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ECONOMICS AND THE ENVIRONMENT

A cartoon published in the *New Yorker* depicts an industrialist looking out of his office window at his factory's billowing smoke stacks. In front of the factory gates a forlorn figure holds up a placard that reads, "We have only 35 years to go." The caption says, "Boy, that shook me up for a minute. I thought it said three to five years." Fortunately, the exertion of corporate consciousness, prodded perhaps by public pressure, is rendering this commentary invalid. Private and public enterprises are focusing increased attention and resources on problems of environmental concern. The Bureau's participation in this research area is evidenced by two conference addresses which appear together in this issue as a *Supplement* to the *National Bureau Report*.

Economic Growth and the Environment

The Bureau's president, John R. Meyer, in his address to the Seventh Environmental Control Seminar sponsored by the Western Electric Corporation outlines the various approaches the economics profession has taken in tackling the dual problem of establishing and maintaining environmental standards in an industrialized growth economy. In his paper "Setting Environmental Standards: An Economist's View," he concludes that economists have come a long way toward the solution of the problem of "negative externalities" first recognized in the nineteenth century.

Not only has economic growth created negative side effects for our environment, some would claim these negative effects override the benefits from the greater quantities of goods and services. These anti-growth advocates claim that ever-increasing consumption of an ever-increasing population results in unbearable strains on our resources. The implication is that we can no longer afford to pursue the goal of economic growth.

Edward K. Smith, a Bureau vice president, in his address, "Growth: Meeting the Challenge," to the Northeast Industrial Developers Association's annual conference highlights recent National Bureau research in this area. He presents the findings of William Nordhaus and James Tobin ("Is Growth Obsolete?" *NBER's Fiftieth Anniversary Colloquium V)* that our growth *is* real, both materially and in terms of economic welfare, and that they have *not* found evidence to support the fear that the scarcity of natural resources must arrest economic growth. Population of course cannot continue indefinitely and is already slowing down. But even with zero population growth, there is no reason to shut off economic growth. Smith, however, goes still further and points out the inherent social and political dangers in anti-growth attitudes. The choice before us, he says, is not to slow down or to stop growth but to direct it as best as we can into useful and socially productive channels.

Economic Analysis and Human Fertility

Although it is common thinking today that population growth cannot continue indefinitely, until quite recently very little attempt was made to apply current tools of economic analysis to the area of human fertility. As Richard Easterlin noted in *The American Baby Boom in Historical Perspective* (an Occasional Paper published by the National Bureau in 1962), "The attitude of economists toward population growth is curiously ambivalent. The effects of population growth are accepted as important and have been accorded considerable analytical attention. . . . With regard to the causes of population growth, however, the attitude of economists can best be characterized as laissez-faire." Today, analysis of the causes of population growth stands as one of the goals of the National Bureau's population studies program, discussed in the next section of the *Report.*

THE NBER POPULATION STUDIES PROGRAM

For many years economists accepted variations in rates of population growth and family size as data that helped explain various economic phenomena but could not themselves be explained in terms of economic theory. In 1958, however, Gary S. Becker, a member of the National Bureau's senior research staff, delivered the paper "An Economic Analysis of Fertility" before the Universities-National Bureau Conference on Demographic and Economic Changes in Developed Countries, and thereby broke ground for an analysis of family size decisions within an economic framework.

Economic Theory of the Family

Robert J. Willis, a National Bureau research associate, notes in "A New Approach to the Economic Theory of Fertility Behavior" (presented at a joint conference of the Population Council and the National Bureau, and published in the supplement to the March/April 1973 issue of the *Journal of Political Economy)* that this framework might be called the "economic theory of the family." The family, or household, is treated as a complex social institution in which the interdependent and overlapping life cycle behavior of the individual members and the family unit as a whole is determined by the interaction of the preferences and capacities of its members with the social and economic environment. It may be compared to a small multiproduct firm, endowed with time, a rate for converting time into money (a wage rate), and perhaps nonhuman wealth yielding property income. By utilizing these endowments or resources the household produces the things that give it satisfaction. By contrast, received theory of consumer behavior has rested on the view that the household attempts to maximize satisfaction obtained directly from the services of goods purchased in the market place.

Children: Consumption and Production Goods

For most parents children are a source of satisfaction. Accordingly, for purposes of analyzing population growth within an economic framework, children may be regarded as a consumption good: they are assumed to provide "utility" or services. The household produces these child services by spending time and money maintaining the child and affecting the child's quality. A given level of child services can be produced from various combinations of the number and quality of children. Moreover, children may sometimes provide money income to the household, particularly in rural families and less economically developed areas in general.

While it may seem artificial, and perhaps even immoral, to rank children with cars, houses, and machinery, this classification permits economists to relate the "demand" for children to a well-developed body of economic theory.

Problems Posed by the Subjective Characteristics of Fertility Behavior

The demand for children within a given population is reflected in its fertility behavior – age and income levels of parents at the time of children's births, the timing and spacing of children, the number of children within households, et cetera. As Willis notes in the paper cited above, the principal problem in analyzing fertility as a form of economic behavior is one of definition – how to define (conceptually and operationally) satisfactory measures of the costs and satisfactions children represent to their parents, in a manner consistent with the distinctive characteristics of fertility behavior. For example, childbearing and child rearing are nonmarket activities in which there are few transaction prices to provide information about the cost and value of children – since parents are both demanders and suppliers of children there are no formal transactions. Then, too, wide variations are observed from family to family and from culture to culture in parental expenditures of time and money on bearing and rearing children. So, within the scope of laws and mores, parents may exercise considerable discretion in expenditures for shaping the characteristics and activities of their children. Even the motives for having children may include both the direct satisfaction children are expected to provide and the indirect satisfaction they may render by working in the household or remitting money income to their parents. Thus, the "demand" for children may be motivated by consumption, saving, or investment considerations.

The fact that parents cannot exercise complete and costless control over the number and timing of their children presents yet another problem. A couple may influence the probability of conception and, given conception, the probability of the pregnancy resulting in live birth. Similarly, the probability of a child's survival will depend on choices made by parents as well as on environmental conditions outside parental control. In addition, the economist is faced with the difficulties of defining the appropriate units of analysis within a household. Decisions to have children and decisions concerning the age at marriage and characteristics and preferences of the marital partners are intertwined. Finally, as children mature they have an independent effect on family decisions. To sum up — there seems to be no lack of analytical or empirical problems to be solved in this area of research.

A Theoretical Model of Fertility Behavior

In an attempt to accommodate some of these issues, economists measure the cost of a child in terms of the opportunities forgone as a result of having it, and the satisfaction derived from a child, in terms of children's characteristics that give rise to utility. In order to focus on specific inherent problems, Willis has constructed a theoretical model of fertility behavior under a set of given assumptions. Accordingly, husband and wife with given economic and demographic characteristics, are considered to adopt at the outset of marriage a lifetime plan for childbearing, and for expenditures of time and money on children and other sources of satisfaction. The household's utility function reflects the tastes and preferences of all family members as they are taken into account by the husband and wife, who are assumed to make all family decisions. The couple is assumed, further, to have perfect and costless control over its fertility, and to possess perfect foresight concerning all relevant demographic and economic variables over the course of their marriage. Thus, the lifetime plan adopted at marriage coincides with observed behavior regarding completed fertility. These assumptions simplify the complex and dynamic interconnections between fertility, family formation, and family behavior. This is the purpose of any model — it provides a framework within which the social scientist can sort out the effects of certain variables on observed behavior. The assumptions can also be altered. For example, the assumption of perfect fertility control could be replaced by a theory of imperfect fertility control, or the assumed date of marriage and characteristics of marital partners could be replaced by a theory of marriage.

The limitations that Willis imposes, however, do not render the model unfit to explain empirical evidence. His model emphasizes, for example, that the cost of children is an increasing function of the value of the wife's time which, in turn, is equal to the wife's market wage if she works, and is an increasing function of her husband's income if she does not work. Empirical evidence supports this theorizing.

Fertility Behavior and Household Time Allocation

The Willis model and his conclusions highlight the necessity for evaluating the value of parental time, an assessment that is considered central to most economic analyses of fertility behavior. Gary Becker laid the groundwork for such an evaluation in "A Theory of the Allocation of Time," published in the September 1965 issue of *The Economic Journal*. He noted that the family combines time supplied by family members with goods and services purchased in the market to produce within the household basic "commodities" (i.e., good health and welfare), which are the true objects of utility. Jacob Mincer, another member of the National Bureau's senior research staff, complemented Becker's theory with the argument that an individual's decision concerning the allocation of his own time is often made in a family context. Hence, the hours of work of a family member depend not only on his wage and the other variables specific to him but also on similar variables relating to other members of the family unit.

National Bureau research associates Robert Michael and Edward Lazear utilize these household time allocation concepts to focus on an analytical determination of the price of children in a paper entitled "On the Shadow

The Shadow Price of Children

Price of Children" (NBER mimeograph). Michael and Lazear proceed from the premise that in the human capital model individuals invest in wealth (i.e., education, good health, et cetera) which is embedded in themselves. The stock of this wealth changes over their lifetime as a result of different rates of investment and depreciation. If time spent in child rearing affects the rates of investment and depreciation in the parent's human capital. then time spent with children affects the value of the parents' own human capital investments. Any reduction in the value of this capital resulting from time spent with children should be considered a part of their cost. In short, the parents' human capital forgone may be a significant part of the price of children. Michael and Lazear emphasize that a relevant evaluation of the price of time employed in the household sector cannot rely on the observed wage alone. Additional factors must also be considered as part of the shadow price of time: the value of the forgone investment in human capital (proficiencies which augment productivity in a given employment circumstance), and the value of any increase in the rate of depreciation of previously acquired human capital. Therefore, if the presence of a child induces a parent to shift time from the labor market to child care, the observed wage forgone probably understates the shadow price of that time, especially if the individual has had relatively few years of labor market experience. Moreover, having forgone on-the-job investments in human capital by removing time from the labor market during the child's preschool years, the parent back in the labor market at a later age, will earn a wage that is lower than it would have been without the interruption.

A Woman's Place Is in the Home—or Is It?

The topic of wage and human capital costs of raising a family has also been examined by James Smith, another National Bureau research associate. In a recently completed paper entitled "Life Cycle Allocation of Time in a Family Context" (NBER mimeograph), Smith examines the influence of cyclical, seasonal, and life-cycle movements in wage rates and other variables on household time allocation decisions. He begins by enumerating a sequence of events occurring during the life cycle which could determine the labor-market and household-time allocation decisions that married women make. At the youngest age, the wife substitutes her market time for the husband's while he completes his schooling investments. The decline in a woman's market work as she approaches her mid-thirties is paralleled by an increase in the number of her preschool children. As these children age and begin their formal education, however, the wife is released from some of her home duties, and her market activity increases. Smith finds, however, that black women differ from this pattern in at least one striking way. Before age 35, while white married females are approaching their peak level of home participation in childbearing and child rearing, their black counterparts are specializing in market pursuits. He cites a number of factors that could account for this difference. For example, the higher rate of marital instability facing black women increases the cost of their complete home specialization. Smith also contends that, since black women do not generally cencentrate their childbearing into a relatively short time span, they may lack incentive to respond to the presence of young children by lowering their market participation.

The Timing and Spacing of Births

This last observation vis-à-vis the timing and spacing of children (whether white or black) touches upon what is perhaps one of the newest dimensions of fertility behavior to capture the attention of economists. To project with some accuracy the size, growth rate, and age structure of future populations, knowledge concerning the timing and spacing of births is essential. If each couple achieves the same completed fertility but at a later age, then the length of a generation — the average age of mothers at the birth of all children regardless of birth order — increases, the birth rates decline, and the population grows more slowly. Also, of course, the age composition of the labor force at any time and the proportion of the population of working age depends on the pattern of birth rates in the past.

A less obvious effect of the pattern of birth rates on the supply of labor works through forces in the marriage market. Men and women reach what is considered marriageable age at different times, and thus changes in the number of births per year will result in surpluses of men or of women of marriageable age. Since a woman's marital status affects her labor force participation, an understanding of birth rate trends is important for predicting future labor force supply.

Family Planning and Female Labor Force Participation

A better understanding of the relationship between fertility decisions and education, wage rates, and family income would aid in explaining the past, present, and future patterns of female labor force participation. Household decisions regarding marriage, childbearing, preschool investing in children, fertility control, timing and spacing of children, purchased child care, labor force decisions, accumulation of human and financial capital over the life cycle — these are all topics under investigation by members of the NBER population studies program — Gary Becker, James Heckman, Lisa Landes, Arleen Leibowitz, Robert Michael, Jacob Mincer, Sue Ross, Warren Sanderson, James P. Smith, and Robert Willis.

For example, Sue Goetz Ross, a National Bureau predoctoral research fellow, is examining the impact of economic forces modifying couples' decisions as to the timing and spacing of births. She is interested primarily in explaining the age at which a woman has her first child and her last child, and the interval between her first and last births. She is also examining the time from marriage to first birth and the intervals between successive births.

When Is Child-Bearing Economically Optimal?

The work Ross has already completed suggests that, if child rearing is relatively time-intensive, particularly for a woman, the higher the price of time the greater the incentive to reduce the length of the childbearing interval by reducing family size or by spacing children closer together. The decision as to the timing of that interval, whatever its duration, probably is affected primarily by the pattern of the price of time throughout the life cycle. If that price changes significantly over the lifetime, there is a strong incentive to have children when the price of time is low.

Ross also finds that, in order to minimize the depreciation of their market skills due to nonuse or obsolescence, women who were strongly attached to the labor force before childbearing will postpone acquiring additional skills until after they have completed childbearing. Also, they will complete childbearing as soon as possible by starting sooner and by having a shorter total interval between children. After testing these hypotheses through models that assume that couples operate in a world of perfect certainty, Ross intends to enter such variables as contraceptive failure into her analysis.

The Influence of Education on Contraceptive Use

The efficiency with which contraceptive devices are utilized is one aspect of fertility behavior that Robert T. Michael examined in "Education and Fertility" (soon to appear in *Education, Income and Human Behavior,* jointly published by the Carnegie Commission on the Future of Higher Education and the National Bureau) and expanded upon in "Education and the Derived Demand for Children" (published in the supplement of the March/April 1973 issue of the *Journal of Political Economy).* The observation that the more educated seem to have fewer children prompted Michael to derive a theoretical explanation for the negative effect of education on fertility, and to attempt measuring empirically the effect of education when certain economic factors are held constant.

Michael proceeded from the hypothesis that education influences the effectiveness of the household's contraceptive efforts in the same way it raises the efficiency of household production processes generally. Since one important aspect of production is the choice of a specific production technique, with education increasing one's awareness of new consumer products and reducing the costs of acquiring information about their characteristics and availability, better-educated couples can be expected to use more effective processes of production and to adopt new effective techniques relatively rapidly. Moreover, if education increases one's receptivity to new ideas or one's willingness to reevaluate previously held points of view, the more educated can be expected to be less reluctant to engage in contraception in general and to adopt certain contraceptive techniques in particular. In the economist's terminology, the psychic costs of using contraceptive devices — costs in terms of conflicts with beliefs or exposure to embarrassment, and so forth — may be lowered by education. Michael also hypothesized that, since education increases one's ability to organize production effectively, the better-educated would not only choose better contraceptive techniques but also use these techniques more proficiently. Since many contraceptive techniques are notoriously sensitive to the care and regularity with which they are used, there appears to be a wide latitude in which this attribute of education would operate.

Education, Contraception, and Religion

Michael's hypotheses were substantiated by his empirical evidence. Among other things, he found that the attitude of Protestants toward contraceptive use was appreciably more favorable at higher levels of education. Among Catholics the attitude toward contraception was less favorable at higher levels of education than for Protestants, but the rate of contraceptive use was higher among the better-educated. He also found that better-educated non-Catholics tend to choose more effective methods of contraception and appear to have adopted the new oral contraceptives more readily.

THE NBER CENTER FOR ECONOMIC ANALYSIS OF HUMAN BEHAVIOR AND SOCIAL INSTITUTIONS

The population studies program discussed above is but one of a number of National Bureau projects devoted to basic theoretical and empirical research on the economic behavior of individuals, families, and social institutions. Until quite recently problems in such areas have been relatively neglected by economists. Now, however, theoretical developments suggest that the time is ripe for large-scale empirical efforts in these directions.

One clear lesson of the past decade is that the expenditure of huge sums of money does not guarantee the alleviation of deep-rooted social problems. Policy makers set up social programs designed, for example, to improve health, reduce crime, raise education levels, or reduce the incidence of poverty. The successful design of these programs depends, in large measure, on an adequate understanding of the forces which influence, and are influenced by, the behavior of individuals and the functioning of institutions such as hospitals, courts, and schools. To help increase this understanding and to provide training for scientists who wish to devote their research efforts to these problems, the National Bureau has established the Center for Economic Analysis of Human Behavior and Social Institutions.

The Center encompasses five of the National Bureau's research programs: education and information, health, income distribution, law, and population. It represents a distinct entity within the National Bureau in a substantive, not a physical or geographical sense.

A Focus on Intangible Wealth

In two respects the Center's research programs reflect important extensions in the scope and focus of economic research. First, in contrast to the traditional focus of economics on tangible wealth–production of capital goods, the ownership of land, physical labor, and capital goods – the Center's research is concerned primarily with the intangible wealth of society. Much of this wealth is embodied in human beings – in their health, their skills and knowledge, their basic ability, and their motivation. Equally important and perhaps even less tangible is the wealth embodied in public and private social institutions: the legal system, the political system, churches, hospitals, schools, business firms, and private families. It is the creation of this wealth in human beings and in social institutions, its contribution to total production defined broadly, and its influence on observed human behavior, on the allocation of resources, and on the distribution of income that are at the core of the Center's research interest.

A Focus Outside Formal Markets

Second, while economic research has traditionally concentrated on transactions through organized markets, much human behavior takes place outside formal markets, but in situations where choices must be made and scarce resources must be allocated. It is now believed that economic analysis has much to contribute toward an understanding of this behavior as well. Perhaps the most distinguishing characteristic of the Center's research effort is the application of the familiar tools of production theory and distribution theory to the study of human behavior where no formal markets exist. Indeed, the whole range of human action from birth to death may be amenable to this analysis.

Considerable complementarity exists between the Center and other National Bureau efforts. The Center's research is subject to the broad policy guidelines that cover all National Bureau research. It will follow standard National Bureau practice, and sponsor related programs of information dissemination and training. Since many of the areas of study are also the subject of investigation in other disciplines, the Center encourages fruitful interdisciplinary research efforts. The current staff includes a physician, Edward F. X. Hughes, M.D., and a professor of law, Richard A. Posner. These staff members and scholars from other disciplines in the social sciences and biological sciences provide important breadth for the Center's research efforts.

Much of the Center's work builds on the theoretical foundations and important empirical insights contained in Gary Becker's analyses of economic discrimination, fertility behavior, human capital, time allocation, and criminal behavior. Becker is the Center's research policy advisor and an active member of the research staff in the population and law programs. The Center also draws heavily on the work of another long-time National Bureau senior staff member, Jacob Mincer, through his important contribution to the analysis of personal income distribution, the labor force behavior of married women, the measurement of on-the-job-training, and the relevance of opportunity costs.

In addition to Becker and Mincer, the Center's staff includes two other members of the National Bureau's senior research staff. George Stigler, whose contributions to the economic analysis of both human behavior and social institutions are well known, is engaged in research in the program area in law and economics. Victor Fuchs, whose research in the productivity and growth of the service industries in the United States anticipated and influenced the Center's emphasis on intangible wealth, is pursuing his research on the costs of medical care and the industrial organization of the U. S. health industry within the Center's research program in health economics. Fuchs, a National Bureau vice president-research, is the director of the Center. During the current academic year, while Fuchs is on a leave of absence from the National Bureau, Robert T. Michael, a National Bureau assistant vice president and assistant director of the Center, serves as acting director of the Center.

By focusing on the analysis of intangible wealth and nonmarket behavior, the Center's work fits comfortably into the long-standing tradition of National Bureau research: to provide more adequate quantitative measures of the economic performance of society. Initially, the National Bureau had focused on the quantitative measurement of physical wealth and national income, and thereafter sought to improve the measurement and understanding of production, productivity, and the trends and cyclical behavior in output. Perhaps a shift in the recent research emphasis toward the quantification and analysis of intangible wealth and nonmarket behavior reflects the success of that early effort.

A HISTORY OF THE NATIONAL BUREAU OF ECONOMIC RESEARCH—PART III

For five decades the National Bureau of Economic Research has pursued a policy of active cooperation with other research organizations, government agencies, and individual researchers engaged in studies relevant to its undertakings. This cooperation has assumed several forms.

Other organizations have requested that the National Bureau undertake or aid in investigations. The first example of such a request came from a subcommittee of President Harding's Conference on Unemployment, which requested the report on *Business Cycles and Unemployment,* published in 1923. To this day the National Bureau will agree to conduct investigations requested by government agencies or other organizations only if the subjects are clearly in the public interest, fall within its field as defined by charter, permit reasonably exact determination, and if the National Bureau is assured a free hand both in carrying out the studies and in publishing whatever findings are deemed significant.

In turn, the National Bureau has often requested the aid of other agencies in obtaining data. Thus, for two of its earliest studies, *Business Cycles and Unemployment* (1923) and *Recent Economic Changes* (1929), the National Bureau obtained the aid of investigators from the American Engineering Council, American Association of Labor Legislation, Bureau of Railway Economics, Department of Commerce, Institute of Economics, Federal Reserve Bank of New York, Pennsylvania State Industrial Board, and Russell Sage Foundation; of Brown, Columbia, Cornell, Harvard, Missouri, and Yale; of the New School for Social Research; and of the Dennison Manufacturing, Hickey-Freeman, and Thompson and Lichtner Companies, as well as a lawyer and a statistician in independent practice.

The extensive collections of statistical material that the National Bureau has gradually built up are unique and have become known to many research workers, both in the United States and abroad. In 1933 the National Bureau entered into an informal agreement with the economic research section of the University of Manchester for an interchange of publications and plans for research. Soon similar agreements were concluded with other research organizations around the world.

In 1930 the National Bureau introduced a plan of appointing research fellows to its staff for a period of one year. Its aim was to aid young investigators who had started studies compatible with ongoing National Bureau work but who lacked the time and facilities for pushing their research to completion. During the first two years, research fellows from Oxford, Berlin, California, Harvard, Rutgers, and Smith came to the National Bureau. Among them were Arthur F. Burns and Wassily Leontief. The research fellowship program had to be suspended in 1932, when the National Bureau was threatened with a deficit that could only be avoided by drastic measures. In 1937 a grant from the Carnegie Corporation enabled the Bureau to resume the program.

The National Bureau has always worked closely with university-based researchers. From its inception, its Board contained directors appointed by universities, and its research staff included economists drawn from many major universities in the United States and abroad.

On June 1, 1933, the National Bureau held a Planning Conference to which it invited representatives of various research agencies with interests similar to its own. The aim of the conference was to get suggestions for the most fruitful development of the National Bureau's research program and to avoid duplication of work. The experiment proved so successful that it was repeated in 1934 and 1935. At the 1935 meeting, systematic plans were developed to explore the possibility of making economic research more effective through closer cooperation. The discussion resulted in the establishment of the Universities-National Bureau Committee. Representatives of the economics departments of Harvard, Columbia, Pennsylvania, Chicago, Wisconsin, and Minnesota met with National Bureau staff members and adopted the following resolutions:

> That at the initiative of the National Bureau of Economic Research a committee be appointed by the departments of economics of selected universities, or by the appropriate equivalent economic research organizations of these universities. These representatives should be no more than two from each university so invited.
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> That this committee, in conjunction with the National Bureau, through its two representatives on the committee, should examine the major research problems of common interest, should undertake if possible one or more cooperative projects of economic research, and not later than the end of 1937 should recommend that form of continuing organization which study and experience have suggested.

The Conference on Price Research, the Conference on National Income and Wealth, and the Committee on Research in Fiscal Policy were developed as a result of the committee's efforts. The Conference on Price Research was dissolved in 1947 and the Committee on Research in Fiscal Policy was phased out in 1950, but the Conference on National Income and Wealth is now in its thirty-seventh year, and is about to issue its thirty-eighth publication. To encourage cooperative effort on the part of researchers engaged in studies relevant to the measurement of national income and wealth (one of the first major areas in which the National Bureau initiated studies), the Conference pursues the following aims:

> 1. The exchange of information among the various organizations and individuals carrying on or planning studies in the field, to prevent overlapping, to establish conditions for more intelligent division of work, and to facilitate the planning of cooperative activity;
>
> 2. To agree upon the most appropriate concepts, terminology and methods of exposition;
>
> 3. To work out plans of research, calling attention to particular segments of the field that demand more primary data or more analytical study; and
>
> 4. To stimulate cooperative research in the field by initiating projects, by lending the facilities of the Conference to the assistance of new undertakings; by helping to procure the financial means for new investigations; by giving advice when new studies are being planned or throughout their progress; finally, by sponsoring cooperative studies in which several students or organizations would collaborate.

In 1936 an inquiry from the Association of Reserve City Bankers prompted the development of yet another program of cooperative research, one devoted to financial research and fiscal policy. The Exploratory Committee on Financial Research, which later became the Committee on Financial Research, proposed that a coordinated program of financial research be conducted under the auspices of the National Bureau, in active collaboration with organized banking groups, individual financial institutions, public agencies, foundations, and university authorities. The program was to be carried out by a small central staff on financial research organized by the National Bureau and composed of those most competent in finance. The members of this central staff were to: (a) keep in contact and to cooperate with all financial research wherever initiated; (b) plan and inaugurate specific research projects independently; (c) collaborate with public and private agencies in specific research projects; (d) make research findings available as quickly, as usefully and as widely as feasible; and (e) organize commissions of inquiry on important questions of national financial policy. In short, the central staff would serve as the hub of the entire program, guiding, coordinating, and initiating work. Special advisory committees would be created to assist and counsel it. The Committee on Research in Fiscal Policy, which, as mentioned earlier, was established upon the recommendation of the Universities-National Bureau Committee, followed similar guidelines.

After establishing the criteria that would govern National Bureau conference series and committee work, the Universities-National Bureau Committee became dormant for a time, leaving coordination and cooperation largely to the ad hoc groups working on price, fiscal policy, and financial research. In 1947, however, it was reactivated at the request of its members. The Committee's area of continuing concern was defined in the following paragraphs from a program memorandum prepared by Simon Kuznets:

> The guiding objective is obviously encouragement of economic research, on problems and in fields susceptible of objective treatment; and with preference, although not exclusive insistence, on fields in which quantitative data are available and statistical tools can be used. Since the Committee is a cooperative venture of universities and the National Bureau, the foreground of its concern is with areas and methods in which the research groups, both at the universities and at the National Bureau, can best pool their interests, experience, and resources.
>
> Insofar as the area of concern suggested above is limited by the National Bureau's current work or program, the latter is to be understood in a broad sense. There should be no reluctance to suggest research problems that are now outside the National Bureau's program — so long as these problems are susceptible of objective treatment, with emphasis on the quantitative approach; and so long as they are of sufficiently broad scope to merit attention by institutions serving scientific and public interests.

Since 1947 the Universities-National Bureau has issued twenty-four conference volumes focusing on a wide variety of subject areas such as economic growth, business cycles, problems in international economics, public finance, human capital and transportation.

HILLSIDE

Finding adequate headquarters for the work of the research committees and a suitable meeting place for the various conference groups posed a problem. The National Bureau has a history of outgrowing its office facilities long before a move to larger quarters becomes economically feasible. Until

1929 it was located in a Greenwich Village brownstone immediately behind the New School for Social Research. The building was quickly filled to capacity, with no room for a library or other "amenities." Finally, when the brownstone was scheduled for demolition, the staff moved to 51 Madison Avenue, where it remained until 1933. Then a move became possible to seemingly spacious quarters at Columbus Circle. The staff increases accompanying the 1935 and 1936 cooperative undertakings, however, were significantly beyond the capacities of the available office space.

Then, on June 9, 1936, the National Bureau received a most timely and generous gift – Hillside, an eight-acre estate located in Riverdale just within the New York City limits. Mary B. Ladd donated Hillside to the National Bureau with only one condition – it had to be used for twenty-five consecutive years "for the stimulation of interest and research in the field of economics" or "said premises shall revert to and again become the property of Mary B. Ladd." The estate included "a well-built house of twenty rooms, one garage over which were two apartments, a second two-car garage, an outdoor swimming pool, a tennis court, and a greenhouse." A grant from the Carnegie Corporation enabled the Bureau to equip Hillside and provided operating expenses for one year.

Hillside was used as headquarters for the central staffs of the committees for financial and fiscal research, as a conference center for the National Bureau and cooperating organizations, and for the cooperative program. It also served as a residence center which economists from cooperating institutions, those from abroad, and Research Fellows were invited to use at a minimal cost. A number of scholars spent their sabbaticals at Hillside.

The National Bureau maintained Hillside until 1954, when a larger amount of office space was leased in New York City, and the former Columbus Circle and Hillside operations were consolidated at 261 Madison Avenue. Unfortunately, Hillside's upkeep and operating costs put too great a strain on the National Bureau's budget. As Solomon Fabricant wrote in the *Annual Report* for 1954, "Members of the Board and staff will long remember with pleasure the beautiful surroundings and quiet atmosphere of Hillside. . . . The decision to return the property to Mrs. Ladd was taken only after long consideration and made with deep regret."

PROFILES

John Maynard Keynes once set down the following qualifications for an economist:

> The study of economics does not seem to require any specialized gifts of an unusually high order. Is it not, intellectually regarded, a very easy subject compared with the higher branches of philosophy or pure science? An easy subject, at which very few excel! The paradox finds its explanation, perhaps, in that the master-economist must possess a rare combination of gifts. He must be mathematician, historian, statesman, philosopher – in some degree. He must understand symbols and speak in words. He must contemplate the particular in terms of the general, and touch abstract and concrete in the same flight of thought. He must study the present in the light of the past for the purposes of the future.

> No part of man's nature or his institutions must lie entirely outside his regard. He must be purposeful and disinterested in a simultaneous mood; as aloof and incorruptible as an artist, yet sometimes as near the earth as a politician.

While a few may approximate Keynes's ideal, it is doubtful whether any one man could embody all of these characteristics. Rather, it would take a group of men to satisfy the requirements for "master economist" — mathematicians, historians, statesmen, and philosophers — some relating to the theoretical and some to the concrete, some who see the present in terms of the past and some who can anticipate the future in terms of the present, some who remain seemingly untouched by worldly considerations and some who are very much of the world.

As illustrated by the Board members profiled below — a businessman, a banker, and an academician — each member of the National Bureau's Board possesses some of these attributes. Perhaps by working together to shape and guide the National Bureau's research program they come remarkably close to the Keynesian ideal.

Atherton Bean,

chairman of the Executive Committee of the Board of Directors of International Multifoods Corporation (formerly International Milling Company), became a member of the National Bureau's Board of Directors in September 1970.

Mr. Bean was born in New Prague, Minnesota, where International Milling was founded by his grandfather to manufacture and process flour grain products. He graduated summa cum laude from Carleton College at Northfield, Minnesota, in 1931 with a B.A. degree in chemistry. After a year at Harvard Business School, he was chosen as a Rhodes Scholar to study at Brasenose College at Oxford, England. At Brasenose he completed undergraduate work in philosophy, politics, and economics. He also holds an M.A. degree from Oxford.

When he returned to the States, he went to work for the Upjohn Company in Dallas, Texas. Two years later he moved to the DuPont Company in Wilmington, Delaware. During World War II, Mr. Bean was a Price Executive with the Office of Price Administration, and later worked in Army Intelligence in Washington, D. C.

At the completion of his military service, he returned to New Prague and International Milling. He was elected executive vice president in 1944, and president and chief executive officer in 1955, a position which he held until he assumed his present duties in 1968. The company has expanded considerably since his grandfather's day. A listing of the products of its various divisions includes such items as flour and baking mixes, popcorn, granola, and feed processed meats, and its Away-From-Home Eating Division is the parent company for Sveden House Restaurants and Mister Donut Shops.

Mr. Bean is a director of the First National Bank of Minneapolis, and he was chairman of the Board of the 9th District Federal Reserve Bank from 1961 to 1965. He is a member of the Board of Trustees of Carleton College, where he served as chairman from June 1961 to January 1968, and a past trustee of the Blake School in Hopkins, Minnesota. He has also been a director of Business International since February 1969. Mr. Bean is very active in the Minneapolis Society of Fine Arts, serving as vice chairman of the Board and chairman of the Executive Committee. He is also chairman of the Board of the Mayo Foundation.

In 1969 President Nixon asked Atherton Bean to serve on the Special Task Force on Economic Growth. Subsequently, he was appointed to the Presidential Commission on Financial Structure and Regulation.

George B. Roberts,

is celebrating his thirtieth year as a member of the National Bureau's Board of Directors. In May 1969, shortly after he attained the age of seventy-five, he asked to become a Director Emeritus, an option available to National Bureau Board members who have served fifteen or more years and have reached the age of seventy-five. Theodore O. Yntema, chairman of the Board at that time, reviewed Mr. Roberts' various activities with the National Bureau:

> Mr. Roberts was elected a Director at large in February 1943, and since that time served continuously on the Board, the Executive Committee, and as Chairman of the Finance Committee. He had also been Treasurer from 1942 to 1959, Vice President from 1955 to 1959, and Chairman of the Board from 1959 to 1961. Mr. Roberts had also served as a member of ad hoc Board Committees, including Nominating Committees, and as Chairman of the Committee on Arrangements to Meet the Problem of Retirement of the Director of Research, 1965–65, and Chairman of the Committee on Character and Composition of the Board of Directors, 1966.

When asked to supply an autobiographical sketch for this profile, Mr. Roberts responded with the following account:

> I was born January 24, 1894 at Fort Dodge, Iowa. My parents, George Evan Roberts and Georgena Kirkup, were of pioneer stock. My paternal grandfather migrated from Utica, New York, to the then territory of Iowa in 1844 by way of the Erie Canal to New York City, sailing vessel to New Orleans, and up the Mississippi by steamboat. He met a young woman – my grandmother-to-be – who had migrated from Maine by

covered wagon, and they were married in Rockland County, Illinois. My materal grandparents were likewise pioneer settlers in Iowa.

I received my elementary school education mostly in the public schools of Washington, D. C., where my father served terms as Director of the Mint in the Administrations of Presidents McKinley, Theodore Roosevelt, and Taft. In the fall of 1913 I entered the then new Pulitzer School of Journalism, Columbia University, graduating in April 1917 to accept appointment in the U. S. Army as First Lieutenant, serving with the American Expeditionary Forces in France until July 1919.

Upon resigning from the Army I found my first job with the then embryo economics department of the Federal Reserve Bank of New York. There I participated in the inauguration of the Monthly Review of that bank, and had the great privilege of working for and with such financial leaders as Benjamin Strong, the brilliant Governor of the Fed of New York at the time, Pierre Jay, Federal Reserve Agent, and J. H. Case, for many years Deputy Governor of the Bank. As the department continued to grow I was appointed manager in 1923.

In February 1926 I accepted an invitation by Charles E. Mitchell, president of the National City Bank of New York (now First National City Bank) to come to the bank with title of Statistician to assist in the editing of the Bank's Monthly Economic Letter. In 1932 I was appointed a vice president of the bank, and from then on until retirement in February 1959 was in charge of its growing economics department and coeditor of the Monthly Letter.

Apart from this bread-and-butter connection with the First National City Bank, my most important and rewarding connection has been my long association with the National Bureau of Economic Research. I was appointed Treasurer of the Bureau in 1942, succeeding my father, George E. Roberts, who had been one of the original promoters of the Bureau and had served on the Board since its inception.

In 1932 Mr. Roberts was named a member of the Gold Delegation of the Financial Committee of the League of Nations, a body appointed to report on the probable adequacy of gold supplies as a basis of world currencies. He was a member of the International Conference of Commercial Bank Economists from 1937 to 1956, and a member of the Conference of Business Economists from 1944 to 1959 (he was chairman of the latter group during 1958). From 1938 through 1947 he was chairman of the Banking Seminar of Columbia University's School of Business.

Mr. Roberts lists among his nonprofessional interests The Experiment in International Living, of which he was a trustee from 1958 to 1970. He has been president of the Friends of French Opera, Inc., since 1966.

Robert J. Lampman,

professor of economics at the University of Wisconsin in Madison, staff member of both the Institute for Research on Poverty and the Health Economics Research Center, and editor of *The Journal of Human Resources,* has been a member of the National Bureau's Board since 1968. He first came to the National Bureau in 1957 as a research associate to investigate the numbers, characteristics, and behavior of wealth-holders. He was on leave from the University of Washington and stayed only one year, but his research efforts resulted in two publications – an Occasional Paper entitled *Changes in the Share of Wealth Held by Top Wealth-Holders, 1922–1956* (published by the National Bureau in 1960), and a volume entitled *The Share of Top Wealth-Holders in National Wealth, 1922–56* (published by the National Bureau in 1962).

He left the National Bureau in 1958 to return to his native state, Wisconsin, and to a professorship at his alma mater, the University of Wisconsin. Ten years later the University of Wisconsin, which is among those institutions that may appoint a representative to the National Bureau's Board of Directors, nominated Mr. Lampman as its representative director by university appointment.

After receiving his B.A. degree from the University of Wisconsin in 1942 and completing active duty as an air navigator with the U. S. Naval Reserve, Mr. Lampman began working toward his Ph.D. degree, which he received in 1950 from the University of Wisconsin. He began his teaching career at the University of Washington in Seattle where his research assistant in 1949–50 was a University of Washington undergraduate majoring in economics, John R. Meyer. In 1951–52 he was on leave from that university to teach at the American University of Beirut in Lebanon. He also taught for a year in the Philippines (1966–67), where he was a visiting professor at the University of the Philippines, and spent the summer of 1970 at Gadjah Mada University in Indonesia.

Mr. Lampman has had upward of seventy articles and four books published on such diverse topics as income distribution, collective bargaining, old age and survivors' insurance, fertility, education, labor market participation, et cetera. Apart from his National Bureau publications, he lists as his principal works *The Low Income Population and Economic Growth,* published by the U. S. Congress Joint Economic Committee in 1959; *Washington Medical Service Corporations,* which he co-authored with George A. Shipman and S. F. Miyamoto, published by Harvard University Press in 1962; "Approaches to the Reduction of Poverty," which appeared in the

American Economic Review of March 1965; "Transfer Approaches to Distribution Policy," in the *American Economic Review* of May 1970; and his latest book, *Ends and Means of Reducing Income Poverty,* published by Markham in 1971.

In addition to serving as a member of or consultant to numerous state and local government agencies, Mr. Lampman has also served in a number of capacities within the federal government. There he first worked as a member of the Bureau of Labor Statistics' Advisory Committee on Consumer Expenditure Surveys (1960–62). During 1962–63 he was a staff member of the Council of Economic Advisers. He has also been a consultant to the Social Security Administration (1961–65), the Department of Labor's National Institute of Mental Health (1963–64), the President's Task Force on Poverty (1964), and the President's Commission on Income Maintenance (1968), and has served as a member of the President's Task Force on Income Maintenance (1964) and the Advisory Committee on Research of the Social Security Administration (1964–66).

NEW PUBLICATIONS

THE EFFECT OF EDUCATION ON EFFICIENCY IN CONSUMPTION

Robert T. Michael
Price: $3.00
Published: November 28, 1972

This book represents the first attempt by an economist to identify and measure benefits from education other than higher wages. Michael begins from the hypothesis that if schooling helps make a worker more productive and raises the value of the worker's time (as evidenced by the higher hourly earnings of the more educated workers), then perhaps schooling also helps a consumer be more productive in spending money and in using purchased goods and leisure time. If this is true, the return on an investment in education includes not only higher money income through the job market, but also higher consumption income through improved efficiency in nonmarket activities.

Analytically, Michael uses the notion of a "household production function," in which the family is viewed as utilizing some purchased goods and services, for instance, a steak, skillet, fuel, and recipe along with some of the family members' time buying, cooking, and eating the steak, to "produce" a desirable commodity — a nutritious steak dinner. Schooling may affect the family's choice of the market goods (the steak or the price of the steak), the method of production (the recipe), or the productivity of the time input (the chef's cooking skill). The analysis pertains not only to housework, but also to recreation, cultural activities, travel, reading, et cetera — indeed, to all activities and all consumption categories.

In the empirical analysis, Michael uses U. S. Department of Labor surveys to study the effect of differences in the level of education of the head of the household on the spending pattern of households.

After removing the effects of differences in money earnings and income, the observed systematic shifts in spending patterns across households with different education levels permit the author to infer the effect of education on the household's consumption efficiency. The evidence suggests that better-educated households are more efficient, with the effect of schooling on productivity in the home about one-half as large as its effect on productivity in the labor market.

The study also offers a brief analysis of the effects of age, family size, and geographical region on consumer behavior, and suggests how the influence of other environmental factors might be analyzed.

In sum, Michael finds that better-educated families are more efficient consumers. Those with more education behave as if they had more real income even when their dollar income does not change.

THE DEMAND FOR HEALTH: A THEORETICAL AND EMPIRICAL INVESTIGATION

Michael Grossman
Price: $3.50
Published: December 4, 1972

The distinction between health and medical care has been a major concern of the National Bureau's health research program ever since its inception some five years ago. Do people purchase "good health" or are they buying medical care when they visit a doctor? In this book Grossman presents the most detailed treatment to date of the distinction between health and medical care.

Until now, studies of the demand for medical care were typically set in the framework of consumer demand for a final product and were thought to depend upon prices, income, and "tastes." Tastes were thought to depend in part on state of health, which was externally determined. By drawing on some of Gary Becker's work concerning the household's role in the production of ultimate commodities, the author constructs a model in which people to some extent choose their level of health just as they choose the level of consumption of other commodities. Variables such as age and schooling affect demand by altering the price of health.

When he turns to the production of health, Grossman assumes that medical care is only one factor. He presents a substantial amount of evidence that people with higher degrees of educational attainment enjoy better health than those with less schooling.

Somewhat surprisingly, Grossman shows both theoretically and empirically that higher income does not necessarily lead to higher level of health. His explanation is that higher income may also induce higher levels of consumption of other goods and services, such as cigarettes, alcohol, and rich food, that have negative effects on health.

This study was awarded the Harry G. Friedman prize by Columbia University for the best dissertation defended in economics in 1970.

ESSAYS IN THE ECONOMICS OF HEALTH AND MEDICAL CARE

Victor R. Fuchs, editor
Price: $8.00
Published: December 4, 1972

With this collection of essays, the National Bureau initiates a timely new series of publications entitled *Human Behavior and Social Institutions.* A few years ago the National Bureau began a program of research in the health field, thus anticipating the current demand by policy makers for information and advice concerning the determinants of the utilization of medical care; the efficiency with which resources are used in this industry; the value of improvements in health; the appropriateness of medical care prices and wages; and the creation of new methods for financing medical care.

As government agencies find themselves overwhelmed by the rapid rise in the cost of health services, there is mounting public concern over the state of health and system of medical care in the United States, which compare unfavorably with many developed countries with respect to such important health indexes as infant mortality and life expectancy. Too many Americans either obtain no medical care at all, or obtain it under such conditions that are degrading and inimical to good care, and some patients experience shortages of personnel and facilities even when they are willing and able to pay the going price. Within the medical profession itself questions are being raised about medical education, research, and practice.

Chapter 1 relates the study of economics to the health field. It indicates that in a world of scarce resources and competing wants choices must be made with regard to the amount and distribution of health services. The economist's task is to analyze the decision-making process and suggest alternatives which will best satisfy society's objectives in regard to good health care and other goals. Chapters 2 and 4 discuss the rapid increase in health care expenditures in recent decades. Related to this cost are the physicians' decisions in determining treatment based on the "technological imperative" (the desire to give all the care technically possible without regard to balancing potential benefit against potential cost). Chapter 3 clarifies three widely shared objectives of the medical community – increasing effectiveness, efficiency, and equity – and explains some of the obstacles which are detriments to maximizing these objectives.

Chapters 5 and 6 hypothesize upon the variations in health care, such as length of hospital stay and per cent of income allocated to medical and dental services, utilized by different segments of the population. Chapter 7 compares the distribution of earnings in health and other industries, and makes note of the need for trained personnel in the middle professional and supervisory range. Chapters 8 and 9 attempt to measure the impact of medical care and other variables such as schooling, income, and marital status on health, with Chapter 9 directing special attention toward black-white differentials in mortality.

The compilation of these essays attempts to bring into focus the differing factors that determine health levels in the United States. In addition, it is hoped that the book will serve to establish a link between health experts who are unaware of economics and economists who are unfamiliar with the health industry, which now accounts for over 7 per cent of the country's gross national product.

INTERNATIONAL MOBILITY AND MOVEMENT OF CAPITAL

Fritz Machlup, Walter S. Salant, and Lorie Tarshis, editors
Price: $20.00
Published: December 18, 1972

This volume comprises all papers and comments prepared for the conference on International Mobility and Movement of Capital held early in 1970 under the sponsorship of the Universities-National Bureau Committee on Economic Research.

In one paper, Britain is seen as choosing to restrict capital movements in preference to adjustment of the exchange rate, restrictions on trade, or retrenchments of domestic expenditure – a choice which is viewed as less costly than unemployment or trade restrictions. In another, France and Germany, as well as the United Kingdom, are found to restrict foreign direct investment, international agreements notwithstanding. Each country employs a distinctive technique, but in no case is there a sound basis in economic theory.

Another study deals with the takeover of Canadian companies by foreign firms – largely American. Results show foreign takeovers to be largely explained by the level and pattern of mergers in the United States. Other important variables are tariff policy, corporate cash flows, and the level of business activity. A second paper on Canada analyzes the hypothetical effect of proposed tax reforms on the Canadian economy.

A report dealing with intra-EEC capital movements finds no strong tendency for interest differentials to become narrower within the EEC than between these and other countries. Instead, there has been significant internationlization of capital markets by facilities like the Eurodollar system and Eurobond markets.

Financial intermediation services given by one country to another are discussed in another paper. Principal reasons for this activity are (1) lower liquidity preference in the country providing the service, (2) greater competitiveness of the financial-intermediary industry and (3) lower costs of intermediation. Financial intermediation is seen as accounting for a good part of the American liquidity deficits in the 1950's. A second paper on this theme is more critical of the financial intermediation hypothesis, pointing out that it cannot be of much help in determining when a deficit on an official-settlements basis has become excessive.

The behavior of American firms that are direct investors in manufacturing activity abroad is examined. A portfolio approach to direct investment and the American balance of payments is delineated. A second paper employing a portfolio approach traces in detail the effect of a rise in interest rates abroad.

A model is presented which attempts to explain the movements of short-term funds between Americans and foreigners. Both stock adjustment and flow adjustment are examined, and government policy is seen as acting primarily through stock adjustments and very little by way of adjustments of permanent flow. Another model explaining capital movements by the firm includes among its variables the firm's expenditures for plant and equipment, the changes in their current assets abroad, the profits from their foreign activities, and the repatriation of foreign dividends.

Other papers include a presentation of a general equilibrium model of a small, fully employed economy which is used to test the effects of an increase in the domestic stock of money; a discussion of the ultimate limits of fiscal policy imposed by fixed exchange rates; a methodological survey encompassing activity and transactor models; and a plea for the development of sound theoretical underpinnings for empirical studies.

REPRINTS

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

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

Lipsey, Robert E., and Merle Yahr Weiss, "Analyzing Direct Investment and Trade at the Company Level," *American Statistical Association 1972 Proceedings of the Business and Economic Statistics Section.*

Sargent, Thomas J., and Neil Wallace, "Market Transaction Costs, Asset Demand Functions, and the Relative Potency of Monetary and Fiscal Policy," *Money, Credit, and Banking,* May 1972.

MIMEOGRAPHED AND XEROXED PAPERS

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

Arora, Swarnjit S., "Migration Flows and Their Determinants: A Comparative Study of Internal Migration in Italy and the U.S.A.," presented at the Econometric Society Meeting, December 1972.

———, and P. A. V. B. Swamy, "The Exact Finite Sample Properties of the Estimators of Coefficients in the Error Components Regression Models," *Econometrica,* Vol. 40, No. 2, 1972.

Horowitz, Harold, and Barry J. Geller, "The Number of Firms and Competition – A Rejoinder," February 1973.

Lin, An-loh, "The Budgetary Effects of Federal Grant-in-Aid Programs," December 1972.

Moore, Geoffrey H., "Unemployment of Black Workers," *Bureau of Labor Statistics Report 416,* October 1972.

Nadiri, M. Ishaq, "Aggregate Investment Behavior," *Brookings Papers on Economic Activity,* No. 3: 1972.

Wachtel, Paul, "The Return to Investments in Higher Education Revisited," *New York University Graduate School of Business Administration Working Paper Series #72-64,* October 1972.

NATIONAL BUREAU REPORT

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