, encourage greater market labor input by him or her. A wage increase for a family member, according to Mincer, will not result in a decrease in the amount of labor supplied by that particular family member. He also concludes that it is the expected long-run ("permanent") levels of family income that determine current consumption expenditures. "Transitory" deviations from permanent levels are compensated for by saving or dissaving, or by the temporary labor force participation of more family members — particularly wives.

It is on the basis of these refinements in the theoretical model of labor supply that Mincer has been able to resolve the apparent contradiction between the rising labor force participation rates of married women over time as incomes have increased and the fact that the participation rates of married women at a moment of time are inversely related to the incomes of their husbands.

## Female Labor Force Participation

## Working Wives and Mothers

During the last half century there has been an enormous increase in the labor force participation of married women. The interrelationships between marriage, motherhood, and the labor force, however, are complex. A job for a young woman has undoubtedly helped to finance many early marriages and contributed to declining birth rates, the working woman deciding to postpone having children in order to keep the job that enabled her to

marry. Moreover, as Clarence Long points out in his Comment on Jacob Mincer's "Labor Force Participation of Married Women: A Study of Labor Supply" (in the National Bureau's 1962 publication *Aspects of Labor Economics*), the declining burden of housework due to fewer children, better appliances, and more outside services for the home (such as prepared foods), the declining hours of work in office and factory jobs, enabling women to perform the dual function of wage earner and wife-mother, and the opening up of new job opportunities for women have all been an influence in increasing female labor force participation.

Females of any age, however, do not automatically enter the labor force. Most men must work if they are at all employable, and while their education affects their chances of getting a job, it would influence their decision to stay in the labor force only if it were so deficient as to make getting a job hopeless. Women's decisions to work depend to a large extent on how abundant and attractive the jobs open to them are. These opportunities increase rapidly with education, especially high school or above. Thus, as would be expected, women's labor force participation and education are positively correlated over most of the life cycle — except during the child-rearing years.

A study being conducted by National Bureau Research Associate Arleen Leibowitz on Family Investments in Human Capital indicates that women with more education spend more time in child care than less-educated women, in spite of the fact that the price of their time is greater and the inputs of their time to other household production activities are smaller throughout their life cycle. The use of time in child care can, of course, be considered an investment of resources in children. Leibowitz's future investigations will focus, among other things, on the way quantity and quality of time inputs by both parents affect children's achievement, and on the effects of father's absence, mother's labor force participation, and various preschool programs on measured ability.

A discussion of working wives and mothers brings to the fore Mincer's hypothesis concerning the family context of labor force behavior. A wife's decision to work is not a mere two-way choice between leisure and paid work, but a three-way choice between leisure, paid work, and unpaid housework including, of course, the care and training of children. The outcome of this three-way choice will be a family decision that will depend not only on the wife's potential market wage rate, but also on the total income position of the family, on the wife's productivity in household work and other activities outside the market, on prices of market substitutes for household goods and services, and on family tastes. Since income has a positive effect on the demand for leisure, a higher family income implies a smaller total amount of work (at home and in the market) supplied by family members. Evidence indicates that for women with similar earning power, labor force participation rates respond negatively to husbands' incomes: the more husbands earn, the less wives work. But for families with a similar income position for the husbands, the more the wife is capable of earning in the market, the more she works. Indeed, the positive response of a woman's labor force participation to her market wage rate is substantially stronger than her negative response to her husband's income.

Work and  
Child Care

Which Wives  
Work?

## **Labor Markets and the Distribution of Income**

### **Poverty Labor Markets**

The National Bureau has also been conducting studies of labor markets with special reference to the distribution of earnings and incomes. One result of this latter emphasis is the recently completed Survey of Research into Poverty Labor Markets, commissioned by the U. S. Office of Economic Opportunity. This survey consists of a collection of essays ranging from fairly general discussions of perspectives for viewing labor markets to completed results for individual research problems. David Gordon's essay, "An Economic Framework for Research on Poverty and the Labor Market," proposes a conceptual scheme for research on individual problems which combines economic and socio-psychological variables. Joseph Persky's paper, "Notes on Alienation, Job Satisfaction and the Underclass," which examines job alienation as a cumulative byproduct of the "equalizing difference" approach to wage structure, also relates closely to the discussion of socio-psychological variables. Jacob Mincer's contribution to the discussion of a research agenda, "Poverty and the Labor Market: Some Research Questions," focuses primarily on economic stimuli, highlighting the interdependencies between welfare, work, family structure, and migration. Educational production relationships, some market imperfections, and intergenerational effects are examined by Finis Welch in "Some Areas of Emphasis in Research Concerning Origins of Labor Market Poverty."

### **Minimum Wages**

The next three essays in the survey are narrower in scope than those mentioned above, but are intended to delve more deeply into some specific problems of poverty labor markets. In "Minimum Wages and Incomplete Coverage: Some Analytical Issues," Finis Welch presents a theoretical discussion of the effects of minimum wage legislation when some, but not all, firms are required to pay the minimum. Masanori Hashimoto and Jacob Mincer provide empirical estimates of the effects of minimum wages on employment and labor force participation when effects are stratified by age, race, and sex in "Employment and Unemployment Effects of Minimum Wages." They find that minimum wage hikes reduce both employment and labor force participation in the 16 to 24 age-sex-race groups. Since employment is reduced more than the labor force, unemployment is increased. Using on-the-job training as the point of reference, Sherwin Rosen constructs a model to derive optimal life-cycle earnings functions in "Learning and Experience in the Labor Market." He explores the ramifications of the model for a variety of problems associated with poverty — occupational discrimination, wage discrimination, learning options, et cetera.

### **Educational Discrimination**

Another study undertaken by Finis Welch concerning black-white differences in the return to schooling developed in part as a result of the survey prepared for the Office of Economic Opportunity. Welch begins by examining the reasons why returns to schooling have historically been low for blacks and analyzes the recent record for evidence of change. He proceeds from the hypothesis that persons who received schooling of inferior quality will earn less at a point in their careers than their colleagues who received better-quality schooling. He finds that while both schooling and experience interact to influence an individual's life-cycle earnings, data indicate that the

interaction is greater for blacks than for whites. This difference in interaction is so strong that schooling returns as a fraction of income for persons entering the work force prior to 1950 are significantly lower for blacks than for whites. For those beginning work after 1960 (whose schooling experience was affected by the Supreme Court desegregation decision of 1954), the opposite is true: returns to blacks exceed returns to whites. As black-white schooling quality differentials continue to narrow, it may be expected that returns to schooling in the form of earnings and income for blacks and whites will converge. Further investigation and analysis, particularly of the 1970 Census, will be needed to confirm this supposition.

Jacob Mincer's development of an econometric human capital earnings function and its application to the distribution of labor incomes should also be of value to analysts of poverty labor markets. The earnings function is enunciated by Mincer in a study entitled "Schooling, Experience, and Earnings," which will appear in a forthcoming National Bureau publication. The first task of the study was to derive and estimate the relation between accumulated investments in human capital of workers and their earnings. The human capital earnings function was then applied to answer two questions, How much of the existing inequality in the distribution of labor incomes can be attributed to individual differences in investments in human capital? and, Can the intricate yet rather stable patterns of the "earnings structure" be understood in terms of human capital investment behavior? The earnings function is capable of generating separate returns to schooling and to post-school, job-related investments. It also distinguishes between contributions of human capital investments, such as schooling, experience, health, and mobility. One of the major findings is that the human capital variables explain close to 60 per cent of the relative differences in individual annual earnings of male workers in 1959. This contrasts with the conclusion of a recent study by Christopher Jencks, *Inequality: A Reassessment of the Effect of Family and Schooling in America* (Basic Books, October 1972), who, by using different data and variables, finds that only 23 per cent of the differentials are explained by schooling and parental background. Mincer also found that the human capital earnings function explains over 75 per cent of the relative skill differentials in earnings of close to 500 male occupations in the United States in 1959. The implicit rate of return on the schooling component of occupational investment was in the range of 11 to 16 per cent.

In a joint investigation, Barry R. Chiswick and Jacob Mincer have applied the earnings function to a time series of changes in income inequality in the United States since 1939, with projections to 1985. They find that, aside from cyclical fluctuations, changes in the distribution of schooling and work experience have significant effects on earnings. They conclude, too, that the decline in earnings inequality between 1939 and 1949 resulted mainly from changes in employment conditions. The projections to 1985, based on labor force and school enrollment projections, *assuming no change in rates of return to schooling*, indicate no significant prospective changes in income inequality.

Barry Chiswick has also been working on regional and international comparisons of income inequality and has recently completed an analysis of

### The Human Capital Earnings Function

### Factors Affecting Interstate Income Inequality

interstate differences in the level and relative inequality of labor market income for white and nonwhite adult males. In earlier studies by Chiswick and others, an investment-in-schooling model was the only one used to generate an earnings function. While this was found to be quite effective for explaining interstate differences in the inequality and skewness of personal income, in the present study the earnings function is expanded to include the effects of labor market experience, weeks worked, and race. He finds that the most important explanatory variable is the estimated rate of return to schooling, followed by the relative inequality of weeks worked, the distribution of experience, and the distribution of schooling. Preliminary analysis for all white and nonwhite males indicates that 90 per cent of the interstate variation in relative income (or earnings) inequality can be explained in terms of these variables. For white males, however, schooling is by far the most important variable for explaining interstate differences in the level of income and earnings, while for nonwhite males, both school and weeks worked are very strong explanatory variables.

Racial  
Discrimination in  
the Labor Market

Few would doubt that racial discrimination is also, in part, responsible for earnings inequality. In a pioneering study of discrimination, *Economics of Discrimination* (published by the University of Chicago Press in 1971), National Bureau Senior Staff member Gary S. Becker presents a theoretical analysis of the labor market implications of what he calls "tastes for discrimination." Becker contends that: "Money, commonly used as a measuring rod, will also serve as a measure of discrimination. If an individual has a 'taste for discrimination,' he must act as if he were willing to pay something, either directly or in the form of a reduced income, to be associated with some persons instead of others. When actual discrimination occurs, he must, in fact, either pay or forfeit income for this privilege." Using this framework Becker analyzes theoretically the effects of four possible kinds of discrimination — by employers, by employees, by consumers, and by the government.

Archie  
Bunkerism

In a recently completed paper, "Racial Discrimination in the Labor Market: A Test of Alternative Hypotheses," which has not yet undergone National Bureau review, Barry Chiswick tests the employee discrimination hypothesis to see whether it is, in fact, operative. Using state data, he tests alternative models of labor market discrimination by examining relative income inequality among adult white males and among adult nonwhite males, when the rate of return from schooling and the distributions of schooling, age, and weeks worked are held constant. Among other things, Chiswick's evidence leads him to infer that for the country as a whole white male workers act as if they had a taste for discrimination against nonwhites. Evidence supporting the alternative hypothesis — that nonwhite male workers act as if they had a taste for discrimination against white workers — is not forthcoming.

Largely as a result of the success of its early work in human capital research, the National Bureau has expanded its efforts to understand the determinants of earnings and the distribution of income focusing on an analysis of earnings functions; a study of the distribution of employment as a component of income distribution; and an investigation of family investment in the human capital of children, particularly in the preschool

years, as exemplified by the Leibowitz study mentioned earlier.

John Hause, Lee Lillard, Sherwin Rosen, and Paul Taubman and Terence Wales have undertaken research projects that focus on analyzing the earnings function directly. Hause is analyzing lifetime income with longitudinal cross-section data from the United States and Sweden. Lillard is modeling earnings over the life cycle. Taubman is continuing the work that he began with Wales by examining the ability-education interaction in earnings functions. Rosen is examining the obsolescence and depreciation of knowledge capital.

Future  
Investigation

Jacob Mincer and James Heckman, on the other hand, are attempting to provide a better understanding of the distribution of employment. Mincer contends with a relatively broad spectrum of theoretical and empirical factors on the supply side (e.g., investments in human capital), the demand side (e.g., volatility and seasonality of demand, capital-labor substitution, specificity of training, et cetera), and unemployment differentials (including differences in duration, turnover, multiple job holdings, and so forth). James Heckman's work focuses more exclusively on the supply side, emphasizing life-cycle differences in labor supply and using consumption theory as well as production theory to shed light on the determinants of annual earnings.

## A HISTORY OF THE NATIONAL BUREAU OF ECONOMIC RESEARCH — PART II

### *The First Fifteen Years*

The original Board of Directors of the National Bureau of Economic Research included:

Professor Thomas S. Adams, Department of Economics, Yale University;  
tax adviser to the Treasury Department

Professor John R. Commons, Department of Economics, University of Wisconsin

John P. Frey, editor of the *International Moulders' Journal*

Edwin F. Gay, editor of the *New York Evening Post*, formerly head of the School of Commerce, Harvard University

Harry W. Laidler, secretary of the Intercollegiate Socialistic Society

Elwood Mead, Professor of Rural Institutions, University of California

Professor Wesley C. Mitchell, Department of Economics, Columbia University

J. E. Sterrett, of Price, Waterhouse & Co., public accountants, New York

N. I. Stone, statistician and labor manager, Hickey-Freeman Co., Rochester, New York

Professor Allyn A. Young, Department of Economics, Harvard University

In order to make the management and supervision still more representa-

tive, the following organizations were each invited to name an additional member of the Board:

American Economic Association — Professor David Friday, of the University of Michigan

American Farm Bureau Federation — Gray Silver, Washington, D. C.

American Federation of Labor — Hugh Frayne, New York

Engineering Council — W. R. Ingalls, New York

American Bankers' Association — George E. Roberts, New York

American Statistical Association — Malcolm C. Rorty

Periodical Publishers' Association — A. W. Shaw, Chicago

Industrial Relations Association of America — J. M. Larkin

National Industrial Conference Board — Frederick P. Fish

The research work was placed in charge of four men: Wesley C. Mitchell, Willford I. King, Frederick R. Macaulay, and Oswald Knauth.

Before the staff was organized, the executive committee had chosen the first subject to be investigated — namely, the national income of the American people and its distribution. From the start the staff realized that many of the items, including some of the largest, necessary for the analysis would have to be estimated on the basis of inadequate data. Thus, a system of statistical controls was set up over their work. Whenever possible, two or more estimates based on independent data would be made, and each estimate would be checked against the other. With this end in view, as well as to learn all they could about the way in which the national income was divided, the staff planned two separate estimates of the total, to be made by different hands, from different viewpoints, and based on different data — estimates whose agreement or disagreement with each other could not be known until both were completed. After much deliberation it was decided that an estimate by sources of production and an estimate of incomes received could be made for the country as a whole, and that they could be made for the most part from independent bodies of data. The years 1909 to 1919 were to be covered by the investigation.

It took longer to complete the report than had been anticipated. The mass of material to be utilized was larger than had been foreseen, and certain points required the collection of data never before assembled. Nevertheless, when the two completed estimates of national income proved to be in close agreement (the largest discrepancy in any one year was only 7 per cent), the staff felt a marked increase of confidence in their work.

The chief results of the investigation appeared in summary form at the end of 1921 in *Income in the United States: Its Amount and Distribution, I.* Volume II, giving more detailed results, sources, and methods, appeared at the beginning of 1922.

When the staff was approaching the completion of their work on income in the United States, the executive committee considered what problem

should be taken up next. After canvassing several proposals the committee decided to choose business cycles as the topic.

Several reasons justified this decision. First, the subject was considered one of great importance to all classes in the community. Second, it was a subject in which quantitative methods could be employed to great advantage. Third, while several institutions and individuals were working on certain aspects of the subject, the executive committee did not know of anyone who was planning a comprehensive survey of the whole. Meanwhile, there was a strong demand for a treatise that would put together in concise, systematic, and readily comprehensible form the results of research into the causes, character, and consequences of cyclical oscillations that affect the economic fortunes of everyone. Fourth, the staff of the National Bureau seemed qualified by past experience and interest to accomplish the task. Finally, the undertaking would enable the staff to make effective use of much of the special knowledge that they had gained in studying the fluctuations of the national income.

While plans for the work were being formulated, Herbert Hoover, secretary of commerce and chairman of President Warren G. Harding's Conference on Unemployment, asked the Bureau's staff to undertake a special job in the public interest. The Conference on Unemployment, before adjourning, had recommended that an effort be made to frame a practical program for preventing the recurrence, or at least mitigating the severity, of future periods of widespread unemployment. To supervise this work the Conference had appointed a standing committee, with Secretary Hoover as chairman. This committee recognized the need for a careful investigation into the cyclical fluctuations in employment and the respective merits and defects of various remedies proposed before attempting to formulate a policy. It was in this connection that Secretary Hoover asked the National Bureau to prepare a report on unemployment and the business cycle within six months.

The Bureau agreed to undertake the work, provided that its report would be submitted to its own Board of Directors for approval before being sent to the standing committee of the Unemployment Conference. It was also agreed that the Bureau would be free to publish its findings separately if desired, and that the work would be confined to ascertaining only the facts that would have to be considered. At Secretary Hoover's request, the Carnegie Corporation awarded the National Bureau a grant of \$50,000 to finance the undertaking.

In order to get quick results, the Bureau asked for the cooperation of several other agencies, notably the Russell Sage Foundation and the Bureau of Railway Economics. The services of individuals who were especially conversant with particular aspects of the subject were also enlisted. This project set National Bureau precedent for seeking the assistance and collaboration of outside contributors. The publication which resulted, *Business Cycles and Unemployment*, appeared in 1923. In 1926, Secretary Hoover requested a continuation of the study on a somewhat larger scale. The results of the latter appear in the two-volume work *Recent Economic Changes in the United States*, published in 1929.

Various studies growing out of the investigation into national income or

preparatory to the analysis of business cycles were also begun during the Bureau's first decade. Oswald Knauth continued updating estimates of the national income on the basis of incomes received. He also prepared a report on the geographical distribution of income by states. Willford King began collecting data bearing upon average hourly output per employee in certain industries to see whether the available data made possible any definite conclusions regarding industrial efficiency in active and dull times. Frederick Macaulay examined the relationship between interest rates and business cycles. To cover certain connections between business cycles and labor problems, the aid of Dr. Leo Wolman was enlisted. His initial investigations dealt with the relations between business cycles and the number of wage earners organized in trade unions; the effect of business cycles upon trade union policy; and cyclical fluctuations in the incomes of wage earners. Dr. Harry Jerome joined the Bureau's staff to direct a study of migration and unemployment in the United States undertaken at the request of the National Research Council and funded by the Social Science Research Council. Analyses of the structure and workings of the price system were begun under the direction of Frederick C. Mills. Wesley C. Mitchell spent most of the decade preparing *Business Cycles: The Problem and Its Setting*.

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In reviewing the National Bureau's first fifteen years of research effort, Wesley Mitchell characterized all but three of the resultant publications as studies in economic change. He summarized these publications in the National Bureau's *Annual Report* for the year 1935.

One group of reports starts with certain *factors* in economic life and describes their fluctuations through time. A second group starts with significant *periods* and shows how numerous economic factors have fluctuated during them. A third group of reports starts with *types of fluctuation* and traces the patterns they have followed in different economic activities, periods and countries.

After enumerating within these categories the publications issued and those in advanced stages of preparation, Mitchell continued:

Few of our volumes can be called tracts for the times. They aim at a broader significance and a more lasting usefulness than is attained by studies of current issues. Nevertheless they have immediate practical value as is shown by the wide use made of the National Bureau's findings by judges, legislators and administrative officials, business executives and labor leaders, thoughtful journalists and realistic economists. Their scientific value is objectively established by their citation in almost all serious books, both foreign and American, that appear nowadays upon subjects that we have studied. We seem justified in believing that the policy of putting most of our energy into the laborious task of determining as accurately as possible the relative importance, the inter-relationships and the behavior of fundamental economic processes is bearing the fruits we hoped for and winning a gratifying recognition. A hasty survey of problems that catch the attention of the public for brief periods would bring us more transient publicity; it would not be so useful to public welfare in the long run, or promote so effectively the aims set forth in the National Bureau's charter. Research of the sort we do is slow and costly; but its results are cumulative and enduring.

## PROFILES

Initially the National Bureau's Board of Directors met once each year to transact formal business (such as the appointment of new directors, a review of the budget, et cetera), discuss research under way, and consider the selection of new projects to be undertaken. As the Bureau grew in size and scope, however, and as the number of Board members increased, a second and somewhat less formal meeting became necessary. Although no guidelines have been established to direct the content of each meeting, the September meeting usually focuses on formal business and a discussion of potential undertakings. The April gathering is less formally structured and is primarily designed to promote dialog between Board and staff members concerning projects under way and speculation about future research which will develop as an outgrowth of current studies. Selected Board members also serve on an executive committee and a finance committee, each of which meets periodically between Board meetings to transact business and render decisions on problems requiring immediate action.

The amount of time and effort which the above meetings require on the part of each Board member is significant — papers detailing the topics to be discussed must be reviewed and considered and decisions must be carefully weighed. Nevertheless, the Board members' duties do not end here. They must also review, comment upon, and authorize (or veto) all National Bureau manuscripts before publication can be considered.

As exemplified by the directors profiled in this issue of the *National Bureau Report*, National Bureau Board members engage in a multitude of business, cultural, social, religious, and civic affairs. The insight which they gain from these activities is of significant value in rendering decisions that will shape the National Bureau's development.



**Eli Goldston,**

astride an elephant, graced the cover of a 1968 issue of *Fortune* over the caption "The Man Who Taught a Corporate Elephant to Dance." He advanced upon the pachyderm in question, Eastern Gas and Fuel Associates of Boston Massachusetts, equipped with four degrees from Harvard: A.B. 1942, Harvard College; I.A. (Industrial Administrator, a wartime degree) 1943; M.B.A. 1946, Harvard Business School; and L.L.B. 1949, Harvard Law School.

After completing a stint as a Lieutenant in the U. S. Navy Supply Corps during World War II and receiving his law degree, Mr. Goldston joined the law firm of Hahn, Loeser, Freedheim, Dean & Wellman. Soon he became a partner in the law firm and president of Midland Enterprises Inc., a Cin-

cinnati, Ohio firm whose principal operating subsidiary was The Ohio River Company, a major barge line headquartered in Cincinnati. In 1961 Eastern Gas and Fuel Associates acquired Midland, and he joined Eastern as executive vice president and trustee. He became president in 1962 and chief executive officer in 1963. Today, Mr. Goldston is also chairman and a director of Eastern's thirteen subsidiary companies, which have operations in the bituminous coal, gas utility, river and ocean barge, and coke industries.

A director of a number of business firms, including The First National Bank of Boston, First National Boston Corporation, Raytheon Company, Arthur D. Little, Inc., John Hancock Mutual Life Insurance Company, and United Brands Company, Mr. Goldston is also active in professional and trade association affairs. He has been elected to the American Law Institute and the American Academy of Arts and Sciences. He is a director of Hebrew Union College and the New England Aquarium and a member of the board of advisors of the Ford Foundation Energy Policy Project.

Mr. Goldston has also served on and been the chairman of various municipal, state, and federal committees and commissions and has been active in civic and welfare activities in Ohio and Massachusetts. The Boy Scouts of America, the Boston-Kyoto Sister City Committee, the Afro-American Center of Fine Arts, Boston Museum of Fine Arts, Combined Jewish Philanthropies, and the National Multiple Sclerosis Society have all benefited from his counsel. In addition, he is a director of the Boston Urban Foundation and Opportunity Funding Corporation, and he was campaign chairman for the 1970 Massachusetts Bay United Fund.

Boston College, Babson College, and Bates College have awarded Mr. Goldston honorary degrees. He serves on visiting committees at Harvard, Massachusetts Institute of Technology, and Carnegie-Mellon University. He has lectured at these and other universities and at the Salzburg Seminar in American Studies in Austria. He delivered the Diebold Lecture at the Harvard Graduate School of Business in 1970, and the Fairless Memorial Lectures at Carnegie-Mellon in 1971 (the latter were recently published under the title *The Quantification of Concern: Some Aspects of Social Accounting*). During the first half of 1972, Mr. Goldston was on sabbatical from Eastern as a Visiting Fellow at the London Graduate School of Business Studies, where he lectured, studied, and wrote on the subjects of asset management and the social responsibility of business. Mr. Goldston began serving as a National Bureau director at large in September 1968.



**J. Irwin Miller,**

chairman of the board of the Cummins Engine Company, Inc., was also appointed a National Bureau director at large in September 1968. He re-

ceived his B.A. degree from Yale University in 1932 and an M.A. from Oxford University in England in 1933. He also holds a dozen honorary degrees from such institutions as Yale University, Princeton University, Dartmouth College, the University of Notre Dame, Case Institute of Technology, and Columbia University. He is a Fellow of the Yale Corporation and honorary rector of Dubuque University.

Upon returning from England in 1934, Mr. Miller joined the Cummins Engine Company of Columbus Indiana and was soon appointed vice president and general manager. He rose to an executive vice presidency in 1944, the presidency in 1945, and he has been chairman of the board since 1951. He is also chairman of the board of the Irwin Union Bank and Trust Company. He serves as a director of the Chemical Bank and the American Telephone and Telegraph Company, as a trustee of The Ford Foundation, the Museum of Modern Art, and the Urban Institute, and he is a member of The Business Council, The Conference Board, and the Steering Committee of the National Urban Coalition.

During President Eisenhower's administration, Mr. Miller was named a member of the Commission on Money and Credit. He returned to government service in 1965 when President Lyndon Johnson asked him to serve as chairman of a Special Committee on U. S. Trade with East European Countries and the Soviet Union. During 1966 and 1967 he was chairman of the National Advisory Commission on Health Manpower. Subsequently, he served as a member of the President's Commission on Postal Organization and the President's Committee on Urban Housing.

Mr. Miller has long been active in the World Council of Churches and the National Council of Churches of Christ in the U.S.A. He was president of the National Council from 1960 through 1963 and a member of the Executive Committee of the Central Committee of the World Council from 1961 through 1968. Most recently, he was appointed by the World Council to the Executive Committee of the Commission of the Churches on International Affairs.

In 1968, J. Irwin Miller was chosen *Saturday Review's* Businessman of the Year. The article announcing his selection was entitled "The Revolutionary Role of Business," and one of its quotations of him seems to sum up many of his personal commitments:

It is ridiculous ever to forget that you and your business are each implanted in the society of the moment and influenced by the forces of history, and will flourish according as that society is healthy and those historical forces are channeled in propitious directions. We cannot ignore the world of our time. We had better understand it.



**Donald B. Woodward,**

coauthor of three books concerning economics — *Primer of Money* (with M. A. Rose), *Inflation* (with M. A. Rose), and *Prosperity: We Can Have It If We Want It* (with Murray Shields) — received no formal training as an economist. After receiving his A.B. degree from Indiana University in 1928, he went to work as a Washington reporter for the *Wall Street Journal*. His first beat was the Federal Reserve Board, an assignment which required at least a fundamental knowledge of economics. Through perseverance and the assistance of his colleagues, he mastered the rudiments — mastered them so well, in fact, that he soon left the *Wall Street Journal* to become financial editor of *Business Week*.

In 1933 he joined the staff of economists at Moody's Investors Service, where he remained for seven years. During this time he was named a consultant to the National Recovery Administration and to the Federal Reserve Board, and he was an instructor in Bank Investments at Columbia University. He left Moody's in 1940 to become research assistant to the president of the Mutual Life Insurance Company of New York, and while rising to the position of Mutual's vice president for research, he also served as consultant to the U. S. Treasury Department and the Department of State. In 1953 he joined the Vick Chemical Company, which subsequently became Richardson-Merrill Inc., as an economist and director, and in 1961 became a managing partner of A. W. Jones & Company, an investment partnership, from which he retired in 1969.

In addition to the federal government appointments mentioned above, Mr. Woodward has also served on the International Development Advisory Board, and was staff director of the President's Citizen Advisors on the Mutual Security Program. He was secretary of the Committee on Public Debt Policy, and secretary of the Committee on the History of the Federal Reserve System.

During the early 1950's he was a visiting lecturer in the Graduate School of Business at the University of Virginia. He has also been a member of the faculty of the Graduate School of Banking of the American Bankers Association.

Today Mr. Woodward remains active as a director of the Piedmont Management Company and as a trustee and member of the Investment Committee of the Lincoln Savings Bank of Brooklyn, New York. He is also a trustee and member of the Executive and Finance Committees of the Brookings Institution in Washington, D. C., and a member and former chairman of the Conference of Business Economists. Among numerous other affiliations, he lists such memberships as the Cosmos Club of Washington, D. C.,

the National Press Club, the University Club of New York City, and the University Club of Washington, D. C.

Mr. Woodward has been a National Bureau director at large since 1955. He served as treasurer of the organization from 1962 to 1970, and he is now a member of both the Executive and Finance Committees of the Board.

## NEW PUBLICATIONS

### **ECONOMETRIC MODELS OF CYCLICAL BEHAVIOR, VOLUMES I AND II**

A record of the proceedings of the 36th Conference on Research in Income and Wealth

Bert G. Hickman, editor

Price: \$17.50 per volume (Hard Cover)      \$7.50 per volume (Paperback)

Published: May 8, 1972

The scientific testing of econometric models is still in its infancy. This two-volume work, however, presents a pioneering attempt to analyze the cyclical properties and forecasting performance of several large-scale quarterly econometric models of the U. S. economy. The models discussed were constructed by econometricians at Wharton, OBE, Brookings, and NBER.

With one exception, the model-builders have not produced mathematical versions, or translations, of particular business-cycle theories. In Professor Hickman's words, "Their purpose was to specify and quantify empirically valid behavioral hypotheses about the decisions and actions of various economic agents, and to integrate the estimated relationship into a complete system capable of determining the values of all the current endogenous variables for known, or assumed, values of the predetermined variables."

Through the use of simulation techniques, the dynamic properties of contemporary macroeconomic models are studied in both deterministic and stochastic contexts. The much debated question reappears: Are cyclical fluctuations caused by stochastic disturbances impinging on a dynamically stable response mechanism? For their stochastic simulations, the model-builders have employed spectral methods to ascertain whether crucial endogenous variables display cyclical periodicity.

What constitutes good forecasting procedure? The material has been classified under three headings: *ex post* predictions, *ex ante* forecasts, and forecasts of cyclical turning points. One contributor argues that mechanical adjustment procedures function as well as economically based adjustment techniques. Others treat at length the question of *ex ante* forecasting — which is not to be considered a simple conversion of *ex ante* predictions of exogenous variables into *ex ante* forecasts of endogenous variables. "It is here that science shades into art...."

## INTERNATIONAL COMPARISONS OF PRICES AND OUTPUT

A record of the proceedings of the 37th Conference on Research in Income and Wealth

D. J. Daly, editor

Price: \$12.50

Published: April 13, 1972

In this volume the uses of national income concepts and disaggregated trade figures to appraise the supply and output of developed and developing countries are examined. The topics, discussed from a wide variety of viewpoints, include problems of economic growth and income differences between countries, economic problems of developing countries and the scope for relative prices in planning for such countries, international trade and speculation, economic integration in Latin America, and comparative productivity levels in the United States and the Soviet Union.

One set of papers focuses primarily on price comparisons. The theory of price index comparisons is examined by Sidney Afriat in an articulated mathematical exposition of index number theory, beginning with utility theory. D. J. Daly surveys the uses to which intercountry comparisons are put in economic analysis, with special reference to the United States and Canada. He emphasizes the extent to which the data reveal differences in production conditions between these two countries. The conflict between growth and efficiency that confronts developing countries is explored by Gustav Ranis. Drawing on the experience of Korea and Pakistan, he illustrates the point that "the role of relative prices in planning for the transition from colonial agrarianism, through import substitution, to a more market-oriented and broadly based growth effort is a central one" in a country's ability to transform its economy into greater self-reliance. Robert Lipsey and Irving Kravis use new data for four industrialized countries to assess the elasticity of substitution as a variable in world trade. They suggest, among other things, that the degree to which exports respond to price changes is not constant over time, nor among commodities.

A second group of papers provides new data on international price and income comparisons. Abram Bergson details comprehensive estimates of comparisons of output and other variables in the United States and the USSR. Joseph Grunwald and Jorge Salazar provide a progress report on their project on Latin American economic integration and on the program of comparative studies being coordinated at the Brookings Institution with the cooperative research effort of a number of Latin American statistical organizations. Differences in prices between countries and the contrasts with official exchange rates are explored, methodological questions are discussed, and some preliminary results of the research program are presented. Concentrating on selected capital goods industries, Barend A. de Vries points up the large contrasts between prices of identical items in the developed and developing countries.

## **MENTAL ABILITY AND HIGHER EDUCATIONAL ATTAINMENT IN THE 20th CENTURY**

A joint publication of the Carnegie Commission on Higher Education and the National Bureau of Economic Research

Paul Taubman and Terence Wales

Price: \$1.50 (available only in paperback)

Published: May 15, 1972

Despite the explosive growth of higher education since World War I and the appearance of "open access" colleges and universities, Taubman and Wales find that the average mental ability of college students has not declined — in fact, it has increased noticeably. They provide empirical evidence that from 1920 to 1960 the proportion of high ability students attending college has substantially increased. "In the 1920's only about 60 per cent of the most able high school graduates entered college, whereas by the 1960's the corresponding figure was about 90 per cent."

There is also evidence that existing colleges and universities have increased the academic quality of their students, while new colleges and community colleges meet the needs of the less able. In fact, according to the report, as compared to the 1920's, "the more able students may be receiving a better education now."

The authors contend that in the middle to late 1920's college admissions were largely determined by a parent's ability to pay. After World War II, however, the percentages of students continuing to college in the upper IQ brackets rose sharply, partly because middle-income families could afford to send their above-average children to college and partly because the advent of federal scholarships and loans allowed more able students with limited means to attend college.

This report may be purchased from the Carnegie Commission on Higher Education, 1947 Center Street, Berkeley, California 94704 (attention: Verne A. Stadtman)

## **THE CHANNELS OF MONETARY EFFECTS ON INTEREST RATES**

Phillip Cagan

Price: \$5.00

Published: July 6, 1972

Can Federal Reserve monetary actions affect credit flows? The view that they do reflects an emphasis on credit lending, rather than money creation, the author points out. He finds that monetary policy has little direct impact on credit flows. It does, however, affect interest rates due to money creation. Nevertheless, Cagan notes that "the first round effects of money creation associated with an expansion of credit are but the tip of an iceberg." The

initial impact on particular financial markets is outweighed by the subsequent rounds of portfolio adjustments.

More specifically, this volume deals with two major theories concerning monetary effects on interest rates — the portfolio effect and the credit effect. The portfolio effect focuses on the substitutions people make between money and holdings of other assets when actual and desired money balances are not equal. These substitutions initially change interest rates. The credit theory, on the other hand, emphasizes the role of banks in supplying loanable funds, on the premise that an expansion of bank credit has a permanent effect on interest.

The author finds that by regressing interest rates on two variables representing two sources of money growth, the portfolio effect accounts for most of the initial inverse association between monetary growth and interest rates. The credit effect is not usually statistically significant.

The statistical analysis indicates that, no matter how money is created, monetary growth reduces interest rates initially, but this first reaction is weak and most of the effect on interest rates comes in subsequent rounds through the public's adjustment to monetary growth by a corresponding increase in the growth rate of expenditures. The author has also discovered that the movement toward lower interest rates in response to monetary growth appears to reach its full effect in one to two quarters, and that, after that, the movement changes direction, with interest rates surpassing their original level in three to five quarters.

The results of this study are pertinent to various issues in monetary theory and policy that deal with the channels of monetary effects. One example is the emphasis that Federal Reserve policy has long placed on credit market conditions as being more important than monetary aggregates. But portfolio adjustments work through a variety of channels rather than exclusively through credit markets. Another example is the "bills only" controversy of the early 1960's, in which the question was whether the Federal Reserve open-market operations should be conducted in Treasury bills or bonds. The author maintains that the amount of money created is the crucial variable, rather than how it is created.

#### **A SURVEY OF EMPIRICAL MODELS OF URBAN LAND USE: SUGGESTIONS ON RESEARCH OBJECTIVES AND ORGANIZATION**

H. James Brown, J. Royce Ginn, Franklin J. James, John F. Kain, Mahlon R. Straszheim, with a foreword by John R. Meyer

Price: \$5.00

Published: August 28, 1972

During the past fifteen years virtually every major metropolitan area in the United States has undertaken a metropolitan land-use-transportation

study, but the results have been poorly understood and applied. Early transportation system studies were actually highway system studies, with research limited to the effects of the highway system on the conditions faced by people driving their automobiles from one point to another. As a result the relationship between transportation and metropolitan development has not been made clear. The fact that urban transportation is one of the primary factors helping to shape the distribution of jobs and homes spatially has been poorly understood. Neighborhood patterns, land values, income distribution, and many other factors contributing to the overall quality of urban living are also affected in part by transportation availability.

As the six models discussed in this survey make clear, tremendous advances have occurred in the sophistication of the techniques and breadth of analysis employed to analyze the impact of transportation systems. The volume provides an overview of the institutions and methodology of current land-use-transportation planning and a chapter-by-chapter detailed study of land-use models developed for five major metropolitan areas. Six distinct models are reviewed: (1) Puget Sound Regional Transportation Study; (2) Southeastern Wisconsin Regional Planning Commission; (3) Atlanta Area Transportation Study; (4) Detroit Regional Transportation and Land Use Study; (5) Bay Area Simulation Study; and (6) Bay Area Transportation Study Commission. The authors criticize the models and suggest possible improvements in current modeling techniques, with emphasis on the technical and methodological problems of organizing research and building models for transportation planning. Improved land-use models, the authors contend, can be extremely useful in the debates that inevitably arise around transportation system planning.

## REPRINTS

The following papers by Bureau staff members are available from the National Bureau in reprint form. Please address requests to the Publications Department.

Chiswick, Barry R., and Jacob Mincer, "Time Series Changes in Personal Income Inequality in the United States from 1939, with Projections to 1985," *Journal of Political Economy*, Vol. 80, No. 3, Part 2, May/June 1972.

Fabricant, Solomon, "Inflation and Current Accounting Practice: An Economist's View, *The Journal of Accountancy*, December 1971.

Juster, F. Thomas, and Paul Wachtel, "Anticipatory and Objective Models of Durable Goods Demand," *The American Economic Review*, Vol. 62, No. 4, September 1972.

\_\_\_\_\_, "Inflation and the Consumer," *Brookings Papers on Economic Activity*, September 1972.

Morton, Alexander L., "Intermodal Competition for the Intercity Transport of Manufactures," *Land Economics*, November 1972.

Schwartz, Anna J., "The Aliber, DeWald, and Gordon Papers, A Comment" (Papers presented at The American Bankers Association Conference of University Professors held at Lake Arrowhead, California, September 1970), *Journal of Money, Credit and Banking*, November 1972.

#### MIMEOGRAPHED AND XEROXED PAPERS

The following papers by Bureau staff members are available upon request from the authors. The Bureau does *not* have a supply of these studies.

Cagan, Phillip, and Anna J. Schwartz, "How Feasible Is a Flexible Monetary Policy?", presented at the conference in honor of Milton Friedman at the University of Virginia, October 1972.

Dresch, Stephen P., "Assessing the Differential Regional Consequences of Federal Tax-Transfer Policy," *Proceedings* of the Regional Economic Development Research Conference, April 1972.

\_\_\_\_\_, "Blinded Economics: Higher Education and Public Policy," a revision of remarks before the Woods Hole Conference of the Panel on the Benefits of Higher Education, National Research Council, July 8, 1972.

\_\_\_\_\_, "The Economic Potential of Disarmament Alternatives," July 1972.

\_\_\_\_\_, "Taxation and Fiscal Structure: Prospects and Alternatives," summary revision of a paper prepared for the Office of the Secretary, U. S. Department of Health, Education, and Welfare, October 1972.

Hughes, Edward F. X., "Alcoholism," chapter in *Dynamics of Health and Disease*, edited by C. M. Marshall, November 1972.

Juster, F. Thomas, Introduction to NBER-Carnegie Commission report *Education and Human Behavior*, edited by F. Thomas Juster, forthcoming.

Kain, John F., and John M. Quigley, "Housing Market Discrimination, Home Ownership, and Savings Behavior," *American Economic Review*, June 1972.

\_\_\_\_\_, "Note on Owner's Estimate of Housing Value," *Journal of the American Statistical Association*, December 1972.

Lipsey, Robert E., and Merle Yahr Weiss, "Analyzing Direct Investment and Trade at the Company Level," presented at the annual meeting of the American Statistical Association, August 1972.

Maitha, J. K., "A Short-Term Employment Function for Kenya Manufacturing," *Eastern Africa Economic Review*, December 1972.

**FINANCIAL STATEMENTS OF THE  
NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.  
Years Ended June 30, 1972 and 1971**

***Report of Independent Certified Public Accountants***

The Board of Directors  
National Bureau of Economic Research, Inc.

We have examined the statement of assets, liabilities and funds of National Bureau of Economic Research, Inc. as of June 30, 1972 and 1971 and the related statement of changes in fund balances for the years then ended. Our examinations were made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. However, with respect to contributions and subscriptions received from the general public, it was not practicable to extend our examinations beyond accounting for amounts so recorded.

In our opinion, the financial statements identified above present fairly the financial position of National Bureau of Economic Research, Inc. at June 30, 1972 and 1971 and the results of its changes in fund balances for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis during the periods except for the change, with which we concur, in accounting for furniture and equipment as described in Note 1 to the financial statements.

**Hurdman and Cranstoun, Penney & Co.  
Certified Public Accountants**

New York, New York  
August 18, 1972

**EXHIBIT "A"**  
**Statement of Assets, Liabilities and Funds**  
**June 30, 1972 and 1971**

The accompanying notes are an integral part of the financial statements.

**EXHIBIT "B"**  
**Statement of Changes in Fund Balances**  
**June 30, 1972 and 1971**

	1972		1971	
	Current Fund		Sustaining Fund	
	<u>Restricted</u>	<u>Unrestricted</u>	<u>Restricted</u>	<u>Unrestricted</u>
<b>Revenues:</b>				
Grants (Note 1) .....	\$ 2,302,349	\$ 450,000	\$ 1,105,653	\$ 475,000
Contributions and subscriptions .....	366,235			390,875
Interest and dividends .....	336,594			378,032
Royalty income and sales of publications and other services .....	89,858			103,135
Gain (loss) on sales of marketable securities .....	1,222	(120,600)	439	\$ 647,373
Miscellaneous .....	515			3,930
<b>Total revenues</b> .....	<b><u>2,302,349</u></b>	<b><u>1,244,434</u></b>	<b><u>1,105,653</u></b>	<b><u>1,351,411</u></b>
 <b>Expenditures:</b>				
Research programs (Note 1) .....	2,302,349	1,100,634	1,105,653	1,568,241*
Fund raising .....		49,389		40,896*
Distribution of publications .....		36,491		49,075*
General publicity .....		30,086		11,393*
General and administrative .....		834,041		838,586
Applied to projects (Note 1) .....		(634,041)		(838,586)*
<b>Total expenditures</b> .....	<b><u>2,302,349</u></b>	<b><u>1,216,600</u></b>	<b><u>1,105,653</u></b>	<b><u>1,669,605</u></b>
<b>Excess (deficiency) of revenues over expenditures</b> .....	<b><u>—</u></b>	<b><u>27,834</u></b>	<b><u>129,400</u></b>	<b><u>(318,194)</u></b>
 Net increases (decreases) in advance payments received for restricted research projects (Note 1) .....	(14,598)			149,489
 <b>Transfers from sustaining to unrestricted fund</b> .....		<b><u>12,908</u></b>	<b><u>(12,908)</u></b>	<b><u>573,622</u></b>
Net change for year .....	(14,598)	40,742	116,492	255,428
 <b>Fund balances (deficit), beginning of year</b> .....	<b><u>415,216</u></b>	<b><u>165,319</u></b>	<b><u>8,212,553</u></b>	<b><u>265,727</u></b>
<b>Fund balances, end of year</b> .....	<b><u>\$ 400,618</u></b>	<b><u>\$ 206,061</u></b>	<b><u>\$ 8,329,045</u></b>	<b><u>\$ 415,216</u></b>
				<b><u>647,373</u></b>

\* Restated for comparative purposes (see Note 1).  
 The accompanying notes are an integral part of the financial statements.

## NOTES TO FINANCIAL STATEMENTS

June 30, 1972 and 1971

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### 1. Accounting policies

#### *Grants and contracts*

National Bureau of Economic Research, Inc., undertakes specific research projects funded by United States Government agencies and certain private organizations under restricted grants and contracts providing for reimbursement of specific expenditures. Funds advanced in excess of such expenditures are returnable to the grantor.

Revenues from restricted grants and contracts are recognized to the extent that amounts reimbursable under the terms of the grants or contracts are expended. Amounts received in excess of sums spent are recorded as restricted fund balances until such funds are expended. Reimbursable amounts generally include corporate general and administrative expenditures applied to projects based on stipulated rates; for certain projects, provisional rates are used which are subject to review. Commencing with the current year, general and administrative expenditures not applicable to reimbursable projects have been allocated to all other Bureau projects based on direct expenditures charged to such activities. Prior to June 30, 1971, the Bureau had followed the practice of allocating such expenditures based on estimated rates. This change had no effect on total expenditures or fund balances. The applicable components included within the caption "Expenditures" in the accompanying statement of changes in fund balances for the year ended June 30, 1971 have been restated to conform with the classifications used in the current year.

The Bureau also receives unrestricted grants which are recognized in current revenues as fixed payments become due in accordance with grant terms.

#### *Furniture and equipment*

Furniture and equipment are depreciated using the straight-line method over the following estimated useful lives:

Furniture .....	10 years
Equipment .....	5 years

Purchases made since June 30, 1971 have been capitalized as fixed assets and, during the year ended June 30, 1972, depreciation thereon amounted to \$1,300. Prior to June 30, 1971, the Bureau's practice was to charge such purchases to current expenditures and the change was made to provide a more meaningful matching of revenue and expenditures; the effect thereof on fund balances at June 30, 1971 is immaterial.

#### *Leasehold improvements*

Improvements to leased facilities are being amortized on a straight-line basis over the lives of the appropriate leases. For each of the years ended June 30, 1972 and 1971, \$1,639 was so amortized and charged to the current fund.

#### *Marketable securities*

Marketable securities are stated at cost, exclusive of brokerage commissions which are charged to expenditures as incurred.

### 2. Sustaining fund

The sustaining fund balance consists primarily of the original amounts of five grants from foundations, plus accumulated net gains from sales of investments, reduced by amounts transferred to the current fund, as authorized by the Executive Committee, to partially finance research expenditures. There are no donor-imposed restrictions on the use of principal or income from any of these grants.

### 3. Taxes

The Bureau qualifies under Section 501(c) (3) of the Internal Revenue Code of 1954 as a publicly supported organization that is exempt from Federal income tax.

### 4. Commitments

The Bureau occupies office space under four leases which expire in 1974 and 1979. During the years ended June 30, 1972 and 1971, aggregate rentals amounted to \$218,200 and \$183,040, respectively.

On March 3, 1972, the Bureau entered into an agreement with an employee union providing for vacation and sick leave pay, annual cost of living increases, and other benefits for covered employees.

## NATIONAL BUREAU REPORT

**National Bureau Report** is exempted from the rules governing submission of manuscripts to, and critical review by, the Board of Directors of the National Bureau. Each issue, however, is reviewed and accepted for publication by the Research Committee of the Bureau and a standing committee of the Board.

**National Bureau of Economic Research** is a private, nonprofit organization founded in 1920 as a center for independent and impartial economic research. In the belief that such research can contribute significantly to the sound treatment of economic problems, it has sought to conduct its activities under conditions that safeguard the scientific nature of the findings and that help make them authoritative and acceptable to persons of different interests and opinions. The National Bureau is supported in part by grants from philanthropic foundations and business associations for particular studies, in part by investment income on capital-sum grants, and in part by unrestricted contributions and subscriptions from companies, banks, labor organizations, foundations, and individuals.

Further information regarding contributions and subscriptions may be obtained from the office of the Vice President—Executive Secretary.

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**National Bureau Report**, with occasional supplements, is issued several times a year by the National Bureau of Economic Research, Inc., 261 Madison Avenue, New York, New York 10016; telephone (212) 682-3190. It is distributed without charge to Bureau contributors, subscribers, and others interested in the field of economic research. Inquiries may be addressed to Mrs. Nancy Steinthal.

