

# HEALTH ECONOMICS

SECOND EDITION



CHARLES E. PHELPS

# Health Economics

Second Edition

**CHARLES E. PHELPS**

*University of Rochester*

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*To Dale—Our time has just begun.*



# Preface

All those who wish to develop a deeper understanding of health economics—including undergraduate and graduate students in economics, business, public health, or public policy—should find the second edition of *Health Economics* helpful. It is written to serve a variety of users, and the content should be accessible to any student who has successfully completed an intermediate undergraduate economics course. The text presumes a working knowledge of the basic concepts of utility theory (utility functions and indifference curves), demand curves, cost curves, consumer surplus, and the like. Students who feel rusty in these areas would probably make better use of this text by undertaking parallel refresher work in microeconomics.

One of the first major economics journal articles on medical care (by Kenneth J. Arrow, who later received a Nobel Prize in economics) emphasized the importance of uncertainty, and it is my hope that *Health Economics* carries forward and extends that tradition. This text stresses the effects of uncertainty and incomplete information, both on the market for medical care and on the sustenance of health. The importance of uncertainty in generating the demand for health insurance is obvious, as every analyst of the medical care and insurance markets has learned.

As this text repeatedly emphasizes, uncertainty appears in many other important ways in the study of health economics. We understand intuitively that medical treatments don't always produce the desired results and, hence, that the production of health itself contains substantial uncertainty. As numerous studies have demonstrated, the medical profession as a whole harbors considerable uncertainty about the average and incremental effectiveness and

desirability of using many medical interventions, ranging from coronary bypass surgery to the hospitalization of a child for a middle-ear infection. Recently, questions of information have become more prominent, particularly when asymmetric information exists—that is, when the patient and the health care provider, or the insurance company, the doctor, and the patient have differing amounts of pertinent information.

Uncertainty also pervades the structure of health insurance, the contractual arrangements that exist between patients and doctors, and the relationships between doctors and hospitals, doctors and insurers, and hospitals and insurers. In addition, a wide range of regulatory interventions in the health market (e.g., licensure and new drug testing) are directly linked to uncertainty, and the presence of other regulations (e.g., laws limiting hospital construction or cost control regulations) can be indirectly linked to uncertainty as a social response to the “side effects” of health insurance. *Health Economics* examines all of these topics in detail. Even the newest forms of organizing the delivery of health care—the so-called integrated delivery systems—arise in an important way to deal with information about patients that is otherwise unobtainable in a more fragmented delivery system.

In presenting information in the text, wherever I introduce concepts that might not have been covered thoroughly in preceding economics courses (or where the student might benefit from a conceptual review), I include boxed material to elaborate on the ideas. Examples of this boxed material include a review of the concepts of elasticity of demand and monopoly pricing and a review of statistical concepts such as mean, standard deviation, and regression analysis. Chapters dealing mostly with theoretical concepts are followed immediately by companion chapters that develop applications of those concepts (e.g., concepts of demand for medical care are followed by evidence about the importance of various factors as they affect demand).

The text avoids the use of calculus, but I have included in appendices to several chapters additional material that depends in part on calculus and statistics. I have also included optional topics that lie beyond the scope of some courses for which this text might be appropriate. The chapter on international comparisons of health care systems, for example, might prove particularly useful to students of international health or to students seeking to examine U.S. health care spending in a comparative context.



The referenced readings are intended to expand students' understanding of the text material. Any student contemplating further study in health economics should become accustomed to dealing with original source materials such as journal articles and reports. Empirical studies in this field are burgeoning so rapidly that the only way to "keep up" is to read original sources. This second edition adds more than 50 new references to important material published since the first edition came out a mere five years previously, and (as is obvious to any scholar in the field) even these additions barely scratch the surface of the amount of new knowledge being produced. In the field of health economics, alas, the adept scholar must keep abreast of a wide variety of sources. Important material appears in some mainline economics journals, and several specialty journals in the field now exist, most prominently the *Journal of Health Economics* and *Health Economics* (a journal sharing the same name as this textbook, but otherwise not connected in any formal way). A series of journals in the realm of "health services research" often produce valuable studies for the scholar of health economics, including *Medical Care*, *Inquiry*, *The American Journal of Public Health*, *The Milbank Memorial Quarterly*, *Health Care Financing Review*, and *Health Affairs*. Many very important studies appear in prominent medical journals, including *The New England Journal of Medicine*, *JAMA*, and specialty journals such as *Annals of Internal Medicine*, *Pediatrics*, and the like. This is a wide literature with which one must "keep up," but electronic journal search capabilities, particularly MEDLINE in the realm of medical journals, can keep the problem within manageable dimensions.

Finally, the sets of problems and questions at the ends of chapters are designed to help students assimilate text material and to stimulate further thinking about some of the ideas presented. I have provided prototype answers to nearly half of these questions at the back of the book.

I would like to thank the following individuals who read parts or all of this book's manuscript: Jim Akin, University of North Carolina, Chapel Hill; Kim Carney, University of Texas, Arlington; Steve Chasin, Office of Planning and Evaluation, Food and Drug Administration; Patricia Danzon, University of Pennsylvania; David Dranove, Northwestern University, Kellogg School of Management; Randall P. Ellis, Boston University; Richard W. Foster, University of

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I have had the benefit of excellent research assistance from several graduate students at the University of Rochester, most notably Elizabeth Bayley, in compiling information for this second edition.

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## CHAPTER 1

# Why Health Economics?

**H**ealth care represents a collection of services, products, institutions, regulations, and people that accounted for more than 15 percent of our gross national product (GNP) in 1995, or almost \$1 out of every \$7 spent in our country. Personal spending on medical care (which occurs only rarely for most individuals) is exceeded on average only by food and housing, which “happen” every day. Estimates for 1995 show that aggregate spending on medical care has surpassed \$1 trillion, of which more than \$0.9 trillion represents “personal” health care expenditures, with the remainder arising from research, construction, and other administrative expenses. Personal health care expenses amounted to more than \$3300 in 1995 for each of the 275 million persons living in this country. This alone makes the study of health care important.<sup>1</sup> Yet, it is the many other aspects of health care economics that make the topic fascinating.

Almost every person has confronted the health care system at some point, often in situations of considerable importance or concern to the individual. Even the most casual contact with this part of the economy confirms that something is indeed quite different about health care. In fact, the differences are often so large that one wonders whether anything we have learned about economic systems

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<sup>1</sup>The most detailed accounting of national health expenditures available at this writing appears in *Health Care Financing Review* 16:1 (Fall 1994), which contains detailed data for 1993 (Levit, Sensenig, Cowan, et al., 1994). An earlier study provides detail for years 1980–2030 (Burner, Waldo, & McKusick, 1992). Sources of earlier years’ data come from Arnett, McKusick, Sonnefeld, and Cowell, 1986.