



CHARLES E. PHELPS

HEALTH ECONOMICS

SIXTH EDITION

Health Economics

Can we really use economic thinking to understand our health care system? *Health Economics*, now in its sixth edition, not only shows how this is done, but also provides the tools to analyze the economic behavior of patients and providers in health care markets.

Health Economics combines current economic theory, recent research, and up-to-date empirical studies into a comprehensive overview of the field. Key changes to this edition include:

- additional discussion of the consequences of the Patient Protection and Affordable Care Act (PPACA), in light of current political changes;
- an extensive discussion of quality measures;
- more discussion of preventive services;
- a new section on drug markets and regulation;
- discussion of Accountable Care Organizations (ACOs);
- new references, problem sets, and an updated companion website with lecture slides.

Designed for use in upper-division undergraduate economics studies, the book is suitable for students and lecturers in health economics, microeconomics, public health policy and practice, and health and society. It is also accessible to professional students in programs such as public policy, public health, business, and law.

Charles E. Phelps, PhD, has contributed to the field of health economics at the RAND Corporation (1971–1984) and the University of Rochester (1984–2010), USA. Now retired from the faculty, he continues through work with the National Academy of Medicine (to which he was elected in 1991) and various consulting arrangements. He has supervised 35 doctoral candidates across the fields of economics, political science, public policy, statistics, and nursing.



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Health Economics

6th Edition

Charles E. Phelps

Sixth edition published 2018
by Routledge
711 Third Avenue, New York, NY 10017

and by Routledge
2 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2018 Taylor & Francis

The right of Charles E. Phelps to be identified as author of this work has been asserted by him in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

First edition published by Prentice Hall 1997
Fifth edition published by Pearson 2013

Library of Congress Cataloging-in-Publication Data

Names: Phelps, Charles E., author.

Title: Health economics / Charles E. Phelps.

Description: 6th edition. | New York, NY : Routledge, 2018. | Includes bibliographical references and index.

Identifiers: LCCN 2017027102 | ISBN 9781138207981 (hbk.) | ISBN 9781315460499 (ebk.)

Subjects: | MESH: Economics, Medical | Health Services Needs and Demand—economics | Insurance, Health—economics | Financial Management, Hospital—economics |

Marketing of Health Services—economics | Health Policy—economics | United States

Classification: LCC RA410 | NLM W 74 AA1 | DDC 338.4/73621—dc23

LC record available at <https://lcn.loc.gov/2017027102>

ISBN: 978-1-138-20798-1 (hbk)

ISBN: 978-1-315-46049-9 (ebk)

Typeset in Minion Pro
by Apex CoVantage, LLC

Visit the companion website: www.routledge.com/cw/phelps

To Dale—our time has just begun again, after 50 years.



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

Contents

Preface to the Sixth Edition xiv

Acknowledgments xvii

CHAPTER 1	Why Health Economics?	1
	1.1 Important (if not Unique) Aspects of Health Care Economics	2
	1.2 How Markets Interrelate in Medical Care and Health Insurance	7
	1.3 Afterthought	24
	1.4 Summary	24
	1.5 Related Chapters in <i>Handbook of Health Economics</i>	25
	1.6 Problems	25
CHAPTER 2	Utility and Health	27
	2.1 How to Think About Health and Health Care (or . . . How Health Economics?)	28
	2.2 The Production of Health	30
	2.3 Health Through the Life Cycle	32
	2.4 A Model of Consumption and Health	33
	2.5 Summary	44
	2.6 Related Chapter in <i>Handbook of Health Economics</i>	44
	2.7 Problems	44
	Appendix to Chapter 2: A Formal Model of Utility Maximization	45
CHAPTER 3	The Transformation of Medical Care to Health	48
	3.1 The Productivity of Medical Care	49
	3.2 Confusion About the Production Function: A Policy Dilemma	64
	3.3 Physician-Specific Variations (Medical Practice Styles)	71
	3.4 Extensive and Intensive Margin Differences: Are They Similar?	74
	3.5 Summary	76
	3.6 Related Chapters in <i>Handbook of Health Economics</i>	76
	3.7 Problems	76
	Appendix to Chapter 3: Marginal, Average, and Total Productivity	78

CHAPTER 4	The Demand for Medical Care: Conceptual Framework	82
4.1	Indifference Curves for Health and Other Goods	83
4.2	From Indifference Curves to Demand Curves	87
4.3	How Demand Curves Depend on Illness Events	89
4.4	Demand Curves for Many Medical Services	90
4.5	The Demand Curve for a Society: Adding up Individual Demands	91
4.6	Use of the Demand Curve to Measure Value of Care	91
4.7	How Insurance Affects a Demand Curve for Medical Care	93
4.8	Time Costs and Travel Costs	102
4.9	The Role of Quality in the Demand for Care	103
4.10	Revisited: The Price Index for Health Care	106
4.11	Summary	107
4.12	Related Chapters in <i>Handbook of Health Economics</i>	108
4.13	Problems	108
	Appendix to Chapter 4: Demand Curves and Demand Elasticities	109
CHAPTER 5	Empirical Studies of Medical Care Demand and Applications	112
5.1	Studies of Demand Curves	113
5.2	Another Randomized Study: The Oregon Medicaid Experiment	121
5.3	Effects of Patients' Age and Sex on Demand	122
5.4	The Effects of Illness on Demand	123
5.5	Lifestyle and Its Effects on Demand	123
5.6	The Demand for "Illness"	125
5.7	Further Discussion of Prescription Drug Insurance	128
5.8	Other Studies of Demand for Medical Care	130
5.9	Applications and Extensions of Demand Theory	133
5.10	Decision Theory: Deriving the "Right" Demand Curve for Medical Care	136
5.11	Cost-Effectiveness Ratios and Demand Curves	137
5.12	Why Variations in Medical Practice?	138
5.13	Summary	138
5.14	Related Chapters in <i>Handbook of Health Economics</i>	139
5.15	Problems	139
	Appendix to Chapter 5: An Example of Medical Decision Theory	140

CHAPTER 6	The Physician and the Physician-Firm	146
	6.1 The “Firm”—Inputs, Output, and Cost	147
	6.2 The Physician as Entrepreneur	148
	6.3 The Physician-Firm and its Production Function	148
	6.4 The Physician as Diagnostician	149
	6.5 Nonphysician Primary-Care Providers	154
	6.6 The Size of the Firm: Group Practice of Medicine	156
	6.7 Practice Ownership Patterns	159
	6.8 The Physician as Labor	161
	6.9 The Aggregate Supply Curve: Entry and Exit	166
	6.10 The Open Economy: U.S. and Internationally Trained Physicians	166
	6.11 Summary	168
	6.12 Related Chapters in <i>Handbook of Health Economics</i>	169
	6.13 Problems	169
	Appendix to Chapter 6: Cost Passthrough	170
CHAPTER 7	Physicians in the Marketplace	173
	7.1 Physician Location Decisions	174
	7.2 Consumer Search and Market Equilibrium	179
	7.3 The Consequences of Incomplete Search	190
	7.4 Actual Search by Patients	191
	7.5 Advertising and the Costs of Information	192
	7.6 The Role of Licensure	194
	7.7 Estimates of the Demand Curve Facing Physician-Firms	195
	7.8 Induced Demand	196
	7.9 The Role of Payment Schemes	203
	7.10 Summary	204
	7.11 Related Chapters in <i>Handbook of Health Economics</i>	205
	7.12 Problems	205
CHAPTER 8	The Hospital as a Supplier of Medical Care	208
	8.1 The Hospital Organization	209
	8.2 Who is the Residual Claimant?	213
	8.3 Where Does the Utility Function Come From?	216
	8.4 Hospital Costs	220
	8.5 Long-Run Versus Short-Run Costs	223

8.6	The Hospital's "Cost Curve"	224
8.7	Ambulatory Surgery Remakes the Hospital Sector	226
8.8	The Demand Curve Facing a Single Hospital	228
8.9	The Utility-Maximizing Hospital Manager Revisited	229
8.10	Summary	230
8.11	Related Chapters in <i>Handbook of Health Economics</i>	230
8.12	Problems	230

CHAPTER 9 Hospitals in the Marketplace 233

9.1	Hospitals and the Market for Medical Staff	234
9.2	Hospitals and Patients	235
9.3	A Model of Equilibrium Quality and Price	237
9.4	Insurance and Competition in the Hospital's Decision	240
9.5	Interaction of Doctors and Hospitals: "Goodies" for the Doctor	242
9.6	Interaction of Doctors and Hospitals: Patients for the Hospital	243
9.7	Competition: "Old Style" Versus "New Style"	244
9.8	Entry and Exit: The Pivotal Role of For-Profit Hospitals	246
9.9	The Hospital in Labor Markets	246
9.10	Nursing "Shortages"	248
9.11	Summary	251
9.12	Related Chapters in <i>Handbook of Health Economics</i>	252
9.13	Problems	252
	Appendix to Chapter 9: The Hospital's Quality and Quantity Decision	252

CHAPTER 10 The Demand for Health Insurance 257

10.1	The Demand for Health Insurance	259
10.2	Reasons People Want Insurance	260
10.3	Choice of the Insurance Policy	264
10.4	Insuring Preventive Services	269
10.5	Insurance Market Stability: The Question of Self-Selection	271
10.6	Income Tax Subsidization of Health Insurance	278
10.7	Empirical Estimates of Demand for Insurance	283
10.8	The Overall Effect of the Tax Subsidy on the Health Sector	284
10.9	"Optimal" Insurance	285
10.10	Other Models of Demand for Insurance	285
10.11	Summary	286

10.12	Related Chapters in <i>Handbook of Health Economics</i>	287
10.13	Problems	287
	Appendixes to Chapter 10	290
	Appendix A: A Detailed Calculation of Welfare Loss	290
	Appendix B: The Calculus of the Risk/Moral Hazard Tradeoff	291
	Appendix C: The Statistics of an Insurance Pool	292

CHAPTER 11	Health Insurance Supply and Managed Care	295
11.1	The Supply of Insurance	295
11.2	Insurance Exchanges in the PPACA	299
11.3	Managed care: A Response to the Incentives of Traditional Insurance	302
11.4	Why Managed Care?	303
11.5	Market Share Trends	305
11.6	Types of Interventions	308
11.7	Which Interventions Work Best for Managed Care?	317
11.8	Long-Run Issues	318
11.9	Summary	321
11.10	Related Chapters in <i>Handbook of Health Economics</i>	322
11.11	Problems	322
CHAPTER 12	Government Provision of Health Insurance	325
12.1	The Medicare Program	327
12.2	Economically Appropriate Deductibles	329
12.3	Program Additions Through Time	329
12.4	Operational Changes in Medicare	337
12.5	The Medicaid Program	350
12.6	Summary	354
12.7	Related Chapters in <i>Handbook of Health Economics</i>	355
12.8	Problems	355
CHAPTER 13	Medical Malpractice	359
13.1	Background of the Legal System in the U.S.	360
13.2	The Economic Logic of Negligence Law	364
13.3	Judicial Error, Defensive Medicine, and “Tough Guys”	366
13.4	Medical Malpractice Insurance	368
13.5	Evidence on Actual Deterrence	368

13.6	Malpractice Awards: “Lightning” or a “Broom Sweeping Clean”?	378
13.7	Tort Reform	379
13.8	How Much Can Tort Reform Reduce Costs?	382
13.9	Tort Reform Writ Large	382
13.10	Summary	383
13.11	Related Chapter in <i>Handbook of Health Economics</i>	384
13.12	Problems	384

CHAPTER 14 Externalities in Health and Medical Care 387

14.1	Externalities, Property Rights, and the Control of Externalities	388
14.2	Externalities of Contagion	389
14.3	Solutions to the Externality Problems	395
14.4	International Issues: Expanding the Scope of the Externality	397
14.5	Externalities from Tobacco	398
14.6	Information as an Externality	400
14.7	Research as an Externality	402
14.8	Reasons for Such Little Research on Medical Effectiveness	403
14.9	Transfusion-Induced AIDS and Hepatitis	404
14.10	Summary	406
14.11	Related Chapters in <i>Handbook of Health Economics</i>	406
14.12	Problems	406
	Appendix to Chapter 14: Value of Life	407

CHAPTER 15 Managing the Market: Regulation, Quality Certification, and Technical Change 412

15.1	A Taxonomy of Regulation	413
15.2	Licensure	414
15.3	Measuring Quality	418
15.4	Paying for Outcomes: ACOs in the PPACA	420
15.5	“Certificate of Need” (CON) Laws	421
15.6	Price Controls	424
15.7	Medicare Price Controls	426
15.8	Drugs and Devices: The New Wave of Medical Care	434
15.9	Summary	447
15.10	Related Chapters in <i>Handbook of Health Economics</i>	448
15.11	Problems	448

CHAPTER 16	Universal Insurance Issues and International Comparisons of Health Care Systems	452
16.1	Aggregate International Comparisons	455
16.2	Increase in Costs and Health Outcomes	459
16.3	The Patient Protection and Affordable Care Act	465
16.4	General Considerations for a National Health Policy	468
16.5	A Final Conundrum	478
16.6	Summary	478
16.7	Related Chapters in <i>Handbook of Health Economics</i>	479
16.8	Problems	479
	<i>Author's Postscript</i>	481
	<i>Bibliography</i>	483
	<i>Index</i>	500

Preface to the Sixth Edition

The fifth edition went to press just as the Patient Protection and Affordable Care Act (henceforth the PPACA or simply ACA) was coming to fruition. In the intervening years, the PPACA succeeded in some of its goals, failed in some, and got intermediate grades in other aspects of its performance. But then in 2017, the Trump Administration came to the White House, and the Republican Party had control of both the U.S. House of Representatives and U.S. Senate. Republican Party candidates had all campaigned vigorously on a promise to “repeal and replace” the PPACA. After an early failure in March, modified legislation passed the House of Representatives in May 2017 called the American Health Care Act (AHCA). However, subsequent parallel legislation failed to achieve a majority in the Senate. Thus: as this Sixth Edition goes to press, the ACA remains the law of the land, but with continued political activity to repeal and replace, or to “repair” the ACA. What emerges—and how to analyze it—will be the task of students and their professors using this book to discover and analyze.

The key issues focused on several things, all of which we will discuss at appropriate places in this sixth edition. First, about 19 million people had gained health insurance coverage under the ACA, driving the rate of people without health insurance (“the uninsured”) to about 11 percent of the under-65 U.S. population. Before the ACA became law, an estimated 18.2 percent of the same population was uninsured. So with a goal of universal coverage, the ACA had gotten a bit under 40 percent of the way toward “universal” insurance. Nobody ever anticipated true universal coverage, and ACA proponents proudly point to the gains in coverage, and anticipated more enrollment as the penalties for not having coverage (under the “individual mandate” requiring either insurance coverage or a penalty enforced through the tax system) increased through time.

Shortly after the details of the AHCA proposal became public in early 2017, the Congressional Budget Office (CBO; a neutral fiscal advisory group working for the U.S. Congress) estimated that the AHCA would lead to 24 million people losing their insurance coverage, approximately doubling the percentage of uninsured, while saving about \$30 billion per year in federal spending (less than \$100 per person per year in the U.S.). Population polls put the favorability rating of the AHCA at 17 percent, most likely driven by the CBO estimates of 24 million additionally uninsured people.

Why spend so much time talking about these political issues in the Preface to a textbook on health economics? First, because the political turmoil leaves somewhat ambiguous what will happen to the PPACA (and hence with what clarity we can speak about its successes and failures). Perhaps of greater importance, it highlights an enormously interesting set of issues in health policy. Economics is the study of tradeoffs made under constraints. That is precisely the type of discussion carried out in the U.S. Congress about “repeal and replace.”

We begin our analysis of health care by analyzing the standard *homo economicus* model of a person maximizing expected utility within a budget constraint, and seeing how that leads to an understanding of demand curves, demand for insurance, and even choice of individual therapy options for (say) cancer patients. We study how doctors behave using similar models of human behavior. We expand that thinking to help guide our understanding of how not-for-profit hospitals behave and how they make choices. And we can now vividly see

that the necessity of making tradeoffs within constraints reaches even the highest levels of national governance. Life is full of tradeoffs. This book will explore how to think about them at every level, ending with an extensive discussion (in Chapter 16) of the core issues that led to the enactment of the PPACA, and the 2017 attempts to repeal and replace it.

What's New in the Sixth Edition

The health care landscape has changed rapidly since the fifth edition went to press in 2011, and the sixth edition brings things up to date in some important ways. The biggest ambiguity that remains is what will happen to the PPACA (aka “Obamacare”) with a new U.S. Congress and new president vowing to repeal and replace it, but (as of the time this edition goes to press) not reaching consensus on how to do that. The major changes associated with the PPACA include:

- expansion of coverage under the PPACA and discussion of where it failed;
- pricing reforms and experiments to change the ways hospitals and doctors are paid, including new methods of linking quality of care to Medicare payments;
- discussion of the Health Insurance Exchanges and interaction with the tax for non-compliance with the individual mandate; and
- Medicaid expansion and Medicaid Managed Care.

During the 2016 U.S. presidential election, the one apparent point of agreement between the two major-party candidates was that prescription drug pricing deserved major policy attention. The sixth edition greatly expands the discussion about prescription drugs, showing that they represent not 10 percent but 16 percent of all health care spending, and includes new analysis of the effects of the Waxman-Hatch patent extension legislation, the Orphan Drug Act, and the role of generic competition.

Other additions to the sixth edition include:

- data tables are brought up to date where new data are available;
- a wholly new explanation of the demand for preventive care;
- new information on the role of tort law in driving health care costs;
- new data on the effects of insurance coverage on health outcomes;
- discussions about the growing importance of high-deductible health plans (HDHPs);
- related to the growing importance of HDHPs, new information about price-shopping and how it helps people with HDHPs save money;
- extended discussion about changes in Part D (prescription drug coverage) and the expanding role of Medicare Advantage (the voluntary voucher program in Medicare);
- public health updates on Ebola and Zika outbreaks; and
- looking ahead to experiments with global budget caps and all-payer diagnosis-related groups (DRGs) in Canada and the U.S.

What Comes Next?

At the point in time when you use this textbook in a college course, much may have changed in the political arena since the time of this writing. Hopefully, you and your professors will be better able to understand these changes with the tools you will learn while studying health economics.

The other issue I wish to highlight is the urgency of getting some bright minds to think about these issues. As you will read in Chapter 1, if current trends continue, our health care system is in for some troublesome times. If the current health care system remains absolutely static—no changes in relative prices, per-person use rates, or technological innovation—then simple changes in the age mix of the U.S. population will drive the current budget share for health care from 18 percent to 23 percent by the year 2050. And if the steady increase in the relative prices of medical care continue as they have for the past half-century at 1.7 percent above inflation—driven primarily by technological change—that budget share will reach 42 percent by 2050. These numbers will not change unless somebody—perhaps you—finds a way to alter the current course of the health care system. Hopefully, this book will provide you with some of the tools to help think about these issues constructively.

■ Additional Resources

Each chapter points readers to key chapters in the two-volume compendium *Handbook of Health Economics*, edited by Anthony Culyer and Joseph P. Newhouse (2000). This two-volume series (part of an extended series of Handbooks in Economics edited by top scholars in their fields) contains summary articles from state-of-the-art researchers in topics spanning a wide array of the field of health economics. These articles, while “dated” to the 2000 publication year, still stand as a useful resource for scholars in this field and will do so for years to come. This sixth edition adds appropriate references to the second volume of the *Handbook of Health Economics*, published in 2012, edited by Mark V. Pauly, Thomas G. McGuire, and Pedro P. Barros.

The companion website for *Health Economics*, found at www.routledgetextbooks.com/textbooks/9780132948531, offers additional resources for students such as useful web links, additional material on the role of genetics in obesity and the use of alcohol and tobacco, and self-study quizzes. The companion website also features three appendices to augment the printed text—material covering marginal tax rates in the U.S. (related to Chapter 10), a review of health policy and systems in selected countries (related to Chapter 16), and an introduction to basic economics concepts (for students who would find a review of basic introductory economics useful).

Acknowledgments

I wish to acknowledge the excellent work by the editorial and production teams at Routledge Press who made this 6th edition possible. Thanks begin with Emily Kindleysides, Senior Editor, Natalie Tomlinson, Commissioning Editor, and Laura Johnson, Senior Editorial Assistant. The production team was also stellar, led by Cathy Hurren, Senior Production Editor and Gary Smith, Editor.



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

1



Why Health Economics?

Learning Goals

- ▶ Assess why the special study of health economics makes sense. Understand novel aspects of health care and ways to approach the issues.
- ▶ Identify how health care markets differ from others, particularly understanding the unique role of health insurance.
- ▶ Ascertain how medical spending has evolved over time (and why), dissecting changes over the years in medical spending.

HEALTH CARE REPRESENTS a collection of services, products, institutions, regulations, and people that, in 2015, accounted for about 18 percent of our gross domestic product (GDP), growing at about 2–4 percent of GDP per decade in recent years. In 2016, the most recent year with estimated data at this writing, medical spending reached \$3.3 trillion, or about \$10,500 per person for the 325 million people living in the United States, representing about 18 percent of the GDP of the country. About half of this comes from private spending, the other half from government spending (financed by taxation). This alone makes the study of health care a topic of potential importance.¹

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 quite different about health care. Indeed, the differences are often so large that one wonders whether anything we have learned about economic systems and markets from other areas of the economy will apply, even partly, in the study of health care. Put most simply, does anybody behave as a “rational economic actor” in the health care market?

1.1 Important (if not Unique) Aspects of Health Care Economics

Although the health care sector shares many individual characteristics with other areas of the economy, the collection of unusual economic features that appears in health care markets seems particularly large. The unusual features include (1) the extent of government involvement; (2) the dominant presence of uncertainty at all levels of health care, ranging from the randomness of individuals' illnesses to the understanding of how well medical treatments work, and for whom; (3) the large difference in knowledge between doctors (and other providers) and their patients, the consumers of health care; and (4) externalities—behavior by individuals that imposes costs or creates benefits for others. Each of these is present in other areas of the economy as well, but seldom so much as in health care, and never in such broad combination. A brief discussion of each issue follows.

As background to each of these ideas, and indeed for the entire book, the student of health economics will be served by the following notion: Uncertainty looms everywhere. Uncertain events guide individual behavior in health care. This major uncertainty leads to the development of health insurance, which in turn controls and guides the use of resources throughout the economy. The presence of various forms of uncertainty also accounts for much of the role of government in health care. Thus, if all else fails, search for the role of uncertainty in understanding health care. Such a search will often prove fruitful, and will lead to a better understanding of why the health care economy works the way it does and why the institutions in these markets exist.

Government Intervention

The government intrudes into many markets, but seldom as commonly or extensively as in health care. Licensure of health professionals, of course, is common. Many other professionals also require a license before they may practice, including barbers, beauticians, airplane pilots, attorneys, SCUBA instructors, bicycle racers, and (ubiquitously) automobile drivers. But almost every specialist in health care has to pass a formal certification process before practicing, including physicians, nurses, technicians, pharmacists, opticians, dentists, dental hygienists, and a host of others. The certification processes include not only government licensure, but often private certification of competence as well. Why does our society so rigorously examine the competence of health care professionals?

The government also intrudes into health care markets in ways unheard of in other areas. The 2010 Patient Protection and Affordable Care Act (PPACA) vastly altered the health care landscape, including (among other provisions) the requirement that all citizens maintain a minimum level of health insurance coverage, rules prohibiting any health insurer from using preexisting conditions either to determine access to health care or the cost of insurance, and established regional “exchanges” to provide health insurance for people in small-group settings. The PPACA also proposed a phase-in of taxation of high-cost insurance (“Cadillac”) plans, a number of reforms of Medicare (discussed in detail in Chapter 12), and development of a stronger focus on illness prevention in both private insurance and government programs. As this book goes to press, legislation is pending in the U.S. Congress to reshape the PPACA. And wherever that legislation ends, it will represent only the next step in the evolution of government intervention in the U.S. health care sector.

Even before the PPACA, federal and state programs provided insurance or financial aid against health expenses for an extremely diverse set of people, including all elderly persons, the poor, military veterans, children with birth defects, persons with kidney disease, persons who are permanently disabled, people who are blind, migrant workers, families of military personnel, and schoolchildren of all stripes. In addition, a broad majority of people living in the U.S. can walk into a county hospital and claim the right to receive care for free if they have no obvious way of paying for the care. Probably only in public education do various levels of government touch as many individuals at any given time as in health care. Over a life cycle, nothing except for education comes close: Because Medicare has mandatory enrollment at age 65, every person who lives to that age will become affected by an important government health care program. By contrast, many individuals go through private schools and never see a public school. Why does the government involve itself so much in the financing of health care?

The government also controls the direct economic behavior of health care providers such as hospitals, nursing homes, and doctors, far more than in other sectors of the economy. We have seen economywide price controls sporadically in our country's history, and considerable regulation in various sectors such as petroleum, banking, and (by local governments) housing rental rates. After the Organization of Petroleum Exporting Countries (OPEC) raised the price of oil fourfold in 1973, petroleum regulations became a national phenomenon for several years, with such unintended consequences as gasoline shortages and hours-long queues to buy a tank of gas. However, such intervention pales in comparison to government involvement in prices in the health sector. At least in some form, the government has been controlling prices in the health care industry continually since 1971, and these controls, at least in terms of prices paid to physicians by government insurance programs, have become more rigorous and binding over time. During the same time, the government decontrolled prices in a broad array of industries, including airlines, trucking, telephones, and petroleum. Why do we spend so much effort controlling prices in health care in contrast to those in other industries?

For decades, the United States has also seen direct controls on the simple decision to enter the business of providing health care. Even ignoring licensure of professionals as an entry control, we have seen a broad set of regulations requiring such things as a "certificate of need" before a hospital can add so much as a single bed to its capacity. Similar laws control the purchase of expensive pieces of equipment such as diagnostic scanning devices. The reverse process also attracts considerable attention: If a hospital wants to close its doors, political chaos may ensue. What leads the government to intensively monitor and control the simple process of firms entering and exiting an industry?

Quite separately, both federal and state governments have commonly provided special assistance for providing education to people entering the health care field, through direct financial aid to professional schools and generous scholarships to students in those schools. This financial aid often directly benefits a group of persons (e.g., medical students) who will enter one of the highest paying professions in our society. Why do governments proffer this support for the medical education process?

Government research is also prominent in the health care sector. Although the government accounts for considerable research in other areas, most notably those involving national security (such as aircraft design, electronics, and computers), its concern with research in health care is unique. The campus of the National Institutes of Health (NIH) in Bethesda, Maryland (on the outskirts of Washington, D.C.) surpasses that of almost every major university in the country in health-related research and education. In no other nonmilitary

area does the government directly undertake research at such a scale. How did biomedical research reach such a level of prominence?

Before any new drug reaches the market, it must undergo a rigorous series of hurdles—research requirements imposed by the government on pharmaceutical firms, drug testing, and reporting of potential side effects. New medical devices confront similar regulations now. By contrast, for example, no regulations exist to control the study of health economics—perhaps, you might argue, fortuitously for this textbook! Why does the government concern itself so much with the drugs we stuff into our mouths, and so little with the knowledge we stuff into our heads?

Other apparently minor aspects of the government can dramatically affect our lives through the health sector. A simple provision of the tax code, dating from 1954, made employer-paid health insurance exempt from income taxation. Another tax provision (Section 501(c)3 of the Internal Revenue Code) grants corporate immunity from income taxes to most hospitals and to insurance plans that account for about half of the private health insurance in the U.S. In turn, most states adopt this same tax treatment for state income and sales taxes, and most local governments exclude the same organizations from paying property taxes. Why does the health care sector receive these favored tax treatments, and how much has its size and shape been changed thereby?

These ideas touch only briefly on the extent of government involvement in health care, and indeed much of the remainder of this book refers continually to the presence and effects of the government. Astonishingly, though, the government's role in the health sector in the U.S. is much less than in almost all other countries. An online supplement to Chapter 16 at www.routledge.com/textbooks/9780132948531 describes how other nations have made choices to involve the government even more than in this country, and attempts to understand the consequences of such choices.

Uncertainty²

Uncertainty lurks in every corner of the health care field. Many decisions to use health care begin because of seemingly random events—a broken arm, an inflamed appendix, an auto accident, or a heart attack. Most other medical events are initiated because an individual is concerned about the possibility of some illness—“Do I have cancer, Doctor?” “Am I crazy, Doctor?” “Why am I so tired, Doctor?”

Uncertainty may begin with the consumer-patient in health care, but it certainly doesn't end there. Providers also confront large uncertainty, although often they don't appear to recognize it individually. Yet, in similar situations, doctors often recommend treatment at vastly different rates, and often diverge greatly on which treatment they recommend. Therapies of choice change through time, often with little or no scientific basis for the decision. How can such medical confusion persist in a modern, scientific society?

The contrast between our approach to uncertainty in some areas of medical care (e.g., new drugs) and to similarly large uncertainty in other areas (e.g., the efficacy of a new surgical technique) also commands attention. In one case, we regulate the market intensively. In the other, we license the providers broadly, and then entrust them to make appropriate decisions. Thus, new therapies may sweep through the country with not so much as a single case-control study, let alone a true randomized controlled trial such as would be required for a new drug. Why do we behave so differently in these areas of uncertainty?

Asymmetric Knowledge

Symmetry exists when two objects are identical in size, shape, or power. When two people bargain in an economic exchange, and one holds far more relevant information than the other, the issues of asymmetric information arise. “Knowledge is power,” so goes the old saying. This holds equally in international arms control negotiations and discussions between a doctor and a patient. In the former case, however, both sides have similar opportunity and (presumably) similar skill in evaluating the positions and claims of the other. In health care, just the opposite holds true: One party (the doctor) generally has a considerably, possibly massively, greater level of knowledge than the other (the patient) about the issues at hand—namely, the diagnosis and treatment of disease. Not only that, the incentives to reveal information differ. In the arms control case, the two parties hold similar incentives to reveal or hide information. In the doctor–patient case, the patient clearly wishes to reveal information to the doctor, but the doctor may be in a different position.³ Professional duty, ethics, and personal responsibility make the doctor want to be open and honest. Conflicting with this, however, the simple profit motive can lead the doctor into different choices. Put most simply, if so desired, the doctor might be able to deceive the patient, and make more money doing so. In addition, the patient would have no way of telling when this was happening (if at all). Patients, after all, decide to consult with doctors because they want the doctors’ advice.

As with many other facets of health care economics, this situation is not unique to health care. Many adults have confronted a similar circumstance in the most common setting imaginable—auto repair. There, the auto mechanic is in a position to do the same thing, that is, deceive the customer into believing that repairs are needed, and then possibly not even undertake them, because nothing really needed to be fixed.

We have evolved a variety of mechanisms to protect untutored consumer-patients in settings such as these, some applying with more force in health care than others. As Kenneth Arrow (1963) has discussed so well, one of the important reasons for “professions” to evolve, with a code of ethics and, commonly, professional licensure, is to provide an institutional mechanism to help balance transactions such as these.

Arrow also emphasizes the importance of trust in ongoing relationships, and recent developments in the study of health care and other similar markets have formalized these ideas more completely: When two parties know that they will deal with one another for a long time—the classic “doctor–patient relationship”—their behavior can differ considerably from that in a one-time transaction.

The logic of this idea is quite simple: If a mechanic at a cross-country-route service station tells you that you need new shock absorbers in your car, pointing ominously to some oil dripping from one of your shock absorbers, the chances are a lot higher that the mechanic squirted the oil there moments before, rather than that you really need new shocks. However, local mechanics have both less opportunity and less reason to try such stunts. First, they cannot keep selling you new shocks each week! Second, they know that if you catch them once at attempted fraud, your relationship will end, and you will also tell your friends to avoid them. Mid-desert service stations will never see you again, and thus have no such constraints on their behavior.

Consumers can protect themselves against fraud by learning more about the activity at hand. With auto repair, many people can learn to be effective mechanics on their own, and hence less likely to be subject to fraud. With the purchase of stereo equipment, we at least can listen to the quality of the sound. With these and many other activities, we also can return the product to the seller or the device to the repair person if it doesn’t function correctly. You can

always go back to your mechanic and say, “Do it again until you get it right!” Not only that, mechanics probably have incentives to try, if they value maintaining a lasting relationship with you.

With medical care, as with other areas in which “professionals” dominate the supply of the activity, things seem at least qualitatively different. First, the disparity of knowledge between the doctor and the patient is larger than that between the customer and the auto mechanic. A reasonably intelligent person can learn quite a bit about auto repair in a relatively short period of time.

Perhaps more important, it may prove difficult to trade in a “service” when it doesn’t work properly. By its very nature, a “service” involves the participation of the patient’s body. If a surgical mistake is made, trade-ins may be hard to come by. Obviously, many medical mistakes are self-correcting, and many others can be restored with further medical intervention, but it seems reasonable to state that, on average, mistakes are harder to correct with services than with goods, services having less recourse to trade-ins as an ultimate fallback strategy.

The ability of individual customers to learn about the activity they purchase from others places a constraint on the amount of fraud one might expect. Alas, there are so many things to learn about in this world that we cannot learn enough to protect ourselves on every possible front. Adam Smith pointed this out a few hundred years ago, when he noted that “division of labor is limited by the extent of the market.” In frontier communities, we would all operate as “Jacks (and Jills) of all trades”; in a larger society, we all specialize. Because we specialize, we must depend on (and trust) others, leading to the possibility of fraud. Some of this fraud is not worth confronting. There is, in the words of one study, an “optimal amount of fraud” that we should learn to live with (Darby and Karni, 1973).

Fortunately, we are protected somewhat by our friends and neighbors who take the time to learn about auto repair (for example). They can help steer us away from clearly fraudulent mechanics toward those whom they trust. This process of acquiring information about the quality of mechanics (or doctors and dentists) proves important in the functioning of health markets, a topic to which we return in Chapter 7.

Externalities

Another area importantly separating health care from many other (but not all) economic activities is the common presence of “externalities,” both positive and negative. External benefits and costs arise when one person’s actions create benefits for or impose costs on others, and when those benefits and costs are not privately accounted for in individuals’ decisions. Many early successes in medicine dealt with communicable diseases, probably the purest form of an event with externalities. When people get sick with a communicable disease such as polio or the flu, they not only bear their own illness, they also increase the risk that their relatives, friends, and neighbors will contract the same illness. When they take steps to avoid such diseases, they confer a benefit not only on themselves, but on those around them. For example, the social benefit of getting a flu shot exceeds the private benefit. If people balance the costs of flu shots (including monetary costs, time, inconvenience, pain, and the risk of an adverse reaction) with just their private benefits (the reduced risk of contracting the flu for a season), they will underinvest in flu shots from a societal perspective.

Many health care activities have little or no external benefit or cost, but surprisingly many other such activities do. Most of the major health care activities with significant externalities have become such a part of the background of our society that we seldom recognize their presence or consequences. Sewage control, mosquito abatement, quarantine rules for

certain diseases, and massive inoculation programs for infectious diseases often pass unnoticed by the average person.

Other apparently private activities also create external costs. For example, every time a patient receives an antibiotic injection, the odds go up slightly that a drug-resistant strain of a bacterium will emerge, immune to the current antibiotic. In relatively closed communities such as nursing homes, this can become a serious problem (Phelps, 1989).

A number of other private actions affect other people's health and safety, but the health care system deals with them only at the end of the process. Most notable are individuals' decisions to drink and drive. Half of the vehicle fatalities in this country involve at least one driver who has consumed alcohol, and the number of "external" deaths caused by drunk drivers staggers the imagination. Every three years, for example, drunk drivers cause the deaths of more people on American roads than all deaths among U.S. soldiers in the entire Vietnam War. Although these issues typically are not considered as "health care economics," the death and injury associated with such events may be more important than most diseases (and their cures) in our society.

As with everything else discussed in this section, the issue of externalities is not confined to the health care sector. Such simple local activities as fire and police protection have at least some element of externality (or "public good") about them, and on a grander scale, national defense and the formation of alliances such as NATO create the same issues. Air and water pollution, obnoxious "boom boxes" at the beach, and cars with noisy mufflers provide other examples of externalities outside the area of health. Thus, although externalities may be an important part of some medical activities, they are not unique to health care markets.

1.2 How Markets Interrelate in Medical Care and Health Insurance

To gain a better understanding of health care economics, the next step should provide a framework upon which more detailed information can be assembled. This section provides that framework; it spells out the relationships between health care and health insurance, and establishes the major forces affecting supply and demand in each market. Later chapters focus on each of these subjects in greater detail; our purpose here is to set the stage, and to show more in outline form how these various factors relate to one another.

This analysis of health markets will be "static," assuming initially that the world stands still for a while. In this analysis, we seek to determine the sort of equilibrium toward which the health care markets would naturally move. Later, we consider dynamic issues, particularly those arising from development of new knowledge about medical care and health, and those arising from broad economic events (such as persistent economic growth). After we have this structure in hand, we will go back to the important elements in this world—supply and demand for insurance, supply and demand for medical care, and technical change—and study each in more detail.

Medical Care Markets with Fixed Technology

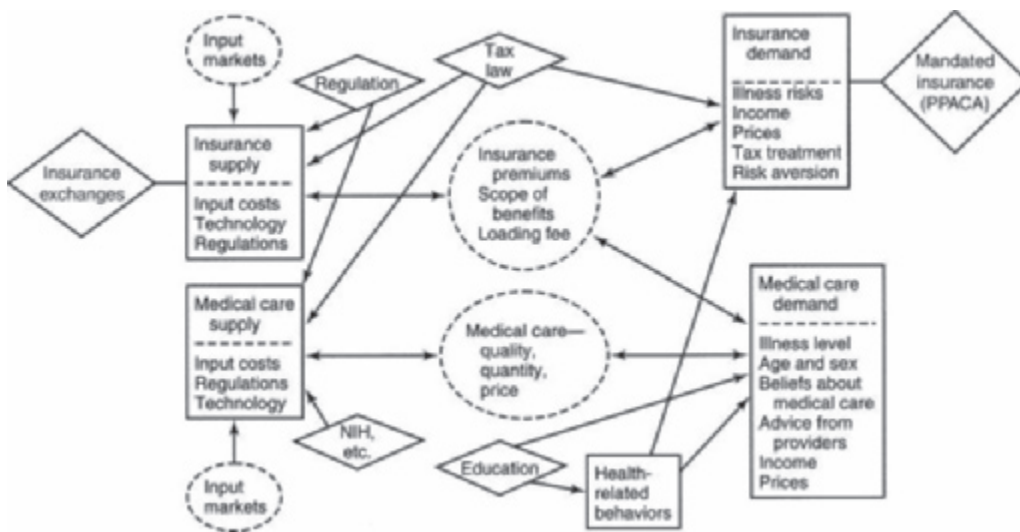
One fruitful way to analyze medical markets links together the supply and demand for health insurance with the supply and demand for medical care. In each separate market (as in any market), supply and demand interact to create the *observed quantity demanded* and the *observed price*, the product of which is actual spending in the market. Except for this direct

interaction, the analysis of competitive markets assumes that supply and demand in a market are independent of one another. Put differently, consumers shouldn't care about the cost of the inputs for a good, just its output price. Similarly, producers (at least in a competitive market) don't need to know the incomes of consumers in order to decide how to price their products. In noncompetitive markets, different ways of analyzing behaviors of sellers and buyers are needed, as we shall see in later chapters.

Health care differs considerably from most other markets in the following way: The price consumers pay to buy the product is different from the price sellers receive. This happens because of health insurance, which *lowers the price* of medical care to the consumer at the time of purchase. Of course, the premium charged by the insurance company must eventually result in recovery of all of the costs of that insurance, including medical care purchased through the plan, but the net result of insurance still leads to a lower *relevant* price for decision making by the consumer. Chapter 4 discusses these ideas in detail, but for now, we need only to create a link between insurance and medical markets: We cannot talk meaningfully about medical markets or health insurance markets separately.

Figure 1.1 shows how these (and related) markets interact. Each box in the diagram characterizes either a supply or demand side of one of the relevant markets. Dotted “circles” show the phenomena we observe as these markets interact, such as prices and quantities consumed.

FIGURE 1.1 The interaction of medical, health insurance, and other markets



With this basic structure in mind, we now turn to a description of each component in these markets.

Figure 1.1 shows immediately why health care markets differ fundamentally from other areas of the economy. We cannot simply talk about “the supply and demand for medical care” (as we might with the study of other markets), but instead we must talk about two closely interrelated markets—those for medical care and for health insurance.

Health insurance (uniquely among insurance markets) directly affects the demand for medical care through the way it pays for health care. In other insurance markets, the

insurance covers an asset that has a definable market value (such as a home or an automobile), and if some harm or loss comes to that asset (fire, theft, collision, flooding, earthquake, etc.), then an appraiser can estimate the value of the loss and compensate the owner with a direct payment of cash, which the owner can use for any purpose whatsoever (repairing or replacing the damaged asset or any other use of the money).

With health insurance, no such objective valuation can occur because the “asset” is an ephemeral stock of health (more about this in the next chapter) for which no market exists and for which no objective valuation is possible. Because of that, health insurance instead insures the purchase of medical care, which (hopefully!) will recoup losses to one’s health.⁴ But this mechanism of protecting against financial risk (paying for health care) distorts the prices we pay for treatment of illness or injury, and hence directly alters the demand for medical care. Chapters 4 and 5 discuss how this works in detail and provide considerable empirical data to help understand the magnitude of the effects in operation.

Figure 1.1 contains several new components, all due to the PPACA. On the left-hand side, the diamond-shaped box (indicating governmental roles) feeding into the “Insurance supply” box indicates the presence of new “Insurance exchanges” created by the PPACA. Chapter 11 describes these in more detail. To the right of the “Insurance demand” box sits another diamond, indicating “Mandated insurance.” This refers to the PPACA rule requiring that all individuals have health insurance coverage meeting at least minimum standards defined in the PPACA. This removes the choice of whether or not to acquire insurance; it becomes required by law. But individuals still have many potential sources of coverage and a dizzying array of options, so “consumer demand” still plays a dominant role in insurance choices. Finally, the diamond showing “Regulation” of health insurance has an important new component in the PPACA. Insurance companies are forbidden (under PPACA rules) from using preexisting conditions either to determine insurance premiums or to define limits on coverage. Previously, the Health Insurance Portability and Accountability Act (HIPAA) had curtailed the use of preexisting conditions in two ways. First, insurers could only “look back” for six months to see if a person had been treated for any illness or injury (the “test” for a preexisting condition) and could refuse coverage for only up to one year after a new enrollment. The PPACA sweeps away any uses of preexisting conditions.

Health insurance also directly enters into the choices of medical care that patients and their health care providers make in the general realm of “managed care,” a topic discussed in detail in Chapter 11.

Medical care is not really a single service or good. Rather, it is a collection of goods and services provided by professionals (doctors, nurses, dentists, pharmacists, therapists of various sorts, technicians of various sorts, and more) through a dizzying array of organizations (medical, dental, and other therapists’ practice groups; hospitals; clinics; pharmacies; nursing homes; and more) that operate under different organizational structures (not-for-profit, for-profit, governmental) and almost always under various forms of regulation (federal, state, and local). These providers (and their organizations) use or prescribe various prescription drugs and medical devices that are invented and manufactured in worldwide markets. These also come under federal regulation (the Food and Drug Administration in the U.S.).

Chapters 6 and 7 discuss the primary type of professional provider (“the physician”) and the organizations in which they typically work (“the physician firm”), and Chapters 8 and 9 discuss the most important separate health care organization (“the hospital”) and some specific aspects of governance and decision making of these organizations in their most typical organizational structure (the not-for-profit firm).