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PRODUCTIVITY IN THE TERTIARY SECTOR

Recent economic growth in most of the industrialized nations of the world is following the pattern experienced by the United States. The shift in the labor force from primary (agricultural) to secondary (manufacturing) industry has had profound consequences for every industrial nation; the subsequent shift to the service sector may also have significant implications. Indeed, as Harvey Cox observed in *The Secular City* (New York, 1965), "When man changes his tools and his techniques, his ways of producing and distributing the goods of life, he also changes his gods." Accordingly, the experience of the United States is under study by economists around the globe, and National Bureau staff members are being called upon to offer their interpretations in international forums.

Service Economy: A Matter of International Interest

Thus, on the occasion of its fifth anniversary, the European Association of National Productivity Centres invited Solomon Fabricant, a pioneer in the National Bureau's work on productivity, to address a session of the Association's Managing Board on the topic "Productivity in the Tertiary Sector." The Supplement to this issue of the *National Bureau Report* was developed by Professor Fabricant from that address. The topic is pursued in the *Report* with special reference to the National Bureau's economics of health program of studies.

THE SERVICE SECTOR

While the emergence of secondary industries had to await the coming of the machine age, the tertiary or service industries have existed since Adam

first recognized Eve's potential. Nevertheless, the concept that an individual could be productively and gainfully employed by rendering service, thus adding to a nation's economic output, is among the most modern in the economist's tool chest. Few recognized the implications of a statement made by Sir William Petty in 1691: "There is much more to be gained by Manufacture than Husbandry; and by Merchandise than Manufacture . . . Now here we may take notice that as Trades and Curious Arts increase, so the trade of Husbandry will decrease, or else the wages of Husbandmen must rise and consequently the Rents of Lands must fall." As a result, in the 1940 edition of his *Conditions of Economic Progress,* Colin Clark could still challenge that "The economics of the tertiary industry remains to be written."

The First Service Economy

By this time, however, the United States was rapidly on its way to becoming the world's first service economy—the first nation in which more than half the working population is associated with institutions that provide service rather than tangible goods. Today, the service sector has become the largest and, in many respects, the most dynamic element in the economy of the United States. The shift in the labor force to service industries is perhaps most readily discernible in highly industrialized areas. For example, the Bureau of Labor Statistics forecasts that by 1980 eight out of every ten workers in New York City will be producing services instead of tangible goods.

Writing the Economics of the Service Industries

The National Bureau's staff, led by Simon Kuznets, Solomon Fabricant, Victor Fuchs, and John Kendrick, among others, has made extensive analyses of the growth of the service sector and its impact on other aspects of economic development. Victor Fuchs' 1968 National Bureau publication, *The Service Economy,* stands perhaps as the most definitive summary work to date. Fuchs analyzed the growth of service employment and the differences in productivity change among the service industries, and explored some of the conceptual problems encountered in measuring service output and productivity. Many of these problems were also recognized by authors who contributed papers to *Production and Productivity in the Service Industries* (Studies in Income and Wealth, Volume 34, 1967), edited by Victor Fuchs. To solve these problems and thus gain a better understanding of the dynamics of the economic relationships within the service sector itself and its relationships with the other phenomena of the economic market place would first require, Fuchs concluded, an in-depth examination of the economic underpinnings of specific, representative service industries.

THE ECONOMICS OF HEALTH

The decision to begin specific service industry investigations with an examination of those industries related to health care may be viewed from both practical and theoretical points of view. The pragmatists might be quick to point out that funds for investigations into the economics of health care were readily available. Indeed, substantial support for National Bureau work in this area has been received from the Commonwealth Fund, and the National Center for Health Services Research and Development, U. S. Department of Health, Education, and Welfare. The theoreticians among us might prefer

to observe that economists feel a certain kinship with their medical colleagues, appreciating the similarities between economic research and medical practice. Medical care, like economics, has at its root measurement—temperature, pulse, heartbeat, and the rest. Like their medical counterparts, economists recognize that no disease was ever cured by the application of a stethoscope or the insertion of a thermometer. Diagnosis must follow. For the economist, diagnosis takes the form of extensive and in-depth data analysis. Finally, there is the administration of the cure. Since the National Bureau's Economics of Health research program was instituted in early 1968, public concern has mounted over the state of health and the provision of medical care in the United States. As a result, Bureau researchers have had to divide their time between the slow accumulation of reliable measures and analyses, and the discussion of current problems and preliminary conclusions with physicians, government officials, and other groups with strong policy concerns. Ultimately, it is hoped, these groups will use the Bureau's analytical findings to prescribe improvements in the system of medical care in the United States.

A Rx for the Health Industries

The objectives of the economics of health program, under the direction of Victor Fuchs, are to gain a better understanding of the factors affecting the demand for medical care, the productivity of medical care industries, and the socioeconomic determinants of health. More specifically, the program focuses on 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 devices for financing medical care.

What Are Health Services?

The economist defines "health services" as services rendered by various profit and nonprofit organizations of labor, physical capital, and intermediate goods and services needed in the provision of medical care. Payment for this labor, capital, and intermediate input is the basis for estimating "health expenditures." Classification problems, however, do arise. One such problem concerns the unpaid health services that people perform for themselves and for members of their families. According to present practice in national income accounting, this labor input is not included in health services. Therefore, this "home" production must be treated as part of the environmental factors that affect health. Other environmenal factors might include the provision of a supply of potable water, efforts to combat air pollution, the creation of effective waste disposal systems—in short, almost all expenditures allocated to the establishment and maintenance of an ecologically healthy environment could be included in computing expenditures for health services. On the other hand, expenditures for the accoutrements of health services, such as that portion of the personnel and facilities in hospitals used to produce "hotel services" rather than health, might be treated separately in determining net expenditures for the purchase of health services.

What is the output of the health industry? Although no completely satisfactory answer is available, National Bureau economists have distinguished three different kinds of output that flow from health services: (1) health, defined by the World Health Organization as, "a state of complete physical and mental and social well-being;" (2) validation services—a physician's

Output of the Health Industries

judgment concerning a person's health status that will be widely accepted by third parties (i.e., life insurance examinations); and (3) other consumer services such as the "hotel services" rendered by hospitals and other health institutions.

For the most part, economists assume that consumers know what they want and know how to satisfy these wants. They further assume that goods and services produced under competitive conditions will be sold at a price which properly reflects (at the margin) the cost of production and the value to the consumer. The health industry, however, has certain characteristics which suggest that special treatment is required.

Consumer ignorance: Very few industries could be named where the consumer is so dependent upon the producer for information concerning the quality of the product. In the typical case he is even subject to the producer's recommendation concerning the quantity of care to be purchased.

Restrictions on competition: In most other industries where the possibilities for consumer ignorance are considerable, the consumer obtains protection through the competitive behavior of producers. In the case of physicians' services (and this is the keystone to health services because of the dominant role of the physician in the industry) the reverse is true. Restrictions on entry into the industry are assured through the medical profession's control of medical schools, licensing requirements, and hospital appointments. Advertising is forbidden and price competition is frowned upon. Critical comment concerning the output of other physicians is also regarded as unethical. For the most part, of course, these restrictions are not meant to frustrate the consumer—but rather to help to maintain high standards of medical care.

The role of "need": Health services are one of a small group of services which many people believe should be distributed according to need rather than demand (i.e., willingness and ability to pay). Other services in this category, such as education, police and fire protection, and sanitation, are typically provided by government. For the distribution (or payment) of health services, however, increasing reliance is being placed on coverage in compulsory insurance plans, and (to a somewhat lesser extent) on taxation. This "third-party" payment for health services may often result in the consumer having less incentive to make certain that what he is getting is truly worth the cost.

The Economists' Challenge

These characteristics of the health industry indicate why output cannot simply be equated with expenditures. This does not mean that economic analysis cannot be applied to the industry. On the contrary, precisely these special characteristics make the industry an interesting subject for economic analysis, both from the scientific and public policy points of view.

Much of the above discussion was developed in one of the first papers written by Victor Fuchs on the economics of the health industry, "The Contribution of Health Services to the American Economy." This paper, together with others by Fuchs, Morris Silver, Kong-Kyun Ro, Elizabeth Rand, Bonnie Garrett, and Richard Auster, Irving Leveson and Deborah Sarachek, some of which were published in medical and economics journals during the first four years of the Bureau's economics of health program, have been collected for publication in the new Bureau volume *Essays in the Economics of Health*

and Medical Care, edited by Victor Fuchs.

Since approximately two-thirds of the value of health services in the United States represents labor input, much of the National Bureau's recent work has been devoted to analyzing the factors that determine this input. According to Edward F. X. Hughes, M.D., a member of the National Bureau's research staff who is also affiliated with the Department of Community Medicine at the Mount Sinai School of Medicine, Victor Fuchs, John E. Jacoby, M.D., and Eugene M. Lewit in "Surgical Work Loads in a Community Practice" *(Surgery,* March, 1972), "Many physicians and laymen believe that the only solution to the alleged "doctor shortage" is a massive increase in the number of physicians; other observers, however, have been calling attention to the underutilization of physicians in those tasks which long years of training have equipped them to perform. With the social cost of college plus medical school now well in excess of $100,000 per student, it is essential that the question of effective and efficient use of medical manpower receive careful study."

Is There A Doctor Shortage?

To begin this task, Hughes and his colleagues have undertaken a study of the utilization of surgical manpower. They hope to answer questions about the possible excess capacity in surgery, the cost of surgery, and the financing of the training of surgeons. The project has been focusing on the measurement of the workloads of general surgeons in a variety of practice settings. To measure the operative workloads of general surgeons, a measuring unit of surgical work—the hernia equivalent (H.E.)—has been developed. A hernia equivalent is defined as the amount of surgical work equal to that involved in performing a unilateral adult inguinal herniorraphy. The first application of the H.E. in measuring surgical workloads involved the determination of the annual in-hospital surgical workload of a population of nineteen general surgeons practicing in a suburban community in the New York metropolitan area. The median workload in this population—assuming forty-eight work weeks per year—was 3.1 H.E., and the mean was 4.3 H.E. per week. A consensus of general surgeons from a number of practice settings estimated that 10.0 H.E. per week would comprise a surgical workload sufficiently large to maintain operative skills and still leave adequate time for other professional and personal activities. This, of course, raises the question, what were the surgeons doing with the remainder (6.0 to 7.0 H.E.) of their professional time per week? To answer this question, a time-motion study of the nineteen surgeons' work was carried out by a fourth-year medical student, Frederick V. Lorenzo. Although analysis of his data is still preliminary, it appears that many surgeons work considerably less than five days per week.

The Hernia Equivalent

Scalpel . . .
Forceps . . .
Two Wood

Workloads in a general surgical residency training program in a New York municipal hospital were also measured to determine how much of a resident's time is actually spent in doing surgery as opposed to other tasks. This study made possible comparisons of the complexity of surgery as practiced by residents with that performed by physicians in private practice. As might be expected, it was found that both the volume and complexity of surgery (operations where the resident was primary surgeon) tended to rise with each year in the program. First-year residents were performing 0.9 H.E.

per week of primary surgical work of an average complexity of 1.02 H.E. per operation. Chief residents were performing 7.5 H.E. of primary surgery per week, with an average complexity of 2.06 H.E. per operation—almost twice the mean volume of weekly surgery performed by the population of practicing surgeons!

The efficiency of the use of operating room facilities is also being evaluated by the application of the hernia equivalent unit. Outputs of operating rooms can be measured (per unit time), and the cost of operating room support services required per H.E. can be determined. Other studies under way include measurement of the surgical workload of the general surgeons in a large, prepaid group practice, and a time-motion study of the full-time general surgical faculty in a university hospital.

Developing a Profile of the "Healthy" Man

It was observed earlier that many health-related resources are not adequately covered under the economist's definition of health services. The influence of education on health status, for example, is not ordinarily considered. Nevertheless, in a study being conducted by Michael Grossman, conclusive evidence indicates a definite positive correlation between health and schooling. The main purpose of Grossman's project is to test alternative explanations of the observed positive correlation between years of schooling and good health. A secondary aim is to construct and estimate a model of consumer decision making in which health, schooling, and wage rates are all viewed as endogenous variables. In addition to schooling, Grossman notes that health also correlates positively with marital status (married men reporting better healh than unmarried men), physical (but not mental) ability, father's education, and job satisfaction.

The patient profile that Grossman's work will ultimately yield expands the research of Victor Fuchs and Marcia Kramer for their soon-to-be published National Bureau Occasional Paper *Determinants of Expenditures for Physicians' Services in the United States.* They begin by noting that "expenditures for physicians' services in the United States increased by 328 per cent between 1948 and 1969." The rate of growth was considerably more rapid than that of gross national product or personal consumption expenditures, but it was about the same as the increase in expenditures for other services. In an attempt to discover why expenditures of physicians' services vary so markedly across geopraphical regions, Fuchs and Kramer find that supply factors such as technology and number of physicians, rather than patient income, insurance coverage, and price, appear to determine the utilization of and expenditures for physicians' services.

The Impact of Abortion Reform

A new legitimate market for physicians' services was created in New York State in July 1970, when abortion was legalized. Since that time nearly 65,000 legal abortions per year have been performed—a strong indication that illegal abortion may have played a critical role in birth control prior to legislative reform. In a study in progress at the Bureau concerning abortion and fertility in New York City, Marcia Kramer is examining, among other things, the demand for abortion, both legal and illegal, the impact of abortion reform on fertility, and the determinants of fertility under conditions of legal abortion. Separate analyses focus on out-of-wedlock fertility and its response to the new law. Kramer hypothesizes that the demand for abortion is a func-

tion of its price, income, attitudes towards abortion, and the incidence of unwanted conceptions. Preliminary figures indicate that during the two years prior to the legalization of abortion (1968–70) the birth rate in New York City increased 2 per cent per annum. Since 1970, the birth rate has fallen 12 per cent.

Other studies recently undertaken in the National Bureau's economics of health program include an intercity analysis of hospital utilization by Barry R. Chiswick and an examination of the reasons underlying the rising cost of medical malpractice insurance by Melvin R. Reder.

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

The National Bureau of Economic Research was founded in 1920 "to encourage in the broadest and most liberal manner, investigation, research, and discovery, and the application of knowledge to the well-being of mankind; and in particular to conduct, or assist in the making of, exact and impartial investigations in the field of economic, social, and industrial science." The events which led up to the Bureau's establishment were recounted in its Twenty-fifth Annual Report (1945) by N. I. Stone, then Chairman of its Board of Directors. His account is being reprinted below as the first in a series of *National Bureau Report* articles designed to trace the National Bureau's history—a history that parallels in large measure the evolution and accomplishments of economic science.

The Beginnings of the National Bureau of Economic Research

by N. I. Stone

I first met Malcolm Rorty early in 1915 at a hearing of the New York State Factory Investigating Committee, of which the then State Senator Robert F. Wagner was Chairman. Having made a study and prepared a report for the Committee on Minimum Wage Legislation I was testifying before the Committee in favor of the adoption of such legislation by the State of New York. Rorty was strongly opposed.

Our next contact (or conflict) took place across the table of the Mayor's Unemployment Committee in New York City to which its Secretary, the late John Shillady, had invited us as consultants. In advocating the expediting of as many public works projects as the City could undertake as an alternative or supplement to public soup kitchens, I again clashed with Rorty. He formed a definite impression of me as a dangerous radical.

In 1916 Scott Nearing published his pioneer study on the distribution of national income. He divided all income into service and property income and after an elaborate analysis of statistical data, in which he displayed considerable originality and ingenuity, came to the conclusion that national income was divided roughly 50-50 between the two types. Harry Laidler, at

that time Editor of the *Intercollegiate Socialist,* a socialistic monthly intended chiefly for circulation among college students, asked me to review Nearing's book. My review grew into an article in which I took Nearing to task for his pseudo socialistic approach to the subject, and pointed out several large items of service income that Nearing ignored in his estimate. I arrived at the conclusion that the division between service and property income was approximately in the ratio of two to one (as the first publication of the National Bureau of Economic Research subsequently confirmed).

My article in the *Intercollegiate Socialist* caught the eye of Malcolm Rorty who made it his business to follow current labor and socialist publications. In line with his impression and the character of the magazine, he expected to find a "red hot" diatribe on the unjust distribution of income under capitalism. Instead, my article gave him a new slant on the "dangerous radical" and he invited me to lunch to talk things over. This was followed by several conferences which culminated in a warm friendship, although we continued to differ strongly on many public questions.

At our second meeting Rorty said: "Hence we are considering a most important question which deeply affects the lives of every man, woman and child in this country, and despite a large fund of statistical data, there is no agreement on the purely arithmetical question what part of the national income goes to each element of society. Would it not be a great step forward if we had an organization that devoted itself to fact finding on controversial economic subjects of great public interest?"

I agreed that it would, provided the organization could command public confidence so that its findings were accepted as conclusive by all parties to the controversy.

He assented to my proviso and asked for suggestions. I said the organization should be started by a group of well known economists representing every school of economic thought from extreme conservative to extreme radical who should associate with them representatives of all the important organized interests in the country: financial, industrial, agricultural, labor, etc.

Rorty thought that some such plan would have to be adopted and believed he could raise the funds if he could promise the participation of outstanding economists. We agreed that men like Edwin F. Gay, Dean of the Harvard School of Business, Wesley C. Mitchell of Columbia University, and John R. Commons of the University of Wisconsin would make an excellent nucleus. He felt that in addition to published statistical data, his own American Telephone and Telegraph Company could make a valuable contribution of original data giving "a complete classification of families according to rents paid and rental value of properties occupied for the majority of cities of over 50,000 population in the United States."

Rorty lost no time in pushing toward the realization of the project, which filled his thoughts to the exclusion of everything except his official duties. The first people he approached were Dean Gay and Wesley C. Mitchell. Both were favorably impressed.

As a result of his conversations with them and some business leaders several plans were evolved. One favored by Dean Gay called for a three-

fold program:

1. The establishment of a bureau of business research attached to the United States Chamber of Commerce, which should attempt most of the statistical work and might resort to approximations when necessary.

2. The utilization, if desired, of the Research Division of the Harvard Graduate School of Business Administration, for more exact and long continued investigations, which, in most cases, would require five years for completion.

3. The setting up of separate arrangements for the use of the accumulated statistics as the basis for economic writings.

In following out Dean Gay's suggestions, Mr. Rorty had conferences with A. W. Shay of *System,* E. H. Goodwin, General Secretary of the United States Chamber of Commerce, Harry Wheeler, former President of the Chamber, and Magnus Alexander, President of the National Industrial Conference Board.

While these conferences were going on Mr. Rorty proceeded to enlist economists. On February 16, 1917, the day after he had written Dean Gay, he wrote Professor Mitchell:

"I enclose herewith a copy of a letter that I have written to Mr. Gay . . . I am entirely in your hands and his as to any action that may be taken, and agree with you that the plan should be carried through on an absolutely scientific basis and without any attempt, on the part of those financing it, to control either the findings or the composition of the Committee. I have, therefore, written to Professor Commons, and am arranging to meet Mr. Stone in Washington on Sunday with the idea of going ahead actively . . . I will also continue actively to solicit contributions to the Committee's fund."

With Professor Commons and myself, the enlarged committee of four elected additional members and the plans originally envisaged in our first talks on the subject came to fruition in the following memorandum.

The Committee on the Distribution of Income
Its Organization and Purposes

The Committee on the Distribution of Income is in process of organization to meet a growing demand for a scientific determination of the distribution of national income among individuals and families, as well as by basic sources—wages and other returns for personal service, land rents, interest, and profits in excess of a normal interest rate.

A knowledge of this distribution is of vital consequence in the consideration of almost every important political and social problem, and will be of particular value in relation to the many special problems of taxation, legislation, and industrial readjustment that will necessarily arise during and after the present war.

The Committee will concern itself wholly with matters of fact, and is being organized for no other purpose and with no other obligation than to determine the facts and to publish its findings.

The initial members of the Committee were Edwin F. Gay, Dean of the Harvard Graduate School of Business Administration, and Professor Wesley

C. Mitchell of Columbia University. These two have since associated with them Professor John R. Commons of the University of Wisconsin, President of the American Economic Association, Dr. N. I. Stone, now connected with the Institute for Government Research at Washington and one time Statistician of the United States Tariff Board, Professor Allyn Young of Cornell University, President of the American Statistical Association, Mr. John P. Frey, Editor of the *International Molders' Journal,* and Professor T. S. Adams of Yale University, formerly Tax Commissioner of the State of Wisconsin; and these seven will in turn choose representatives of business and agricultural interests to complete the Committee.

The Committee is already assured of hitherto unavailable data of a sort that should make it possible to publish a preliminary report of findings well within twelve months of the date of beginning its investigations.

The Committee is now seeking preliminary pledges of financial support. It estimates that the minimum sum required for its purposes will be $10,000, and that effective use can be made of added amounts up to a total of $25,000. It makes its appeal for support, not only to business men, manufacturers and employers, but to all others who believe that sound national progress along industrial and social lines must be founded upon a definite knowledge of those basic and vital facts which concern themselves with the income and welfare of the individual.

The Committee has no conclusions or theories to advance and assumes no obligation to any subscriber other than to make and publish its determinations of fact. This freedom of action and impartiality of attitude is an essential element in the undertaking, and for this reason the Committee is seeking widely distributed support rather than large contributions from individual sources.

No call for the payment of subscriptions will be made until the sum of $10,000 has been pledged, and a formal organization has been effected.

June 4, 1917

The reader will note that $10,000 was considered sufficient to launch the undertaking, although there was a pious wish for as much as $25,000, less than the National Bureau now spends in one month.

Although the committee was organized to study the distribution of income, we had thought of Business Cycles as the second project. Rorty was greatly impressed by and enthusiastic about Professor Mitchell's *Business Cycles* which had recently been published.

Shortly after this memorandum was written, Rorty joined the General Staff of the Army. When later in the year I saw him in Washington in the uniform of a Lieutenant Colonel, he told me he was about to sail for France, but that the new organization for the study of National Income was foremost in his mind as the unfinished business to be taken up as soon as the war was over.

It was several months after the end of World War I before Colonel Rorty was able to resume his efforts on behalf of the project. With the Committee of Economists who were to constitute the first Board of Directors fully organ-

ized, he went energetically about raising the necessary funds. By the end of the year he had completed the task single-handed. On December 29, 1919 advantage was taken of the presence of a majority of the Board of Directors —Adams, Commons, Mitchell, Stone, and Young—at the Annual Meeting of the American Economic Association in Chicago to hold a meeting at which the By-laws of the National Bureau of Economic Research were adopted. Rorty acted as Secretary, and the National Bureau of Economic Reseach was formally launched.

On May 17, 1920 the staff met for the first time with Wesley C. Mitchell as Director of Research.

PROFILES

Members of the National Bureau's Board of Directors are appointed to three-year terms as Directors at Large, as Directors by University Appointment, or as Directors by Appointment of Other Organizations. A nominating committee composed of Board members is appointed by the Bureau's president each year prior to the September annual board meeting. This committee is empowered to arrange and provide for nominations to fill vacancies within the Directors at Large (not to exceed twenty-four) and Directors by University Appointment (not to exceed fifteen) categories. Nominees to the Directors by University Appointment category are suggested to the nominating committee by universities or other educational institutions represented on the Universities-National Bureau Committee for Economic Research. Directors by Appointment of Other Organizations (not to exceed twelve) are nominated by any society or organization designated by a resolution adopted by a majority of the Directors. Academic and business economists and representatives from industry, labor, banking, accounting, finance and statistics—holding divergent economic, social and political views—serve in the nonsalaried directors' positions. Members of the Board profiled below serve as Directors at Large.

Vivian W. Henderson,

President of Clark College, Atlanta, Georgia, was appointed to the National Bureau's Board in September 1968. After obtaining his doctoral degree in economics from the University of Iowa in 1958, Dr. Henderson devoted both his professional and personal life to advancing the economic status and human rights of Negroes and other minority group members. Through academic and social leadership, government service, and numerous works dealing with the economic, educational, and employment problems that Negroes in particular must overcome he serves his community and the nation.

Dr. Henderson's counsel and advice has been sought on many occasions by government policy makers. As a result of his contributions as chief consultant and director of the Jobs and Economics Section of the 1965 Planning Session of the White House Conference on Civil Rights, President Lyndon B. Johnson appointed him director of the Special Task Force on Economic Security and Welfare for the White House Civil Rights Conference held in June 1966. During 1967 and 1968, he served as a member of the Advisory Committee for the Study of Race and Education called for by President Johnson and directed by the U. S. Commission on Civil Rights. At the same time, he was appointed by the president to serve on the Commission on Rural Poverty, and during 1968 he was chairman of the Presidential Task Force on Occupation Training in Private Industry. Through his participation in the works of these and many other national advisory committees he has helped to frame legislation directed toward bettering the employment opportunities of minority group members and others. At the international level, Dr. Henderson serves on the Education Committee and Human Rights Committee of the U. S. National Commission to UNESCO.

As president of one of the five undergraduate institutions within the Atlanta University complex, Dr. Henderson is particularly concerned with the educational and social problems of the South and of Atlanta. He devotes considerable time and effort to such regional, state, and local advisory bodies as the Southern Regional Council (as member of the Executive Committee), the Georgia Advisory Committee to the U. S. Commission on Civil Rights (as chairman), and the Atlanta Chamber of Commerce (as Board member). He is also active in the National Urban League and the National Urban Coalition, and is a Life Member of the National Association for the Advancement of Colored People. In addition, he is a member of the Board of Directors of the Atlanta Civil Liberties Union, the Atlanta Urban League, the Institute for Services to Education, the National Sharecroppers Fund, and of the Board of Trustees of the Teachers' Insurance and Annuity Association of America and of the Ford Foundation.

Alice M. Rivlin,

who was appointed as a member of the Bureau's Board in September 1971, is the first woman to serve in this position. An economist and Senior Fellow at the Brookings Institution, Washington, D.C., she has also served in government, and has written extensively on the economics of education, public finance, population, social experimentation, and the balance of payments.

Born in Philadelphia in 1931, Mrs. Rivlin grew up in Bloomington, Indiana. She graduated from Bryn Mawr College in 1952 and received her doctorate in economics from Radcliffe College in 1958.

Mrs. Rivlin first came to the Brookings Institution as a research fellow in 1957 and joined the staff of the Economic Studies division the following year. In 1963 she was promoted to the position of senior staff economist. During this period she wrote *The Role of the Federal Government in Financing Higher Education* (1961); *Microanalysis of Socioeconomic Systems: A Simulation Study* (with Guy Orcutt, 1961); *State and Local Fiscal Capacity and Tax Effort* (with Selma Mushkin); *The U. S. Balance of Payments in 1968* (with Walter Salant and others); and several demographic studies (with John C. Beresford).

During her three years as an official in the U. S. Department of Health, Education, and Welfare (Deputy Assistant Secretary for Program Analysis, 1966–68 and Assistant Secretary for Planning and Evaluation, 1968–69), Mrs. Rivlin played a major role in implementing the planning, programing, and budgeting system (PPBS) in the department and in bringing economic analysis to bear on departmental decisions. She directed studies of programs dealing with disease control, child health, human investment, medical care costs, income maintenance, and others. In 1969, she was chairman of a committee which advised the Secretary of HEW on higher education policy *(Toward a Long-Range Plan for Federal Financial Support for Higher Education),* and also served as co-chairman of a panel on social indicators *(Toward a Social Report).*

Since returning to Brookings in 1969, Mrs. Rivlin has been engaged in research in the fields of income maintenance, urban higher education, and social experimentation. She is co-author of two Brookings publications on the 1972 and 1973 federal budgets, *Setting National Priorities,* and, in 1971, wrote *Systematic Thinking for Social Action,* based on her series of H. Rowan Gaither lectures in systems science delivered at the University of California, Berkeley. The University of Michigan has awarded Mrs. Rivlin its W. S. Woytinsky Lectureship Award for her book. She currently serves as chairman of the Brookings Panel on Social Experimentation.

Other honors received by Mrs. Rivlin include the Radcliffe Founders' Award (June 1970), an honorary LL.D. from Hood College, Frederick, Maryland (June 1970), and the 125th Anniversary Award from the School of Management of the State University of New York, Buffalo (December 1971).

Mrs. Rivlin served as an editorial writer for the *Washington Post* during a three-month leave of absence from Brookings (July–October 1971), and currently writes a column for the *Post.*

Arnold M. Soloway,

elected a Director at Large in September 1971, is perhaps the Bureau's most versatile Board member. An economist, real estate developer, author, politi-

cal advisor, athlete, and entrepreneur, Dr. Soloway is devoting much time and effort to helping to plan the Bureau's development.

He received his A.B. (1942) and M.A. in economics (1948) from Brown University, and his Ph.D. (1952) from Harvard University. He began his professional career as an instructor of economics at Brown in 1946. In 1950 he joined the faculty of the department of economics at Harvard. While at Harvard he was appointed to the Administrative Board of Harvard College and he was a consultant and lecturer in the International Program in Taxation at the Harvard Law School. He also served as a research consultant to the New York Regional Project, and with Robert C. Wood produced the *Report of the New York Metropolitan Research Project* in 1955. After leaving Harvard in 1959, Dr. Soloway accepted a visiting professorship at the Graduate School of Boston College, and he became an economic consultant to a number of banks in the Boston area. During the mid-1960s he served as a consultant to the Small Business Administration and to the Economic Development Administration. His most recent venture was the development and construction of an office and residential complex, Jamaicaway Tower and Town Houses, in Boston.

Dr. Soloway has been very active in State and municipal affairs. From 1953 to 1957 he served on the Mayor's Committee on Boston's Finances. He was a member of the Consumer's Council of the Advisory Committee to the Attorney General of Massachusetts from 1958 to 1962, and during 1961–62 was Special Advisor on Fiscal Affairs to Massachusetts Governor John A. Volpe. At the present time he is a member of the Research Committee of the New England Council. Many of his publications evolved from his civic interests: *The Financial Problems of the City of Boston* (published in 1953 by the New Boston Committee), *A Balanced Fiscal Program for Massachusetts* (published in 1956 by the Massachusetts ADA), and "The North-South Highway" (published in December 1961 as a special supplement to the *Worcester County Report).*

His most recent publication, however, resulted from his concern over the problems besetting the Middle East. Written with Edwin Weiss and Gerald Caplan, *Truth and Peace in the Middle East* (Friendly House Publishers, 1971) presents a critical analysis of the Quaker Report. Dr. Soloway's knowledge of and involvement in Middle-Eastern affairs has also led him to be named chairman of the New England Leadership Conference on the Middle East. He is also a trustee and member of the Executive Committee of the Combined Jewish Philanthropies of Greater Boston.

Dr. Soloway has always had a keen interest in sports. During his undergraduate days he was a member of the All-New England Football Team and when he returned to Brown as an instructor, he was also appointed Coach of the Football Team. He served on Brown's Athletic Advisory Council from 1963 to 1966. In 1967 *Sports Illustrated* presented him with their Twenty-fifth Anniversary All-American Award.

Among the many awards Dr. Soloway has received, however, he is perhaps most proud of those which have acknowledged him as a humanitarian. He is a life member of the National Association for the Advancement of Colored People and in 1965 received the Northeast Region's Brotherhood Award

of the National Conference of Christians and Jews.

NEW PUBLICATIONS

ECONOMIC RESEARCH: RETROSPECT AND PROSPECT
Fiftieth Aniversary Series

The publications reviewed below were developed from the National Bureau's Fiftieth Anniversary Colloquium Series.

THE BUSINESS CYCLE TODAY (Vol. I)

Victor Zarnowitz, editor
Price: $10.00 (Hard Cover) $3.50 (Paperback)
Published: March 7, 1972

While economic policy measures have stabilized the U. S. economy to the point where most economists believe that severe business downturns may be a thing of the past, the 1969–70 recession clearly emphasizes that the economy continues to be characterized by periods of expansion and contraction. Focusing on the analysis of recent economic fluctuations, authors contributing to this volume conclude that the United States now has to deal with a more sophisticated policy problem: how to measure the slowdown of GNP growth, a phenomenon which Solomon Fabricant labels a "growth recession" in his paper "The Recession of 1969–70."

The authors find that the 1969–70 developments disclose not only important similarities but also significant differences when compared with earlier recessions. In particular, inflation persisted amidst a decline in production and a rise in unemployment more strongly than ever before. Such moderation and modification, for example, require that the methods of cyclical analysis be expanded chronologically to include a more complete reference, integrating the "classical" approach and the speedup-slowdown concept of "modern" growth. Ilse Mintz in "Dating American Growth Cycles" and Geoffrey Moore in "The Cyclical Behavior of Prices" reconsider the criteria for determining the severity of recessions and reappraise traditional concepts and research tools; Victor Zarnowitz examines the impact of current cyclical behavior on forecasting techniques in "Forecasting Economic Conditions: The Record and the Prospect"; and Yoel Haitovsky and Neil Wallace present model simulation approaches incorporating modern cyclical patterns in their paper, "A Study of Discretionary and Nondiscretionary Monetary and Fiscal Policies in the Context of Stochastic Macroeconometric Models." From their various perspectives, each author explores the major implications of their findings for stabilization policies and recommends future courses for business cycle research.

FINANCE AND CAPITAL MARKETS (Vol. II)

John Lintner
Price: $5.00 (Hard Cover) $1.50 (Paperback)
Published: March 7, 1972

The author stresses the need for better models of financial markets and precise formulation of the interrelationships between markets, emphasizing

that precisely quantified models of financial market operations and spending decision behavior will make it possible to implement substantially improved fiscal and monetary policies. After summarizing developments in the monetary field by isolating the dominant trends and research contributions of the past, he suggests possible directions and basic strategies for future research. Despite many advances in the "state of the art," several serious gaps remain. While the importance of money is generally recognized, economists seem unable to delineate clearly the channels through which the effects of money spread out over the economy. Neither expectations of future short-term interest rates nor expectations of future rates of price inflation are directly observed or reported in the data now at hand. Little is known about the supply and demand structures in the interrelationships between markets for long-term municipal, government, agency, utility, and industrial bonds.

Lintner concludes that research in monetary economics should shift from present approaches to analytical studies that incorporate recent econometric and theoretical advances. The research should concentrate on the inner workings of the financial sector and on the linkages between activities in the money market and in markets for real goods and services. He postulates that more knowledge of particular markets and of portfolio choices of major investors influencing the interactions within various clusters and subclusters of the markets could lead to the development of a complete econometric model of the flow-of-funds accounts.

The volume, which contains an extensive bibliography, serves as an excellent reference work for those interested in the fields of consumer instalment financing, business financing, urban mortgage credit, capital formation and financing, flows of funds and national balance sheets, and capital markets and interest rates.

POLICY ISSUES AND RESEARCH OPPORTUNITIES IN INDUSTRIAL ORGANIZATION (Vol. III)

Victor R. Fuchs, editor
Price: $5.00 (Hard Cover) $1.50 (Paperback)
Published: March 7, 1972

New research avenues that might profitably be explored in the field of industrial organization are highlighted in this volume. The authors agree that "industrial organization" should be defined broadly to include all kinds of organizations that use scarce resources to satisfy competing wants. They stress that more attention should be given to the internal behavior and organization within the firm and urge that industrial organization theories and models take account of technological and organizational change.

Apart from these similarities, significant differences in emphasis are apparent. In "Industrial Organization: Boxing the Compass," Professor James W. McKee calls for a better understanding of the relationship between regulation and industrial organization, which, he feels, will help to avoid errors in policy formulation. On the other hand, in "Antitrust Enforcement and the Modern Corporation," Professor Oliver E. Williamson calls for a reex-

amination of the implicit assumptions of conventional firm and market models, in the belief that more sophisticated modeling of the firm and market structures will result in more precise criteria for the application of antitrust policy. Richard R. Nelson's paper "Issues and Suggestions for the Study of Industrial Organization in a Regime of Rapid Technical Change" focuses on the need for a dynamic concept of the firm and research directed at determining the factors which influence organizational decision making. Finally, Ronald H. Coase, in his paper "Industrial Organization: A Proposal for Research," recommends that analysis proceed devoid of policy issues: "It is unlikely that we shall see significant advances in our theory of the organization of industry until we know more about what it is that we must explain." The prime need, Coase believes, is to explore empirically industrial organization problems, systematically gathering new data on the organization of industry; theory building can proceed from there.

Whether they are agreeing or disagreeing, all four authors make their points provocatively. The papers should prove of great interest to economists in a variety of settings—academic, business, and government.

PUBLIC EXPENDITURES AND TAXATION (Vol. IV)

Principal Paper: "Quantitative Research in Taxation and Government Expenditure"

Carl S. Shoup
Price: $5.00 (Hard Cover) $1.50 (Paperback)
Published: June 19, 1972

After tracing the evolution of public expenditure and taxation research over the past half century, the author focuses on the impact which particular studies have had on policy formulation. He considers the following questions: How may a more equitable distribution of the tax burden be achieved? What is the impact of various tax structures on low, middle, and upper income groups? How do taxation policies affect investment practices and other aspects of business behavior? Do federal plans to share revenue with states present an alternative to federal tax reductions? What role should the government play in distributing tax revenue and what criteria should govern revenue distribution? What are the effects of taxation and subsidies or free services on growth, on labor supply, and on efficiency in the allocation of resources?

Shoup predicts that future research emphasis will be placed on the development of analytic models designed to anticipate the effects of various tax substitutions, particularly with respect to analyzing income redistribution in light of recent policy recommendations involving subsidies, revenue sharing, and the like. He also expects that significant studies will be mounted to ascertain the effects of financing public expenditure increases through new tax measures.

With these and many other suggestions students of public finance are challenged to supply the quantitative evidence needed for meaningful policy decisions.

ECONOMIC GROWTH (Vol. V)

Principal Paper: "Is Growth Obsolete?"

William D. Nordhaus and James Tobin
Price: $5.00 (Hard Cover) $1.50 (Paperback)
Published: June 5, 1972

As the ranks of concerned environmentalists swell, more and more voices across the nation are speaking out against continued economic growth, which, these critics contend, is responsible for lowering the quality of American life—notably in our urban centers—and for accelerating the depletion of our natural resources. Yet, on the basis of comprehensive quantitative measurements of the annual real consumption of households from 1929 to 1965, Professors Tobin and Nordhaus find no evidence to substantiate this allegation. Concluding that growth is not obsolete, they see no reason to arrest general economic growth at present. They do suggest, however, that proper incentives be provided to conserve resources which currently cost users less than the true social cost.

The authors have developed a statistical innovation called a "Measure of Economic Welfare" (MEW), which represents the first serious quantitative attempt to provide a comprehensive measure of output that is welfare-oriented rather than production-oriented. This alternative index relies on U. S. national income data adjusted to depict the quality as well as the quantity of economic growth. The figures indicate that MEW has been growing, a fact which leads Tobin and Nordhaus to observe that national product accounts seem to understate increases in economic welfare.

With regard to the relationship between population growth and economic growth, the authors believe that the current trend of declining fertility in the United States will "significantly increase sustainable per capita consumption." But even if zero population growth should result, "there is no reason to shut off technological progress. The classical stationary state need not become our utopian norm."

HUMAN RESOURCES (Vol. VI)

Principal Paper: "Human Capital: Policy Issues and Research Opportunities"

Theodore W. Schultz
Price: $5.00 (Hard Cover) $1.50 (Paperback)
Published: June 26, 1972

This volume considers the impact that the development and application of human capital theory has had on economic research and policy formulation. After outlining the devolopment of human capital research done to date, Schultz goes on to speculate about future devolopments in this area, particularly with reference to the interaction between policy and research. He presents a discussion of the supply and demand considerations that determine

the course of any economic research, and proceeds to offer a wide-ranging agenda for human capital research.

Schultz divides advances in human capital research into two parts. The "capital" part rests on the proposition that certain types of expenditures create productive stocks embodied in men that provide services over future periods particularly affecting market place activities. The second part rests on the allocation of "time," which has led to the economic treatment of a wide array of nonmarket activities. He predicts that during the next decade a major breakthrough in economic research will result from rigorous analysis of the effects of human capital on the nonmarket sector.

In his extensive exploration of the policy questions to which human capital theory is pertinent, the author begins by examining the tradeoffs occasioned by various choices between equity and economic efficiency. He then speculates upon the effects of current and anticipated policy decisions in such areas as education, health, population growth, and labor market shifts.

QUANTITATIVE ECONOMIC RESEARCH: TRENDS AND PROBLEMS (Vol. VII)

Simon Kuznets
Price: $5.00 (Hard Cover) $1.50 (Paperback)
Published: July 26, 1972

Simon Kuznets, this year's winner of the Nobel Prize in economics, offers a series of broad judgments on conditions of quantitative economic research and on its trends in this country—judgments that reflect a set of personal views and observations grounded in some thirty-five years of research experience and backed by sufficient illustrations to provide a useful basis for discussion of needed research. Kuznets stresses the importance of economic measures and the statistical data on which they are based. He also emphasizes the dependence of economic measures upon the social philosophy of the time and place to which they refer.

He suggests that an agenda for future economic research could be developed around the central theme of economic growth, pursued, perhaps, on a comparative international basis. In his view, "The need for a wider historical and analytical perspective is obvious. It is not clear that the search for such a perspective and a more sustained and objective study should concentrate on economic processes. There are other aspects of social structure and performance, which, at least at first glance, seem to lag behind in their capacity to adjust to technological and economic advance. But there are enough economic problems in the growth and changing structure of this and other nations to demand continuous and wider effort. . ."

REPRINTS

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

Boschan, Charlotte, "The NBER Time Series Data Bank," *Annals of Economic and Social Measurement,* Vol. 1, No. 1, January 1972.

Fisher, Franklin M., "On Price Adjustment without an Auctioneer," *The Review of Economic Studies,* Vol. XXXIX (1), January 1972.

Hughes, Edward F. X., Victor R. Fuchs, John E. Jacoby, and Eugene M. Lewit, "Surgical Work Loads in a Community Practice," *Surgery,* Vol. 71, No. 3, March 1972.

Kravis, Irving B., and Robert E. Lipsey, "The Elasticity of Substitution as a Variable in World Trade," *International Comparisons of Prices and Output,* Studies in Income and Wealth, No. 37, 1972.

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Landes, William M., and Lewis Solmon, "Compulsory Schooling Legislation: An Economic Analysis of Law and Social Change in the Nineteenth Century," *The Journal of Economic History,* Vol. XXXII, No. 1, March 1972.

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Zarnowitz, Victor, Charlotte Boschan, and Geoffrey H. Moore, "Business Cycle Analysis of Econometric Model Simulations," *Econometric Models of Cyclical Behavior,* Studies in Income and Wealth, No. 36, 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.

Cagan, Phillip, "The Recent Cyclical Movements in Interest Rates in Historical Perspective," *Business Economics,* January 1972.

Dresch, Stephen P., "Federal Tax-Transfer Substitutions and the Distribution of Income: A Position Paper Proposing a System of Progressive Tax Credits," *Proceedings,* National Tax Association 64th Annual Conference on Taxation, June 1972.

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Kravis, Irving B., and Robert E. Lipsey, "International Trade Prices and Price Proxies," presented at the Conference on the Role of the Computer in the Economic and Social Development of Latin American Countries, October 1971.

Solmon, Lewis, "Capital Formation by Education—1960," *Journal of Political Economy,* November/December 1971.

———, "Stop Trying to Make Equal Education," *National Review,* October 8, 1971.

———, and Paul Wachtel, "The Effects on Income of Type of College Attended," November 1971.

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