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*Essays in the Economics of
Health and Medical Care*

NATIONAL BUREAU OF ECONOMIC RESEARCH

*Human Behavior
and Social Institutions 1*

Essays in the Economics of Health and Medical Care

Edited by

VICTOR R. FUCHS

The City University of New York



NATIONAL BUREAU OF
ECONOMIC RESEARCH

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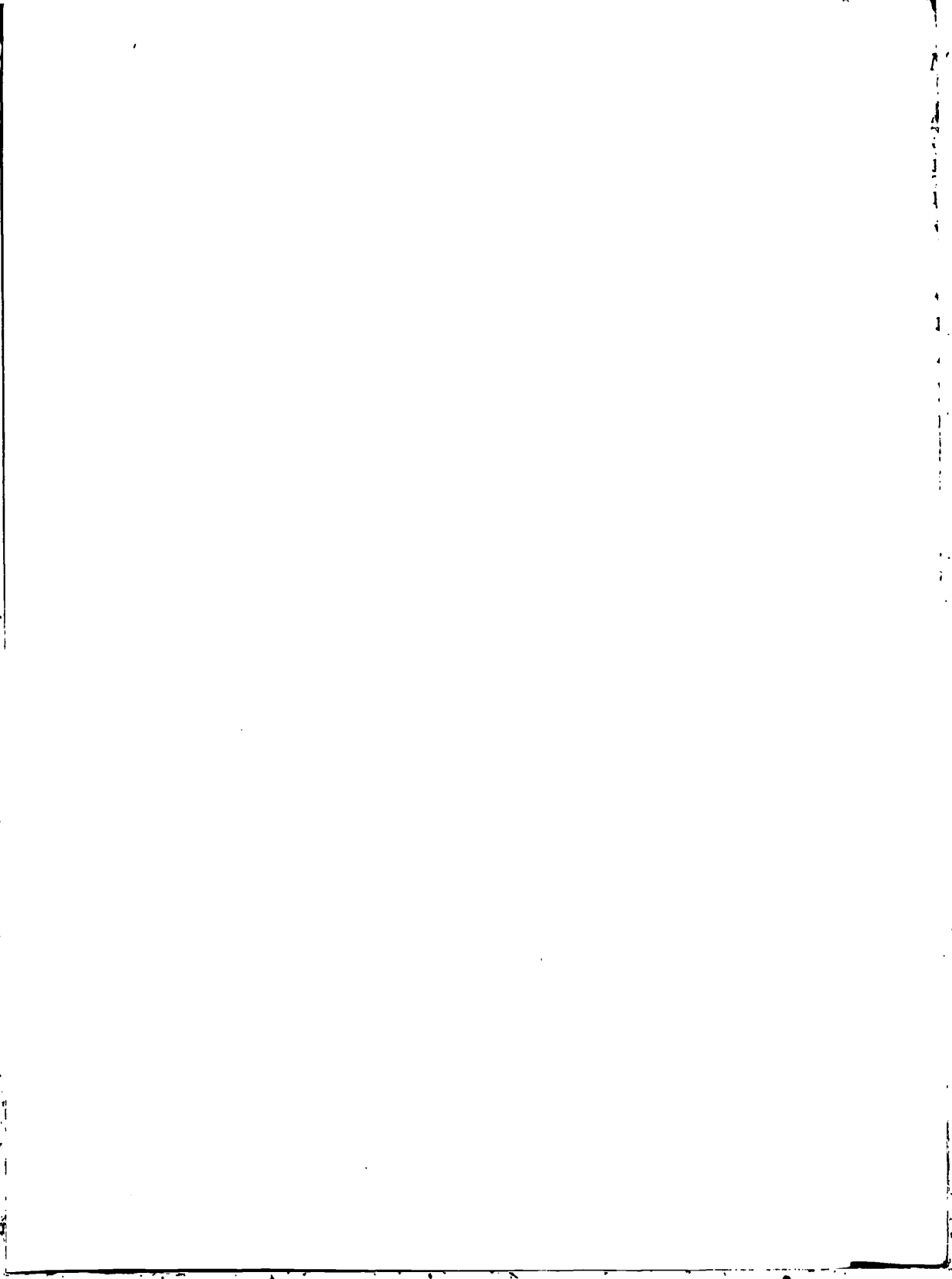
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*To the memory of George James, M.D.,
a pioneer in the application of
social science to the
advancement of health*



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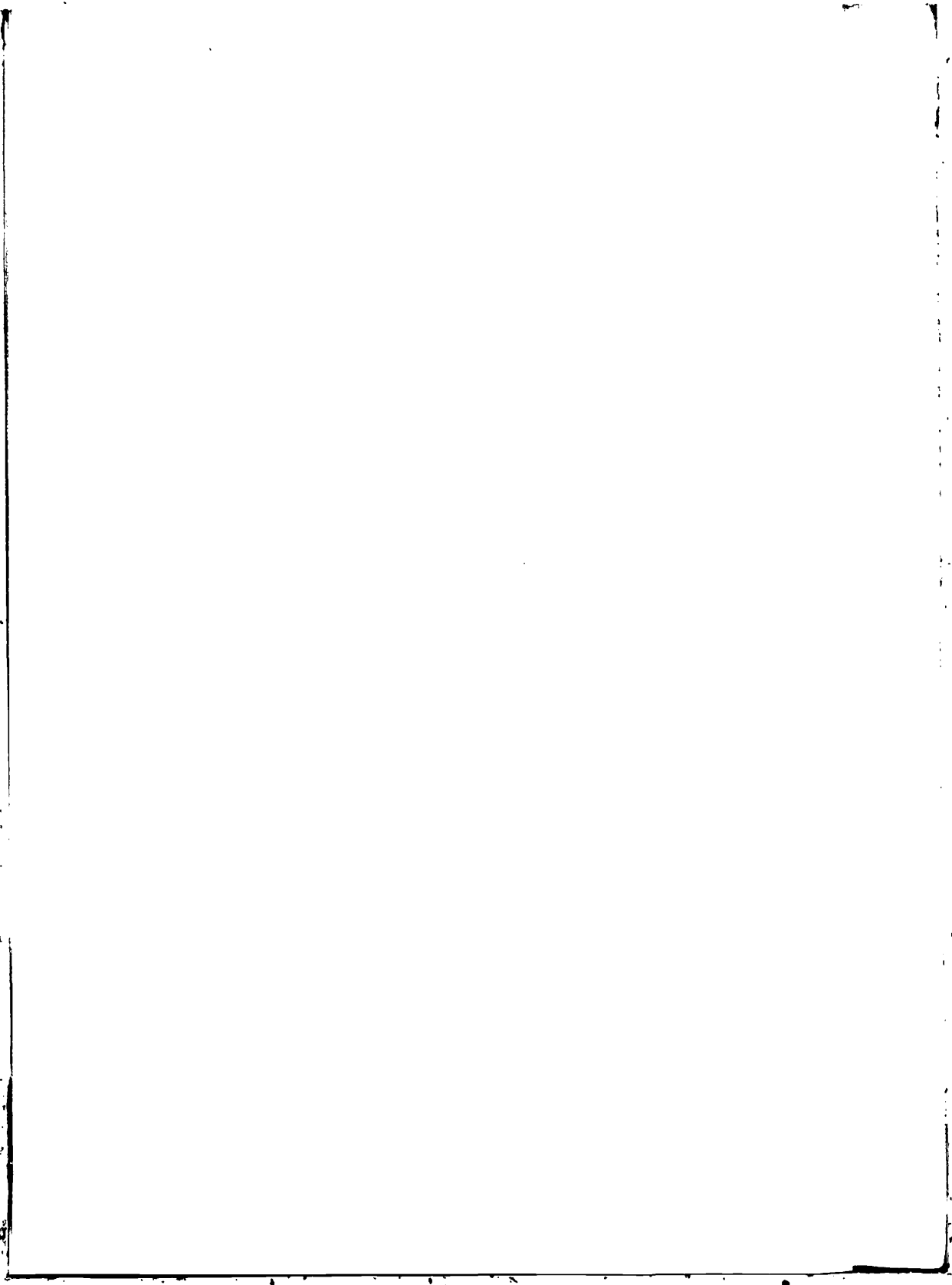
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Introduction

This book appears at a time of mounting public concern over the state of health and the system of medical care in the United States. Federal, state, and local governments find themselves overwhelmed by the rapid rise in the cost of this important service. Because of financial, racial, and geographical barriers, many Americans either obtain no care or obtain it under conditions that are degrading and inimical to good care; some patients experience shortages of personnel and facilities even when they are willing and able to pay the going price. In many quarters there is increasing awareness that the United States compares unfavorably with many developed countries with respect to such important health indexes as infant mortality and life expectancy; and within the medical profession itself questions are being raised about medical education, research, and practice.

Interest in the economic aspects of health problems is particularly strong. The National Bureau began a program of research in this field a few years ago, anticipating that our work might be relevant to decision makers some day. That day has come sooner than expected. Increasingly, economists are being called upon for 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 devices for financing medical care. As a result, my colleagues and I have had to divide our time between the slow accumulation of reliable measures and analyses, on the one hand, and the discussion of current problems and preliminary conclusions with physicians, government officials, and other groups with strong policy concerns, on the other. This book reflects these diverse demands. The essays it contains (many of which have appeared previously in highly

specialized journals)—along with related NBER studies by Michael Grossman (“The Demand for Health: A Theoretical and Empirical Investigation”) and Marcia Kramer and me (“Determinants of Expenditures for Physicians’ Services in the United States”) to be published shortly—should be viewed as interim reports on a continuing program of research by the National Bureau.

This program has two major objectives. First, we are trying to gain some insights into the factors that determine health levels in the United States. In particular, we are concerned with estimating the relative contributions of medical care and numerous socioeconomic variables, such as income and schooling. From the outset we have found it important to distinguish between health and medical care. This distinction is given its fullest theoretical treatment in Grossman’s study, but it is implicit in all our work. Our second principal focus is on the determinants of the cost of medical care and the two components of this cost—utilization and unit price. This concern has led us to consideration of the demand for medical care and the organization of the medical care industry. In addition to our research objectives, we have sought to establish a link between health experts who are unaware of economics and economists who are relatively unfamiliar with a sector that now accounts for over seven per cent of the gross national product.

A brief introduction to each of the essays in this volume is in order. The papers in Part I are intended primarily for physicians and other health specialists. They delineate the concepts, definitions, and methods used by economists in approaching problems of health and medical care. For economists, they may serve as an introduction to some of the institutional peculiarities and policy problems encountered in this sector. The first paper (chapter 1) indicates the relevance of economics to health—namely, that in a world of scarce resources and competing wants choices have to be made, indeed are being made, with regard to the amount and distribution of health services. The economist’s role is to help rationalize the decision-making process so that society may best satisfy its objectives with respect to health and other goals. The paper also considers some of the special characteristics of the health industry, such as the high costs of information, the barriers to competition, and the widespread view that services should be related to need rather than ability to pay. It raises, but by no means solves, the problems of how to measure health and how to measure the contribution of health services to health. (These questions receive more systematic attention in the studies by Auster, Leveson, and Sarachek,

by Silver, and by Grossman.) Another theme introduced in the first paper which reappears in several others that follow is the significance of individual behavior in determining health. Decisions concerning diet, smoking, exercise, and the like may have more effect on morbidity and mortality than does the consumption of medical care.

The second paper (chapter 2) sets out the traditional economic concepts of demand and supply, and asks how these concepts might be applied to explain the rapid increase in health care's share of the gross national product (from under 4 per cent in 1929 to 5.5 per cent in 1960 and to 7 per cent in 1970). The most important reason seems to be a rise in the price of health services relative to other prices facing a relatively inelastic demand. Other factors mentioned include the growth of third-party payment, a shift from household to market production of health services (e.g., nursing homes for the aged), the introduction of radically new medical procedures, and the possible need for more medical care to offset adverse changes in the environment and life-style.¹ (Some of these matters receive more systematic attention in K. K. Ro's paper in Part II, p. 69, and in V. Fuchs and M. Kramer, "Determinants of Expenditures for Physicians' Services in the United States," NBER, forthcoming.)

The final essay in Part I (chapter 3) discusses three widely shared objectives for the health care system—increasing effectiveness, efficiency, and equity. An effort is made to clarify these objectives and to indicate some of the obstacles to their realization. Reference is made to the possible surplus of surgeons, a subject now receiving major attention at the National Bureau.²

Chapter 4, the first essay in Part II, returns to the question raised in chapter 2—Why have medical care expenditures risen so rapidly in recent decades? The hypothesis that the physician plays a major role in determining the demand for care is introduced.³ It is also argued that the physician's decisions are heavily influenced by a "technological imperative"—the desire to give all the care technically possible without regard to balancing potential benefit against potential cost. The implication of this behavior for the allocation of resources is discussed.

¹ On this last point see Auster, Leveson, and Sarachek, pp. 153–58 below.

² See Hughes, Fuchs, Jacoby, and Lewit, "Surgical Workloads in a Community Practice," *Surgery*, March, 1972, for the first study in this NBER project.

³ Some support for this hypothesis is found in Fuchs and Kramer, "Determinants of Expenditures for Physicians' Services in the United States," NBER, forthcoming.

Kong-Kyun Ro's study of hospital utilization (chapter 5), which follows, suggests that utilization is not entirely governed by technological considerations. The author examines the length of stay, number of services received, and size of hospital bill for 9,000 patients discharged from twenty-two short-term general hospitals in the Pittsburgh area. After adjusting for diagnostic category, significant differences in utilization are found, depending upon who pays the major portion of the hospital bill. Patients who pay directly have the shortest stays and the smallest bills. Patients whose bills are paid by government have the longest stays and largest bills. Patients covered by insurance have intermediate utilization. This study also shows significant relationships between hospital characteristics and utilization. The presence of teaching programs in a hospital, for instance, is shown to increase the amount of care provided to patients with given diseases.

An entirely different analysis of variations in health care is provided by Morris Silver in the third paper of Part II (chapter 6). He combines unpublished data from the National Center For Health Statistics with information from the 1/1,000 sample of the 1960 *Census of Population* to explain differences in medical care expenditures and work-loss rates across twenty-four region-age-sex groups. Major attention is given to the estimation of income elasticities, and the results indicate an over-all elasticity (with respect to expenditures) of 1.2, with individual components ranging from 0.85 for physicians' services to over 2.0 for dental expenditures.

Part II concludes with a comparison of the distribution of earnings in health and other industries. As noted earlier (chapter 4), there is a continuum of need for medical care, ranging from very simple supportive services to the most complex diagnostic and therapeutic procedures. One might expect a continuum of health service personnel to meet this need, but the paper by Rand, Garrett, and me (chapter 7) shows that most persons in the health industry earn either less than the industry mean or more than twice the industry mean. In comparison with other industries there is a marked absence of personnel in the middle professional and supervisory range. To our surprise, this gap appears to be equally present in the manpower structure of a large, comprehensive, prepaid group practice plan. We suggest that this may be related to the licensure laws and other legislative or professional restrictions on the deployment of health manpower.

The study by Auster, Leveson, and Sarachek in Part III (chapter 8) is a pioneering attempt to measure the impact of medical care and other variables on health. They use statewide data and measure health

by age-adjusted mortality. Inputs of medical care are measured alternatively by expenditures or by per capita numbers of hospital beds, physicians, and other medical personnel. Alternative models and estimating techniques all yield similar conclusions, namely, that at the margin the reduction in mortality attributable to additional medical care is small. A 1 per cent increase in medical care appears to be associated with a 0.1 per cent decrease in mortality. The partial association between health and schooling is much stronger. When other variables are held constant, income is found to be positively related to mortality.⁴

The authors suggest that this may be related to the consumption habits associated with higher incomes, or reflect the adverse effects on health of earning a higher income. Such a view would help to explain why age-adjusted death rates remained relatively constant in the United States between 1955 and 1965, in spite of a substantial increase in the per capita quantity of medical services and advances in medical science.

The paper by Auster, Leveson, and Sarachek deals only with the U.S. white population. In the final part of this book (chapter 9), Silver examines similar questions, but from a different point of view and with special attention to black-white differentials in mortality. He uses data for standard metropolitan statistical areas as well as states, studies males and females separately, examines the effect of the source of income (labor or nonlabor) on the relationship with mortality, and introduces a large number of other variables intended to measure various environmental and life-style factors that may influence health.

Silver also finds a strong negative relationship between mortality and schooling. With schooling excluded from the regressions, he finds a negative relation between income and mortality, except for white males across states. The decomposition of income into labor and non-labor components suggests that the unfavorable aspects of a high income for health may be primarily related to what is involved in earning a high income rather than to consumption patterns. Marital status is another variable that shows significant results. The inverse relationship between mortality and the per cent married with spouse present is particularly strong for black males. A substantial portion of the black-white difference in mortality is explained by the variables examined by the author, but a substantial portion remains unexplained.

Silver carefully notes the qualifications that must be attached to his

⁴Grossman, in his "Demand for Health," reports similar findings, using observations on individuals and measuring health by work-loss days and by self-evaluation of health status.

study—and these apply to all of the conclusions presented in this volume as well. The paucity of data is severe. The quality of the limited data available is often poor, and the conceptual problems are considerable. We regard our findings primarily as hypotheses that require further testing and we are currently attempting to do this in a number of related projects.⁵

VICTOR R. FUCHS

⁵ Some of the subjects now under study at the National Bureau are hospital behavior (Barry Chiswick); the correlation between health and schooling (Michael Grossman); the utilization of surgical manpower (Edward F. X. Hughes); the demand for abortion (Marcia Kramer); accidents (William Landes); infant mortality (Eugene Lewit); and malpractice (Melvin Reder).

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