

INTRODUCTION AND OVERVIEW

Health economics is a growing field within the discipline of economics. Health economics deals with issues related to the financing and delivery of health services and the role of such services and other personal decisions in contributing to personal health.

Unlike the opening of department stores and car dealerships, there is no grand opening for a new field in a discipline such as economics. As an academic field of inquiry, there was virtually no health economics research before 1945, and relatively little after that date until the 1960s (Phelps 1995; Fuchs 1996). During the early 1960s, two Nobel laureates published papers that had an important impact on the development of health economics as a field. One was the seminal paper by Kenneth Arrow emphasizing the role of uncertainty in determining key institutional features of the health sector (Arrow 1963). The other was Gary Becker's treatise on human capital, which provided the theoretical foundation for economists to analyze the role of health care in the production of health (Becker 1964). Since the early 1960s, health economics has enjoyed several decades of remarkable growth, and the future of this field looks extremely bright as well (Fuchs 2000).

This chapter introduces some key economic concepts and describes the content of the book.

1.1 HEALTH ECONOMICS AS A FIELD OF INQUIRY

THE IMPORTANCE OF HEALTH ECONOMICS

Everyone is affected by health and personal health care services in important ways. Your health affects your enjoyment of life, your ability to contribute to your family's well-being and to be a productive member of the workforce, and, earlier in life, your ability to be productive in school. Most people receive at least one personal health care service annually. By midlife, and certainly later in life, the consumption of personal health services tends to be much higher than for younger adults. When employed, you probably will pay taxes that finance health insurance and personal health care services. Given the importance of the health sector in many countries, many of you will eventually find employment in an organization involved in health care provision or financing, or be involved with health care as an attorney, a business leader, or a government official.

The impact of health economics is felt not only within the discipline of economics but also outside the field. Health economists are as likely to be cited in scholarly journals and other publications outside the economics literature, such as in medical, public health, and public policy books and journals, as they are in economics publications. Fuchs (2000) attributed this phenomenon to the “two-hat” nature of health economics. On the one hand, health economics is a behavioral science: high-quality research in this field advances the discipline of economics in general and, more broadly, all the social science disciplines. On the other hand, health economics provides valuable insights into and empirical evidence on important health policy issues and health services research, a general field in which experts in clinical practice and public health are engaged.

Judged by their participation in the public policy arena and the media, health economists have had an important presence. Of course, our advice has been disregarded more often than it has been followed. Practical political considerations often weigh much more heavily in actual public policy decisions than they do in economists' policy recommendations. Also, new public policy directions are much more likely to be undertaken when there is a crisis. At other times, inertia prevents the adoption of even sound new ideas.

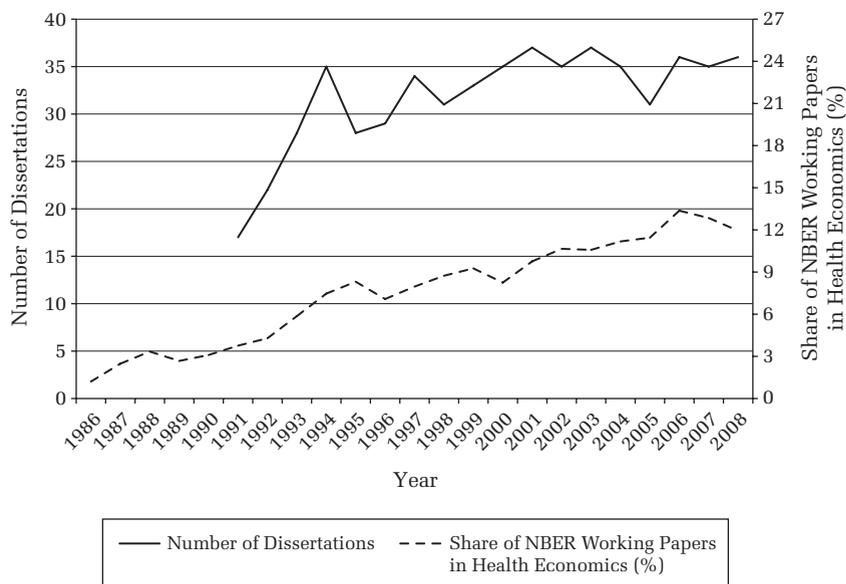
Health economists investigate positive issues—empirical relationships among variables as they are—more frequently than they do normative issues, or policy recommendations about how resources *should* be allocated and distributed. Examples of research on positive issues are inquiries into the response of demand to changes in the price of personal health care services, individuals' choices among several health insurance plans, the decision to start or stop smoking, the decisions pharmaceutical manufacturers make about investments in research and development, determinants of physicians' fees, and hospitals' price and output decisions.

People, firms, and health care organizations are motivated by incentives. Not all incentives that affect decisions are financial, but many are. To achieve socially desirable outcomes, incentives must be structured appropriately. In most markets in most economies, prices provide inducements for those levels of outputs of goods and services to be supplied that are most desired, given the resources available to the party making the decision. Governments are largely on the sidelines, policing abuses and imposing taxes to raise revenue, but in general, governments do not play an active role in resource allocation in most markets. As explained below, however, government intervention is more common in health care than in most sectors.

THE GROWTH OF HEALTH ECONOMICS

There is no common metric to measure the growth of a research field. Two alternative measures are among those that can be used to gauge the tremendous expansion of the field of health economics in the past several decades. First, the number of PhDs awarded annually in health economics has increased rapidly over time. For example, in the United States, the number of dissertations on health economics increased elevenfold from 1965 to 1994. By contrast, the number of dissertations in all fields of economics increased only 2.5 times during the same period (Fuchs 1996). A similar pattern is evident from lists of doctoral dissertations in economics published in the *Journal of Economic Literature*, which reveals a high rate of growth of health economics in terms of the number of dissertations completed during 1991–2008 (fig. 1.1).

Second, by a number of metrics, the supply of health economists and of health economics, measured in terms of books and papers published, public testimony, editorials, and other media reports, has increased. Growth in the supply of PhDs in health economics has enabled many professional schools, government agencies, and research institutes to add health economists to their staffs, which in turn has increased the capacity for health economics research and policy development. The share of National Bureau of Economic Research (NBER) working papers devoted to health economics has grown from 1.2 percent in 1986 to 12 percent in 2008 (fig. 1.1). The number of professional journals devoted to health economics has also increased. The first professional journal in the field, the *Journal of Health Economics*, began in 1982. By 2006 there were seven journals specializing in health economics (table 1.1). Particularly in view of the growth of both real expenditures on personal health care services worldwide and the growing number and size of public health programs, it seems reasonable to expect these trends to continue.

**FIGURE 1.1**

Trends in Health Economics Research.

Sources: Counts from the *Journal of Economic Literature*, 1991–2008, and National Bureau of Economic Research Working Papers, 1986–2008.**TABLE 1.1**

Professional Journals in the Field of Health Economics

Name of Journal	Founding Year	Articles Published in 2009
<i>Journal of Health Economics</i>	1982	91
<i>Health Economics</i>	1992	107
<i>Journal of Mental Health Policy and Economics</i>	1998	16
<i>European Journal of Health Economics</i>	2001	43
<i>International Journal of Health Care Finance and Economics</i>	2001	24
<i>Applied Health Economics and Health Policy</i>	2002	22
<i>Health Economics, Policy and Law</i>	2006	24
Total		327

1.2 FACTORS ACCOUNTING FOR THE GROWTH OF HEALTH ECONOMICS

Two external factors account for the dramatic growth of health economics as a field: (1) global health and longevity gains and (2) the expansion of health sectors throughout the world.

IMPROVEMENTS IN HEALTH AND LONGEVITY

Because of their effect on individuals' productivity and enjoyment of life, improvements in health and longevity are closely related to overall improvements in well-being. One study argues that between 1950 and 2000, improvements in health in the United States were as valuable as all other sources of economic growth combined (Nordhaus 2005). Medical care was unquestionably far more productive in the year 2000 than it was a century earlier. However, medical care delivery and technological advances in diagnostic and therapeutic procedures are not the only source of health improvements over the past century. Health behaviors and environmental factors, including improvements in sanitation and shifts in the occupational structure and those attributable to urbanization, have certainly played a role.

Health and longevity have improved dramatically in most countries around the world, especially in the middle-income and the most affluent countries. Oeppen and Vaupel (2002) documented secular trends in longevity in countries with the highest longevity. In these countries, female life expectancy at birth increased by 40 years in the 160 years preceding the start of the twenty-first century. This increase amounts to a rise in longevity of three months *per year* over an extended time period, 1840–2000. More recently, gains in life expectancy have also been observed in less affluent countries. For example, the longevity gain between 1960 and 2005 in the United States was 7.9 years. By contrast, the gain in life expectancy at birth in China was 35.5 years during the same period (fig. 1.2).

More specifically, 149 out of 156 countries worldwide experienced substantial longevity gains during 1960–2005 (fig. 1.3). Most countries experienced longevity gains in the range of 5 to 10 years. Eight countries, including China, Indonesia, and Vietnam, realized a gain of more than 25 years in life expectancy at birth during the 45-year period. Overall, the relationship between the magnitude of longevity gains and income level is an inverse U shape. Middle-income countries tended to experience greater gains than did low- and high-income countries (table 1.2).

Even though many countries have experienced improvements in population health and longevity, appreciable disparities remain. A widely used if imperfect measure of a country's economic well-being is the gross domestic product (GDP) per capita of population. Underlying the comparison of per capita GDP and longevity is the notion that higher income leads to better health. Of course, causality runs in the opposite direction as well: better health leads to higher income. Although

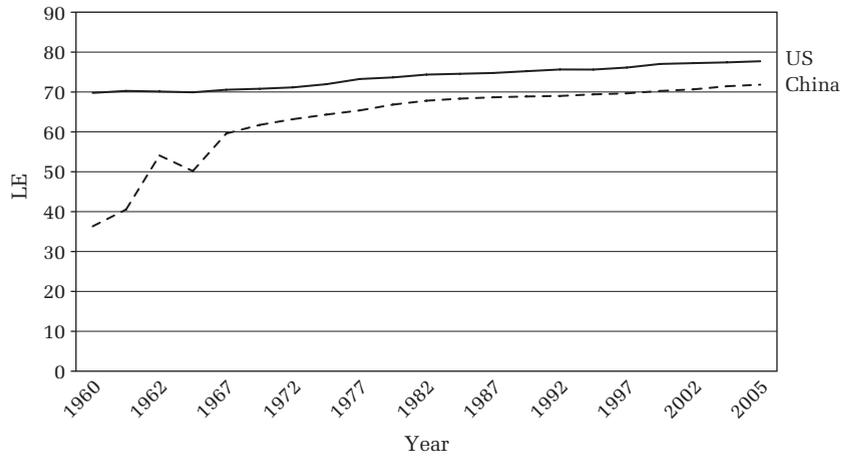


FIGURE 1.2
Life Expectancy (LE) at Birth in China and the United States, 1960–2005.
Source: World Development Indicators (2009).

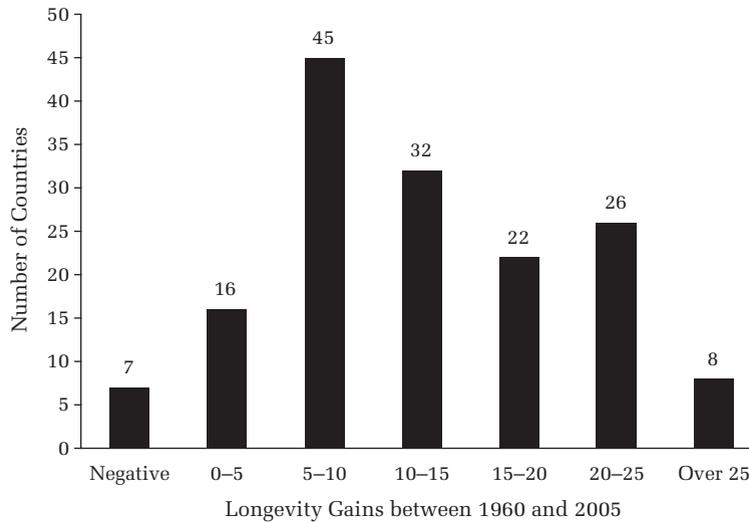


FIGURE 1.3
Global Distribution of Longevity Gains.
Note: We exclude countries with missing data on longevity gains. The figure includes data from 156 countries.
Source: World Bank Group, World Development Indicators (2007).

TABLE 1.2
Global Distribution of Longevity Gains between 1960 and 2005 by Income Level of Country

Income Group	Longevity Gains between 1960 and 2005			
	Mean	Standard Deviation	Minimum	Maximum
High-income countries	12.25	6.11	5.56	27.86
High middle-income countries	13.50	7.20	0.14	24.86
Other middle-income countries	16.32	8.25	1.06	35.51
Low-income countries	11.46	7.05	0.78	24.41
All countries	13.37	7.36	0.14	35.51

Note: Data on 149 countries are included in this table. High-income countries are those with a per capita GDP greater than the 75th percentile of world income distribution. High middle-income countries have a per capita GDP between the 75th percentile and the 50th percentile. Other middle-income countries are those with a per capita GDP in the 25th to 50th percentile range of the world's income distribution. Low-income countries have a per capita GDP less than the 25th percentile of the world income distribution.

Sources: World Bank Group, World Development Indicators (2007).

we draw a conceptual distinction here, in practice, the relationship truly works in both directions.

Countries with higher national income as reflected in their per capita GDP tend to have a higher life expectancy at birth (fig 1.4). The relationship is nonlinear in that the slope depicting the relationship between per capita GDP and life expectancy is much higher at levels below about \$4,000 per capita GDP than at levels above this. Purchasing power parity (PPP) is a measure used to compare the equivalent purchasing power of a dollar in various countries and is a more accurate measure for this purpose than are exchange rates of countries' currencies.

The circles in figure 1.4 represent a country's population size. Thus, the circles are relatively large for China, India, and the United States. When the circle for a country is above the curve depicting the average relationship between longevity and per capita GDP, the country's life expectancy is above average, given the country's per capita GDP, and conversely. Thus, in 2000, Japan, Italy, Spain, and Mexico had a higher life expectancy than one would expect based on each country's output per person. Conversely, the United States, and especially Russia and the Union of South Africa, were below average. China and India were about at the average for their per capita GDPs.

The poor performance of South Africa can be attributed in part to large differences in income between the country's black majority and white minority. Inequality in health within countries is by no means unique to South Africa but typifies several European countries (see, e.g., Mackenbach, Stirbu, Roskam, et al.

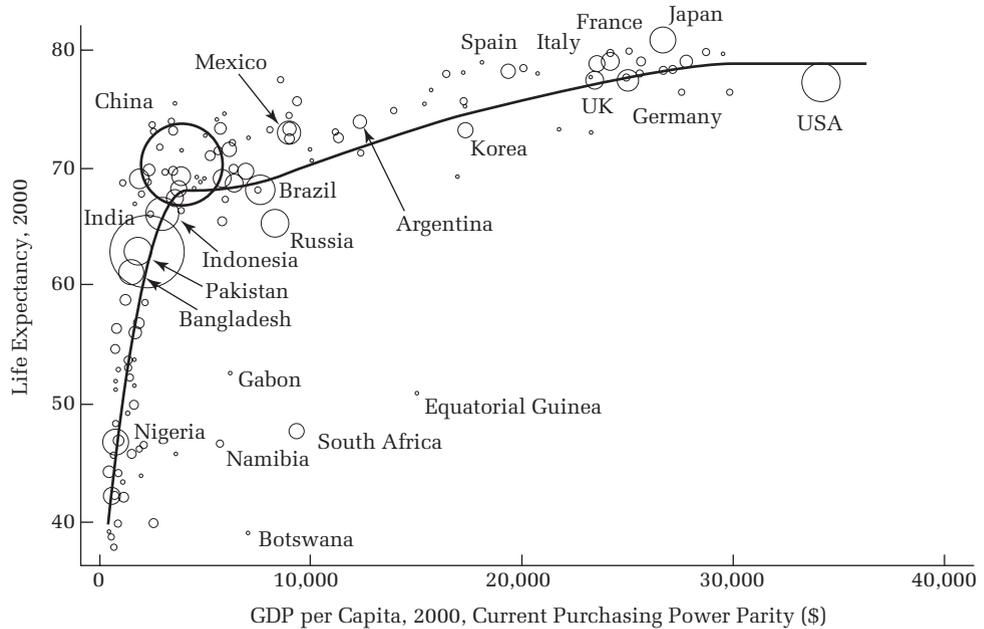


FIGURE 1.4
Relationship between Life Expectancy at Birth and Gross Domestic Product per Capita.
Sources: Deaton (2003) and Cutler, Deaton, and Lleras-Muney (2006).

2008) and the United States as well. Huge disparities in health among countries globally are a major concern, as are disparities within countries.

Several factors underlie the relationship between per capita GDP and longevity. Among these are improvements in sanitation, better nutrition, and greater availability of medical care (Cutler, Deaton, and Lleras-Muney 2006). In sum, two stylized facts are the major global improvements in population health and longevity, coupled with substantial variation in population health within and among countries. These stylized facts raise several important issues for health economists to explore. For example, to what extent does the provision of personal health services contribute to improved population health? And how much do the organization and financing of health services contribute to variation in productivity of personal health care services, measured in terms of various population health indicators?

EXPANSION OF HEALTH SECTORS

The most widely used quantitative indicator of a country's national output is its GDP, which measures the market value of all final goods and services produced in a country in a given year. In essence, GDP is a measure of the size of the economic

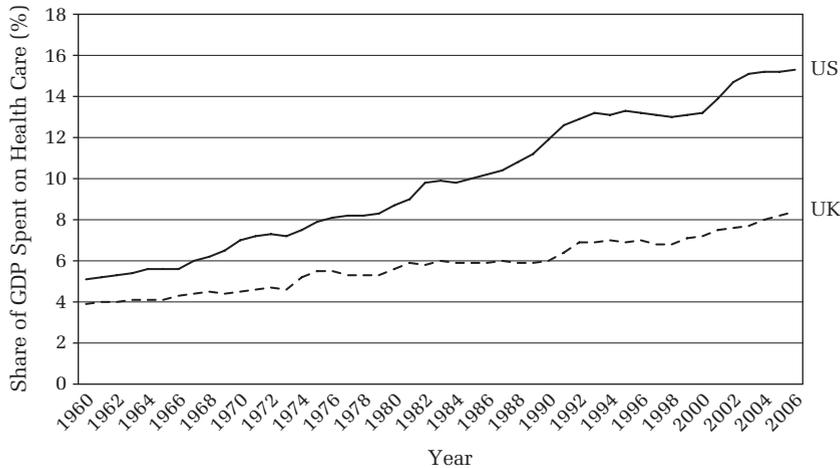


FIGURE 1.5

Total Expenditures on Health Care as Percent of Gross Domestic Product, 1960–2006.

Source: OECD, *Health Data* (2008).

pie. A country's national output can be allocated to various activities, such as housing, food, transportation, health care, education, and national defense. Thus, the share of GDP allocated to health care is a measure of the size of a country's health sector relative to its national output.

During the past several decades, many countries have experienced major expansions in the size of their health sectors, as measured by the share of GDP spent on health care. In the United States, the share of GDP allocated to health care tripled over 4.5 decades, from 5.1 percent in 1960 to 15.3 percent in 2006. During the same period, this share increased from 3.9 percent to 8.4 percent in the United Kingdom (fig. 1.5). Although different countries experienced a similar positive trend in health care spending, there are substantial variations among countries. In 2006, the share of GDP allocated to health care ranged from 1.9 percent to 17.7 percent for 175 countries globally (table 1.3).

A country's share of GDP allocated to health care is positively associated with its income level, suggesting that health care is a “normal good” (the term used in economics to mean that consumption of the good rises with increases in income). People are willing to pay more relative to other consumption goods to be in good health when they become more affluent (Hall and Jones 2007). Consequently, economic growth is an important determinant of health sector size. In addition to income, several other factors, among them technological change in medicine, population aging, and the implementation of health insurance, have contributed to the growth in real health care spending, where “real” refers to spending relative to the prices of all goods and services.

TABLE 1.3
Global Distribution of GDP Share Spent on Health Care by Income Level of Country

Income Group	Share of GDP Spent on Health Care in 2006 (%)			
	Mean	Standard Deviation	Minimum	Maximum
High-income countries	7.84	2.78	2.20	15.30
High middle-income countries	6.34	2.17	2.10	14.40
Other Middle-income countries	5.74	2.15	2.00	13.30
Low-income countries	5.60	2.10	2.20	17.70
All countries	6.38	2.46	2.00	15.30

Note: A total of 168 countries are included in this table. See table 1.2 for a description of income categories.

Sources: World Bank Group, World Development Indicators (2009).

As the health sector has expanded, there has been growing public concern about both efficiency and equity in health services delivery. *Efficiency* refers to how society uses its given resources to maximize the welfare of its members; *equity* refers to how society distributes its goods and services among its members. Concerns about efficiency and equity in any sector raise some major questions: Which, how, and for whom will health services be produced? That is, which health services are to be produced, and in what quantities? How, utilizing which technologies, are health services to be produced? Who will use those health services that are produced? In particular, technological change in medicine often increases the gap between what medicine can do and what it is economically feasible to do (Fuchs 2000).

1.3 IMPORTANT INSTITUTIONAL FEATURES OF HEALTH CARE

While the health care sectors of countries have unique features, there are also many similarities. Following are some of the similarities. First, the sectors' outputs are consumed by individuals. These outputs tend to rival in consumption. This means, for example, if one of us receives an x-ray, that same x-ray cannot be consumed by someone else. By contrast, some goods, such as national defense and public health, are *public goods*. These goods are not rival in that consumption of the safety from a strong national defense or public health policy by one individual does not reduce the potential for others to consume the goods. The health sector encompasses some public goods, in particular those deriving from biomedical research and public

health programs. However, in terms of dollar value, personal health care services dominate. Second, as with the vast majority of other goods and services, decision making about the use of personal health care services is highly decentralized. Each day, hundreds of millions of individuals around the world make decisions about the use of health services.

Third, suppliers of health services respond to financial and nonfinancial incentives as do suppliers of other goods and services. Just because a country's health system is government-run does not mean that individual suppliers are not responsive to incentives. Physicians paid a fixed salary by the government are likely to take account of the fact that an extra hour of work is not likely to result in higher compensation in deciding whether or not they will stay late to serve those patients in the waiting room after official closing time.

Given these similarities, many aspects of health economics are amenable to study using the same methods that microeconomists use to study behaviors in other markets. Health economics is a subfield of applied microeconomics. Students of health economics are helped by courses in labor economics, public economics, industrial organization, and econometrics, and conversely, the study of health economics can be helpful for students in the other applied microeconomic fields.

On the other hand, health care also has more unique features, more than we can consider here. These features are not necessarily unique to health care, but taken in combination, they do account for ways in which health care services are financed and delivered. Three important features are health insurance, externalities, and asymmetric information.

HEALTH INSURANCE

The use of personal health care services is to some extent random because the onset of illness is random. As a result, risk-averse individuals, presumably most persons, seek to reduce expenditure risk by obtaining health insurance. Because health insurance reduces personal expenditure risk, owing to the stochastic nature of illness, risk-averse people are better off with insurance. Both public and private insurance provide protection against expenditure risk.

While insurance improves a person's well-being by providing protection against loss in the event of illness, by lowering the price individuals pay out of pocket for personal health care services, consumption decisions are distorted. When there are no externalities, a topic to be discussed below, consumption of any good or service is optimal when use is at the level at which the marginal value of such services to consumers equals the marginal cost of supplying the good or service. However, health insurance lowers the out-of-pocket price, which in turn increases the quantity of personal health services demanded—a phenomenon called *moral hazard*. Given the reduced price to consumers and the resulting increase in the quantity of services demanded, use may increase to a level at which

marginal cost is far above the marginal value of such services to consumers. If so, there is a misallocation of resources in that the value consumers place on the service is less than the cost of producing another unit of the service.

To see this, imagine that medical care is provided to consumers at a zero out-of-pocket price. Then consumers will use medical care up to the point at which the last unit of service consumed has a zero value. But the cost of producing that last unit of service is likely to be far more than zero. Having output at a level at which the marginal valuation to consumers is less than the marginal cost represents a misallocation of scarce resources. Consumer well-being from available scarce resources could be increased by decreasing the output of the service.

Various ways of reducing moral hazard are employed by both government and private organizations. One alternative is to limit the supply of health resources. Another is to monitor the utilization of personal health care services, disallowing insurance coverage for services considered to be of low marginal value. Still another is to increase cost sharing, that is, the share of the payment to the provider that the insured consumer bears. While increased cost sharing increases expenditure risk, it reduces moral hazard. Some have argued that individuals in the United States are overinsured in that at the prevailing rates of insurance coverage, the societal loss in well-being attributable to moral hazard exceeds the gains in well-being that the coverage provides in terms of expenditure risk protection (see, e.g., Feldstein 1973), but there is no consensus on this issue.

Another problem, largely limited to private health insurance markets, is *adverse selection*. Adverse selection may arise when consumers know more about their own health risks, and hence their future use of personal health care services, than insurers do. Suppose you were just told by a doctor that you have cancer. Or even without going to a doctor, you feel pain in your chest when walking up a couple of flights of steps. Your first thoughts are likely to be about your health and your own longevity. But your second thought is likely to be about your health insurance coverage. If you can, you would like to purchase a comprehensive insurance policy covering large health care expenses. By contrast, if you are a jogger and a nonsmoker, you may figure that you will remain healthy, and be more interested in purchasing jogging shoes, memberships in health clubs, and bicycles than in purchasing comprehensive health insurance policies.

Adverse selection can lead consumers who are healthier to eschew high-cost, complete health insurance coverage or eschew coverage altogether, leaving the market to individuals at higher risk for adverse health outcomes. In theory, adverse selection can lead to the unraveling of insurance markets (Rothschild and Stiglitz 1976). Not knowing each insured's health risk, insurers frequently do not charge sufficiently different premiums to high- versus low-risk individuals. Thus, for any premium that allows the insurer to break even, insurance is an attractive purchase

for the high- but not the low-risk individuals. Thus, fewer low-risk persons demand insurance.

To break even on the remaining persons it covers, the insurer must raise premiums. But at the higher premium, some people who bought insurance before decide against buying insurance. These are the lower-risk of the higher-risk persons who purchased insurance last year. Again, with the sicker pool of insureds, the insurer finds that its premium income is insufficient. So it raises premiums again. The healthier persons in this group drop out of the insurance market. This process of unraveling continues until only a very few high-risk individuals remain in the market. All the rest of the population is made worse off because they have lost a mechanism for reducing expenditure risk at premiums that are appropriate for the health expenditures they are likely to incur.

There are several approaches for dealing with adverse selection. One is to eliminate a choice of insurance plans entirely, which occurs when government provides a single insurance plan. Lack of choice, however, may be welfare reducing in its own right in that less risk-averse persons would purchase less comprehensive policies than would more risk-averse individuals if choices were available.

Another option is to develop and implement improved methods of predicting each individual's future use of personal health care services. In this way, the information asymmetry between buyers and sellers of insurance is reduced. This is called *risk adjustment*.

EXTERNALITIES AND GOVERNMENT INTERVENTION IN HEALTH CARE SERVICES PROVISION

For the vast majority of goods and services, including many personal health services, the benefit from consumption accrues exclusively to the individual consuming the good or service and his or her family. However, for an important subset of health care services, the benefits of consumption extend beyond the household. These *externalities* in consumption have important implications for how health care is financed and produced.

When making private decisions, consumers may not consider the effects of their consumption decisions on others. This may be true in deciding whether or not to obtain a vaccination to prevent an infectious disease—*pure health externalities* for which consumption by person A has a direct potential effect on whether or not person B contracts the disease. If you obtain a vaccination before you travel, you not only protect yourself against the disease, you protect the passengers who sit next to you on a bus, train, or airplane as well. Particularly since the passengers are likely to be strangers, you will probably not consider the effect on these strangers when you decide whether or not to get the shot. However, from society's vantage point, the benefit to strangers is consequential. If people consider only benefits to

themselves, their consumption of personal health care services that have health externalities will be suboptimal, that is, too low. Health externalities provide the rationale for a wide variety of public health programs, ranging from malaria eradication to the provision of flu vaccines to adults and several different types of immunizations to children.

A second type is a *financial externality*. When person C smokes and subsequently contracts lung cancer, which is not contagious, because of risk pooling in the form of health insurance, person D may end up paying for person C's treatment for this cancer. To make smokers take account of financial externalities, governments may impose an excise tax on cigarettes.

A third type of externality is more subtle and falls in the category of consumption externalities. In most countries, there is a broad consensus that each person should have access to at least minimal levels of personal health care services, just as there is a widespread consensus that young children should be able to consume milk. If person E sees person F collapse on the street, for purely altruistic reasons person E may feel better if person F has immediate access to an ambulance and emergency care. The ambulance service and emergency care are *merit wants*—goods or services that generate externalities in consumption only because people think that in a just society, people should be able to consume the good or service. For this reason, to continue our example, the government may supply ambulance services or emergency care for all or for persons with low income at a price well below the cost of production. Absent government intervention, output levels of merit wants may be too low and access of the poor to such goods and services too limited.

Still another type of externality relates to *public goods*. As briefly described above, a good is public if it is nonrival in consumption. That is, consumption by person G does not exclude consumption by person H of that same good or service. For example, if G receives a physician visit, that same visit cannot be provided to H. But the use of scientific findings in treating G in no way limits H's benefit from these same findings. The public good feature of biomedical research provides the rationale for public subsidies and sometimes the public provision of such research (research conducted in government laboratories). It also provides the rationale for granting patent protection to firms engaged in such research as an alternative to government subsidy.

If there are no externalities and the good or service is rival in consumption, consumer information is good, and there are no scale economies in production, an important conclusion of economics is that competitive forces lead to provision of the good or service at socially optimal output levels. Further, under competition, socially optimal levels of quality are provided at the level at which consumers' marginal willingness to pay for additional quality equals the marginal cost of supplying it. However, in markets in which competition does not prevail but rather suppliers are able to exercise market power, price may greatly exceed marginal

cost, and as a result, output will be below its socially optimal level. Among the remedies for market power is *antitrust policy*.

Many countries have limited the role of competition by implementing the public provision of services or by leaving the market in private hands but limiting private sellers' ability to set product prices by, for example, implementing price controls or fixing prices for the health care goods and services that government purchases. Under such circumstances, competitive forces cannot operate to produce socially desirable outcomes. Government intervention may be justified when the preconditions required for competitive forces to yield socially desirable outcomes do not prevail, for example when consumer information is poor, there are barriers to entry, or there are economies of scale in production.

ASYMMETRIC INFORMATION BETWEEN CONSUMERS AND SUPPLIERS OF HEALTH CARE AND THE INSTITUTIONAL RESPONSES

Asymmetric information is present when one party to a transaction has information pertinent to the transaction that another party does not possess. For example, a company executive is likely to have information on an imminent company announcement about the profit it earned last quarter. This announcement is likely to be followed by changes in demand for the company's stock, an increase if the news is good and a decrease if the news is bad. Absent rules or regulations to prohibit this, the executive might buy or sell his stock in the company depending on the nature of the news to be announced. In this example, the executive has information relevant to a stock transaction that traders on the outside do not have. Adverse selection in insurance markets is another example. Here the insurance purchaser has private information that the insurer does not have.

A key attribute of health care is that the supplier of health care services often, if not typically, possesses information about a disease or its treatment that the patient does not have. Such asymmetric information is a potentially important source of market power for physicians.

A prerequisite for competition to prevail in a market is that consumers have good information. Health care consumers may lack sufficient information to make informed choices. One response of an uninformed consumer is to seek the advice of a physician. In fact, one of the fundamental services physicians supply to their patients is conveying information. Ideally, physicians would provide unbiased information to their patients. But a difficulty arises under conditions of asymmetric knowledge, for physicians may exploit the information asymmetry.

Society has designed a wide variety of ways to deal with the information asymmetry. *Professional norms* are designed to combat any tendency physicians might have to take advantage of their superior information. Medical school graduates take the Hippocratic oath, in which the oath taker promises to act in his or her patients' interests. While acting in patients' interest is an ideal, in practice, professional norms operate imperfectly because the strong financial motives to

supply profitable services may lead some physicians to take advantage of patients by exploiting the information asymmetry. Furthermore, what is in the patient's interest may not be very clear given uncertainties in patients' diagnoses and in the effects of various therapies. Not only is the effect of therapy often uncertain, there is often substantial heterogeneity in the effects of treatments. Owing to genetic and other factors, the same drug has different effects in different individuals. A surgical procedure likewise can differ in effectiveness, and the underlying probability of adverse effects of surgery is likely to differ among individuals as well, both because patients differ and because surgeons differ in their ability to perform the procedure.

Aside from implementing professional norms, which largely rely on the self-regulation of behavior, countries have implemented public and quasi-public regulations to cope with asymmetric information, as well as private institutional arrangements. Professional and institutional licensure and certification fall in the former category. Physicians must be licensed before they can practice medicine. Institutional licensure includes licensure of hospitals. Laws allow for the formation of private nonprofit hospitals, organizations that are not organized for the purpose of maximizing profits for shareholders (Sloan 2000).

In recent years, increasing emphasis has been placed on educating health care consumers about their options. This has taken the form of direct-to-consumer advertising of prescription drugs (Berndt and Donohue 2008) and report cards on the performance of hospitals (Gowrisankaran 2008). Even though information provision also has potential pitfalls—for example, direct-to-consumer advertising may give the seller more market power—such advertising may also help consumers know more about their treatment options.

Physicians become knowledgeable about the efficacy of treatments by reading articles in professional journals, enrolling in continuing medical education programs, listening to sales representatives of pharmaceutical manufacturers, and discussing treatments with colleagues. Given the rapid rate of technological change, evidence on efficacy is always changing. Thus, physicians, other health professionals, and health care administrators use various approaches to acquire knowledge about recent technological developments.

1.4 GOVERNMENT INTERVENTION IN HEALTH CARE MARKETS

The World Health Organization (WHO) at one time ranked countries' health systems in terms of their performance. These rankings reflected the performance of the public sector of the countries in health care as well as other factors. The WHO

TABLE 1.4
Ranking of Performance of Health Care Systems, 2000

Top 10	Rank 30–39	Bottom 10
France	Canada	Angola
Italy	Finland	Zambia
San Marino	Australia	Lesotho
Andorra	Chile	Mozambique
Malta	Denmark	Malawi
Singapore	Dominica	Liberia
Spain	Costa Rica	Nigeria
Oman	United States of America	Democratic Republic of Congo
Austria	Slovenia	Central African Republic
Japan	Cuba	Myanmar

Source: World Health Organization (<http://www.photius.com/healthranks.html>, accessed July 27, 2010).

indicates that it no longer produces a ranking table because of the complexity of the task.

Although individual rankings can be debated, it is noteworthy that France, Italy, Spain, Austria, and Japan were in the top ten of the WHO's ranking in 2000. The United States ranked thirty-seventh, which was about the same ranking as Canada, Finland, Australia, Slovenia, and Cuba. In the bottom ten, ranked 181–190, were low-income countries, mainly in Africa.

GOVERNMENT'S ROLES IN ACHIEVING AN EQUITABLE DISTRIBUTION OF RESOURCES

Governments throughout the world have been more active in health care than in most other sectors of their economies. High levels of government activity in health care have created substantial demand for policy analysis by health economists.

A major reason for government intervention is redistributive. The underlying notion is that in just societies, people should have minimal access to certain goods, irrespective of their ability to pay. Historically, such goods were provided by private philanthropy, but apparently in insufficient amounts, providing a rationale for government intervention. Absent government intervention, market forces may lead to a situation in which less affluent populations and populations disadvantaged for other reasons, such as geographic remoteness of locations at which health services are delivered relative to where persons work and live, may have inadequate access to personal health care services. Governments have a choice whether or not to transfer resources to disadvantaged populations in the form of income or in kind transfers.

Economists typically prefer income transfers, leaving it to the recipients of the transfers to allocate the subsidies in a way that maximizes well-being from the household's perspective (Currie and Gahvari 2008). However, for merit wants, societies clearly prefer to redistribute in kind out of a concern that households will underconsume the very goods and services to which societies attach the highest priority. Income transfers may be allocated to other goods and services instead of physician visits and other types of personal health care services.

Countries differ in how in-kind transfers are made. Many countries mainly rely on direct provision through public clinics and hospitals. Some high-income countries, including the UK, Denmark, Norway, and New Zealand, as well as low-income countries, such as those in sub-Saharan Africa, rely on direct government provision of personal health care services. Governments subsidize the production of personal health care services in the form of free clinics and hospitals.

In countries with limited resources, there may be few government-sponsored facilities, and the few that exist may be geographically remote from much of the country's population. Because of the high cost, many persons may obtain care only after their diseases have reached an advanced stage, if they receive care at all. Facilities receive budgetary allocations from the government on a regular basis. The limiting factors are the facilities' budgets and physical plant. Higher-income persons may obtain care from private providers who are not subsidized by the government.

Some countries have single-payer government financing, combined with private provision. Health insurance is provided as social insurance. In these countries, insurance coverage is universal or nearly so and provided without regard to a person's ability to pay. Examples of countries with single-payer systems are Canada and Taiwan. In Germany, which has had a social insurance system for health care since the late nineteenth century, coverage of employees below a certain monthly salary is mandated by law. Although such health insurance is provided by private sick funds, coverage attributes are subject to strict government oversight and regulation. For persons not employed, there is welfare-based insurance coverage similar to Medicaid in the United States.

A third alternative is the private provision of insurance, as is common in the United States. However, even in the United States, about half of expenditures on personal health services are financed by public funds.

THE EQUITY-EFFICIENCY QUANDARY AND GOVERNMENT'S ROLE

While there is a broad consensus that some redistribution of resources is appropriate, there is no consensus on either the proper amount of redistribution or how this should be accomplished. Also, in seeking to redistribute resources, there has been an unfortunate tendency on the part of some to view public policies as almost entirely redistributive and to ignore the effects of public policies on health care resource allocation.

Public policies can also have important potential effects on incentives individuals face as health care consumers, as household decision makers more generally, and as suppliers of health care. Before defining the economic concept of *efficiency* more precisely, we supply a few examples to help set the stage.

To ensure that poor families have access to personal health care services, from the standpoint of equity, it may be desirable to provide such families with a government-paid health insurance policy. However, if one has to be poor to receive this benefit, the cost to a family of engaging in work for pay can become prohibitively high. Not only is the publicly financed health insurance policy potentially lost but the family faces the prospect of paying for health insurance privately, clearly a disincentive to engage in market work.

There is a widespread misperception among some that the government can cut fees to physicians by a given percentage without there being any effect on the supply of physicians' services, or cut prices of pharmaceutical products by this amount or more without having an effect on pharmaceutical research and development. But as fees decrease, physicians may reduce the time they supply to the market, and, for private funds to be allocated to investments in research and development, pharmaceutical manufacturers must be able to count on a return that covers their cost of capital.

The social insurance model of health insurance provision has advantages in helping countries achieve a fairer distribution of income; moreover, the provision of such insurance improves individuals' well-being by reducing out-of-pocket expenditure risk as well. However, when public insurance is subsidized by compulsory payments, such as through a payroll tax, such taxes may distort decisions people make in allocating time to market work versus time spent in other pursuits.

Efficiency has two meanings in economics. One is the usual meaning, which is referred to as *technical efficiency* (Leibenstein 1966). If a unit of output can be produced with two units of labor and three units of capital, producing the unit with more inputs, for example with three units of labor and four units of capital, would be technically inefficient. Technical efficiency issues have been raised in the context of health care just as they have been raised elsewhere. For example, an issue in a health care context is whether or not for-profit hospitals are more technically efficient than hospitals run by the government or private nonprofit organizations.

The other type of efficiency, which is used more often in economics than technical efficiency, is *allocative efficiency*. The three examples above of the equity-efficiency trade-off refer to allocative efficiency. Allocative efficiency describes a situation in which scarce resources are allocated in a way that maximizes social well-being given society's resource endowment. In the production process, this is done so that the ratios of each input's marginal product to its piece are equal in all inputs.

Households are endowed with a fixed amount of time to allocate among various market and nonmarket (e.g., time spent in leisure activities, helping children with homework) uses. Households value both leisure time and the consumption of goods and services. By spending less time on leisure activities and correspondingly more time on market work, households gain more resources to allocate to consumption. If, however, the return from work is reduced because in the case of a physician, the fee is reduced, or for other families, public health insurance is withdrawn when household income increases or a payroll tax decreases the return from work, public policies distort incentives to engage in market work.

Both because redistributive effects of public policies are more readily understood by the public and because they are often easier to quantify than are allocative distortions, the redistributive aspects of public policies often receive greater public notice. On the other hand, economists have a strong theoretical framework for evaluating economic efficiency, much more so than for assessing the adequacy of a particular income distribution. For this reason, economists tend to emphasize the efficiency aspects of public policies. Assessing equity and the equity-efficiency trade-offs involves making value judgments and adopting assessment approaches, which economists tend to feel rather uncomfortable doing.

Much of economic analysis *and* this book is concerned with efficiency rather than equity issues. Lack of emphasis does not reflect a belief that equity concerns are unimportant, just that we economists do not believe we have as much to say about them. Although it is feasible to do this, technical efficiency is better judged by experts in specific technologies, such as engineers, than by economists.

GOVERNMENT'S ROLE IN CORRECTING MARKET FAILURES

In the presence of externalities, asymmetric information, and supply-side imperfections, such as barriers to entry, private markets in general and competition in particular cannot achieve a socially optimal allocation of resources. In economic jargon, absent some type of government intervention, *markets fail* to achieve a social optimum. While government may cause distortions, a common allegation in political discourse, it may also correct distortions that occur absent government intervention. Externalities may be corrected by tax and government transfer policies or by regulations that require private parties to undertake various precautions, for example that a child be vaccinated before enrolling in school or that a manufacturer eliminate or reduce pollutants arising from the manufacturing process. Incompetent or unethical physicians may be eliminated from the market by requiring that physicians have licenses. Antitrust policy may be a counterweight to private attempts to monopolize a market.

1.5 THE BOOK'S FOUR PARTS: A ROAD MAP

STRUCTURE OF THE BOOK

The structure of this book is similar to the paradigm of economic analysis, beginning with consumers on the demand side and then shifting to firms on the supply side of the market. After analyzing decisions at the individual and firm level in the second through tenth chapters, we devote three chapters to market-level analysis, which incorporates the simultaneous responses of participants on both demand and supply sides of the market. While most of the book deals with positive economics, that is, modeling the responses of market participants to the various incentives they face, two chapters deal expressly with normative issues, in particular decisions by governments about which services to cover based on comparisons of the benefits and costs of specific technologies.

This analysis is followed by chapters on the relationship of investments in health and health care to economic growth, and on the frontiers of health economics. A road map to the four parts of the book is shown graphically in figure 1.6.

Part I analyzes three types of decisions commonly made by individuals: (1) decisions about their demand for health and other consumption behaviors that

Decision Analysis at Individual and Firm Levels		
Demand Side (Part I)	Supply Side (Part II)	
Demand for health and health behavior (2)	Physician firms (5)	Quality (7)
	Hospitals (6)	
Demand for health care (3)	Nurses (8)	
Demand for health insurance (4)	Pharmaceutical firms (9)	
	Private insurer firms (10)	

System Analysis at Market Level (Part III)
Cash system and private system (11)
Semipublic system (12)
Public system (13)

Performance of Health Care Sector: Positive and Normative Aspects (Part IV)
Cost-Effectiveness analysis (14)
Cost-Benefit analysis (15)
The link between health and economic sector (16)
Frontiers of health economics (17)

FIGURE 1.6

Health Economics Road Map as Presented in This Book.

Note: Numbers in parentheses refer to chapters of this book.

affect health, (2) decisions about the amounts and types of personal health care services demanded, (3) individuals' demand for health insurance coverage.

Part II assesses the decision making of each major participant on the supply side of health care markets—physicians, nurses, hospitals, and pharmaceutical manufacturers. An important feature of health care is the key roles played by private and public insurers in decisions made at the level of individual decision makers. Hence, we consider both demand and supply of private insurance, as well as decision making by public insurers and the choices societies make in setting up their public health insurance plans.

Countries make important choices about how personal health care services are financed and about the types of organizations that supply those services, the topic of Part III. One important choice about financing involves whether the country will rely on public financing of personal health care services or allow or encourage private insurance markets. Another important choice is whether or not the country is to rely on government provision of services, privately provided services by not-for-profit or for-profit organizations, or some combination of public and private provision. These are not easy choices; Part III describes the pros and cons of the alternatives. Our goal is to provide a framework for analyzing specific types of health care systems. To accommodate students' needs for specific information about particular countries, we provide links to specific websites.

Finally, Part IV provides a direct link between health economics and public policy, starting with descriptions of economic approaches for program evaluation—how the costs and benefits of various investments in health should be quantified. This subject should be particularly interesting to students in public policy, pharmacy, and medicine since demands for evaluations of specific health care technologies occur most frequently in these contexts. Another important public policy issue relates to the size of the health care sector. Is there a particular size of a health sector that is “too large”? Too large often is interpreted as meaning that beyond some point, further spending on personal health care services is largely wasteful. There is an alternative argument that expenditures on such services contribute to a country's economic growth, and furthermore, as countries become more affluent, they demand higher levels of health and health care services for this reason. A chapter in Part IV is devoted to this set of issues. The last chapter summarizes the book by focusing on five major controversies in health economics, all of which have important consequences for public policy and future health economics research.

A brief description of the contents of each chapter follows.

PART I DEMAND FOR HEALTH, HEALTH CARE SERVICES, AND INSURANCE

Part I focuses on the demand side of the market for personal health care services. Demand decisions may be divided into decisions individuals make before becoming ill (*ex ante*) and those made after becoming ill (*ex post*). *Ex ante* decisions

involve choices about health behaviors, the use of preventive services, and insurance purchases. Health behaviors and the use of preventive care affect the probability of becoming ill. In economics, problems are solved by backward induction. Hence, in making decisions about prevention, the individual takes account of the consequences of taking or not taking care of him- or herself.

Although markets for private health insurance are small or nonexistent in some countries, it is still important to understand why people demand insurance, even if you live in one of these countries. Publicly provided insurance also fulfills the basic goal of insurance coverage, to protect people against the risk of high out-of-pocket expenditures on personal health services.

People consume personal health care services and engage in healthy behaviors because they are better off when they are in good health. However, being in good health is generally not individuals' only objective in life. The consumption of other goods and services is also of value. Some of these goods are productive in making people healthy, such as eating nutritious foods. The consumption of others may yield enjoyment, such as the consumption of tobacco products, but detract from health. In general, the consumption of personal health care services means fewer personal resources are available for consuming other goods and services.

Chapter 2 focuses on the personal demand for health and the consumption of personal health services and health behaviors as *derived demands*. An individual "produces" his or her own health, employing combinations of personal health services and health behaviors. The relationship between these inputs and health outcomes is given by a health production function. Given the product technology and prices of input and such exogenous factors as the person's genetic makeup, revealed as one ages, individuals make decisions about their health and the levels of the health inputs they "employ." Typically, the relationship between inputs and health outcomes for an individual is uncertain. Decision analysts have developed decision trees, which are a useful tool for analyzing decisions made under conditions of uncertainty. Decision trees describe production function relationships. Utilities the decision maker attaches to various outcomes are elicited as an integral part of the decision-making process. Inputs, such as how often to visit a physician and whether or not to get a flu shot, take a drug, or smoke, and output choices — expected levels of future health, are made to maximize the individual's expected utility.

The expected utility maximization framework of decision making has been the traditional approach that economists use to analyze decisions made under conditions of uncertainty. This traditional framework has been challenged, and a new subfield, *behavioral economics*, has emerged. We discuss the behavioral economics critique and empirical evidence the critics cite in support of these arguments.

Chapter 3 describes the theory of and empirical evidence on the relationship between the quantity of health services demanded and the out-of-pocket price of

such services. We discuss methods researchers have used to study the demand for personal health care and the findings of these studies. In particular, we focus on empirical evidence on the effects of such variables as out-of-pocket money prices and *time prices*—time allocated for consuming a unit of a good or service—on the demand for personal health services.

In chapter 3, the individual's health insurance coverage, either by a private or by a public insurance plan, is taken as given. Relying on the concept of expected utility maximization, chapter 4 presents the economic framework for analyzing an individual's demand for insurance and empirical evidence on factors affecting individuals' demand for health insurance coverage. As with other goods and services, an individual's demand for private insurance partly depends on its price. The price of insurance is not shown on a sticker as is the price of many other goods, such as shirts and ties and automobiles. A major objective of chapter 4 is to explain the concept of price of insurance. We show how using an expected utility framework, people can be better off with than without insurance.

In the presence of asymmetric information, in this case consumers knowing more than insurance companies about their future health and hence their potential use of personal health care services, certain types of insurance may become unavailable. Insurers do not have information on the individual's health care consumption intentions initially and thus do not charge those persons who expect to be sick a premium sufficiently high to cover the high expected use of services. Selection is adverse in that insurers do not charge a sufficiently high premium and therefore lose money on those insured individuals who expect to be high users.

PART II SUPPLY OF HEALTH CARE SERVICES AND INSURANCE

The major suppliers of personal health care services are physicians, nurses, hospitals, and pharmaceutical manufacturers. In addition, in some countries, private insurers offer coverage of personal health care services. Part II analyzes the behavior of these suppliers.

The physician is the captain of the health care team. Reflecting public law and regulation, physicians are the only providers of some health care services, such as surgery. Moreover, physicians provide medical advice to their patients and often direct the activities of nonphysician providers of health care services. Chapter 5 is about the market for physicians and physicians' services.

The supply of physicians' services depends on career decisions that physicians make, as well as decisions they make about their practices, including pricing, hours of work, the mix of services they provide, and the types of patients they accept for care. Physicians make several important decisions about their careers: (1) whether or not to become a physician, (2) the choice of specialty, (3) geographic location, and (4) type of practice (independent solo, group, or salaried practice).

Important issues about physicians' career choices discussed in chapter 5 are: (1) How important are financial incentives in the choice of medicine as a career,

choice specialty, and practice location? (2) How do physicians select practice types, and in turn, how do the incentives associated with each affect physician incentives? These questions are important in every country.

In contrast to many but not all other sectors in the economy,¹ the physician is an agent for the patient. Particularly since the physician is in a position to recommend care that he or she subsequently provides and may profit from by providing, some health economists and health policy researchers from other disciplines have expressed doubt that many aspects of the physicians' services market can be properly understood by applying analytic methods common in other fields of microeconomics, in which consumers can be assumed to be sufficiently knowledgeable about the goods being consumed (box 1.1).

A major learning objective of chapter 5 is to understand the role of agency and the model developed to reflect asymmetric information between patients and their physicians. We describe alternative models of behavior, consider stylized facts of the physicians' services markets that the alternatives can explain that more traditional models cannot explain, provide a critique of these alternative models, and summarize empirical tests and the findings of studies that have evaluated these models empirically.

Worldwide, hospitals incorporate the latest in medical technology in a country and tend to care for the most seriously ill persons. An important distinguishing characteristic of hospitals is that relatively few are organized on a for-profit basis. Rather, private not-for-profit and public ownership forms are dominant. By contrast, an important article by Kenneth Arrow (1963) explains existing widespread institutional arrangements in health care markets as second-best alternatives. For example, the first-best option would be to insure health. However, absent the feasibility of this, consumers require other protections, which, for example, nonprofit ownership of hospitals presumably provides. Whether or not not-for-profit hospitals indeed perform better than their for-profit counterparts is an empirical question, examined in this book in chapter 6.

Several interesting and important questions follow from the observation that in contrast to other sectors and parts of the health care sector, such as pharmaceutical manufacturers, for-profit hospital organizations are in the minority. Why are the other forms dominant in the hospital sector? Are for-profit hospitals more or less efficient than hospitals organized as private nonprofit or public entities? Do for-profit hospitals provide lower or higher quality of care?

In all countries, physicians are an important part of the production process in hospitals. However, physicians in some countries, mostly notably in the United States, typically are not employed by the hospitals in which they work. Rather, they work in hospitals as self-employed agents and, in important ways, rather than report to hospital officials, the hospital officials report to them. We describe a model in which physicians run the hospitals to serve their own collective interest.

1. Lawyers, real estate, and financial planners are agents in their respective markets.

Box 1.1

Two Classic Studies in Health Economics

An issue that arose during the early years of the field of health economics and persists to some extent today is whether or not health and health care services are fundamentally different from other goods and services, requiring fundamentally different analysis, or whether health and health care services are fundamentally the same but with some important nuances and subject to analysis with standard economic tools—with the tools evolving and improving over time.

In other words, is health care basically “a wolf in sheep’s clothing” or “a sheep in wolf’s clothing?” If a wolf in sheep’s clothing, relationships may not look that different, but they are fundamentally different. The implication is that economists should be very cautious about applying the methods, especially the theoretical methods, that they learned in graduate school and on the job to study health issues. If a sheep in wolf’s clothing, things may seem basically different in this field, but they are the same as in other sectors after accounting for a few nuances.

Whether or not health care is really different has important public policy implications. The stated rationale for licensure of physicians is to protect patients from incompetent and self-serving physicians. More than six decades ago, a landmark economic study of incomes in various professions, including dentistry and medicine, Milton Friedman’s and Simon Kuznets’s *Income from Professional Practice* (1945), questioned whether licensure served the public interest or instead the collective financial interest of those with licenses. In addition to assembling data on national income in the 1930s, Kuznets had assembled data on income in various occupations, completing a draft in 1936. Friedman picked up the project, completing it as his PhD dissertation in 1945. The importance of this study for health economics was its focus on barriers to entry to occupations imposed by licensure and the resulting effect of increasing physicians’ incomes above the level that would prevail under competition. Both these economists subsequently were awarded Nobel Prizes in Economics.

In 1958, Reuben Kessel published an article in the first issue of the *Journal of Law & Economics* on price discrimination by physicians, a common practice in the United States before health insurance coverage became widespread. He argued against the conventional wisdom, which was that multipart pricing of physicians’ services was an act of charity. Rather, he argued that price discrimination reflects the exercise of market power by physicians. In both Friedman and Kuznets’ book and Kessel’s article, the implication was that the motive for institutional arrangements in the markets of physicians’ services was financial gain rather than consumer protection.

At least as much as other types of personal health care services, hospital care is covered by health insurance. As a result, patients are largely insulated from the rising costs and prices of hospital care. To the extent they do not perform the role of watchdog over cost containment, countries have adopted various forms of public regulation to achieve hospital cost containment. These hospital cost-containment approaches and empirical evidence on their effectiveness are discussed in chapter 6.

The track record of regulatory approaches in curbing inflation in health care cost has been mixed. Hence, there has been increased interest in relying on market-oriented forces to achieve socially desirable outcomes. Chapter 6 evaluates the empirical evidence on the effects of competition among hospitals.

Within a product market, the quality of most goods and services tends to vary markedly. Heterogeneity in quality is a fact of life in markets for automobiles, hotels, restaurants, and clothes. In most markets, one takes for granted that people who wish to purchase higher quality will pay more for the product. Market forces eliminate products that do not offer good value for the money. At most, the role of government is to ensure accurate product labeling.

Largely because of asymmetric information between suppliers and consumers of health care and because quality can mean the difference between life and death, ensuring that the quality of health care services is above some minimum level has been seen as a matter of public interest and a rationale for government involvement in health care markets. After decades of public intervention, however, it is increasingly evident that the quality of health care is not always as high as is often alleged. Errors frequently occur in physicians' offices, clinics, and hospitals, with frequent serious adverse consequences for patients. Chapter 7 deals with quality of care: how it is defined and measured in a health care context, including indicators of adverse outcomes patients experience while in the hospital, and regulatory mechanisms, including self-regulation, that have been implemented with the ostensible goal of quality assurance.

In the United States in particular, but in some other high-income countries as well, medical malpractice litigation is widespread, being justified in part as a quality assurance mechanism. Since many readers are likely to be unfamiliar with tort law, the general category of law under which medical malpractice falls, chapter 7 presents some background information on tort liability and its conceptual role as a quality assurance mechanism.

Nurses are the most numerous health professionals and have important roles in providing various personal health services, in particular hospital, nursing home, and home health care. Chapter 8 begins with an overview of labor markets for nurses worldwide, including a discussion of economic concepts of surplus and shortage and the role of monopsony power in markets for nurses. A buyer or an employer of an input has *monopsony* power if the amount of the input that the buyer or employer purchases influences the price it pays for that input. For example,

if a hospital employs more nurses, does it have to pay a higher hourly wage to the nurses it hires? In a competitive labor market, the number of nurses hired would not influence the wage rate.

An important public policy issue relates to whether or not higher nurse-to-patient ratios improve the quality of hospital care and long-term care services, and the advantages and disadvantages of government requirements that health care organizations maintain minimum ratios of nurses to patients. Chapter 8 discusses empirical evidence on this issue and its implications for public policy.

Technological changes embodied in new pharmaceutical products have been an important cause of improvements in health in countries at all levels of economic development. Pharmaceutical manufacturers as profit-maximizing firms with long time horizons decide on investments in new products; once products are developed, there are issues of pricing in various countries, and product promotion. Some manufacturers concentrate on producing generic products that are exact copies of existing pharmaceutical products for which patent protection has been exhausted. Chapter 9 focuses on the microeconomic decisions of pharmaceutical firms in which firms develop strategies to respond to rivals' decisions and to anticipated actions by governments, including policies related to drug approval, drug formularies, and patent protection. Under some circumstances, the market may not provide a sufficient incentive for a sufficient supply response, for example for rare diseases, for diseases highly prevalent in low-income countries, or when there are externalities not captured by the individual user. Various public policies to encourage pharmaceutical innovation when the market provides an insufficient incentive are described in chapter 9.

Chapter 10 focuses on the supply of private health insurance. The chapter explains how premiums are set and why insurance cycles exist. Despite widespread moral hazard and adverse selection, two impediments to well-functioning insurance markets, insurance is generally available in countries that substantially rely on private financing of personal health care services. How do insurers structure benefits to cope with these problems? Health insurance is often employer-provided. What is the rationale for employer provision? Who pays for employer-provided coverage? This question leads to a discussion of the economics of fringe benefits. In all countries, insurance is subject to various forms of government regulation. What is the rationale, what forms does such regulation take, and what are the economic effects of regulation?

PART III MARKET STRUCTURE IN THE HEALTH CARE SECTOR

Part III analyzes resource allocation arising from the interaction of three parties in health care markets, patients, providers, and payers, using a microeconomic methodology to investigate how price and quantity are determined under various market structures. Based on the share of revenue from government sources and the share of supply operated by the public sector, a country's health care markets fall into

four categories: (1) a cash system—out-of-pocket payment by users of services is the major source of financing in the health care market; (2) a private system—private health insurers are a major payer in the market; (3) a quasi-public (social insurance) system; and (4) a public system, which affords both the public provision of services *and* public financing.

Chapter 11 begins with the rationale for this classification system and alternative approaches to classifying health care systems around the world. A common characteristic of cash and private systems is dependence on the private sector for financing personal health care services. Both cash and private systems are described and assessed in chapter 11. Health care systems in India and China, both of which impose substantial cost sharing on patients, are described as examples of cash systems. The United States is the best example of a private system. Important to the US system are such concepts as capitation, managed care, selective contracting (which restricts the insured person's choice of provider as a means for the payer to gain bargaining power), and managed competition.

Government rather than private insurers is the dominant or only payer in countries with quasi-public health care systems, the subject of chapter 12. Governments in their role as payers face several important decisions. First, how should payment be structured? That is, what is the unit of payment (e.g., for hospitals, the patient day, the patient admission, fixed total budget)? There is a substantial amount of empirical evidence on this question. Second, should public payment be payment in full, or is there a role for patient supplementation of fees, including co-payments and reference pricing for drugs? Governments in effect set separate prices for providers and patients. Third, which services should be covered—brand-name pharmaceuticals or generics, devices such as implantable cardiac defibrillators? Chapter 12 reviews existing empirical evidence on the effects of these choices on the price, quantity, and quality of health care. We illustrate quasi-public systems with some country-specific examples, including Canada, China, Germany, Japan, South Korea, Taiwan, and the United States (Medicare and Medicaid).

Countries in still another group have health systems with both public supply and financing. Chapter 13 addresses the issues arising with this type of system. What is the economic rationale for such systems, and how do they compare to others in terms of both efficiency and equity? In these systems, government also has important choices. First, how much money should be allocated to health care in the aggregate? Second, how should these resources be allocated: by geography, by demographic group, such as for children or the elderly, or by type of care—preventive, curative, and palliative? Third, how should providers, such as physicians, be paid? Fourth, should private supplementation of government payment be permitted, and if so, under what circumstances should supplementation be permitted or encouraged? The chapter also provides examples of public provision in practice, such as the National Health Service in the UK.

PART IV PERFORMANCE OF THE HEALTH CARE SECTOR: POSITIVE AND NORMATIVE ASPECTS

A number of questions will have been raised in the chapters preceding Part IV but not answered adequately. For example, how much should the government allocate to the health care sector? How should a social insurance program decide whether or not to adopt a new technology? What is the contribution of personal health services to economic growth and overall population health and longevity? Should there be a single tier, or should government seek to maintain some minimum level of health care for all and allow differences to exist? To what extent can market mechanisms achieve social objectives, and to what extent is government intervention or direct provision desirable?

Whether or not a new technology should be adopted depends on both its costs and benefits. Several countries now use forms of cost-benefit analysis in deciding whether or not to cover a new technology. Such analysis can also be used to decide on the level of reimbursement for the technology.

Especially in view of the rising cost of health care, countries are increasingly interested in knowing whether particular health technologies are worth their cost. Optimal resource allocation requires that only those technologies for which benefit exceeds cost should be adopted. This, of course, is easier said than done. Economists and other researchers have developed methods for assessing the value of technologies in relationship to their cost. The three major methodologies are cost-benefit, cost-effectiveness, and cost-utility analysis. In cost-benefit analysis, an approach first developed to assess the value of public expenditures, ranging from expenditures on parks and water projects to weapons, benefit is measured in monetary terms. Benefit may be measured from demand curves for the item, such as for a park, but demand curves are not available for all goods and services or there is a judgment that demand curves would not accurately reveal consumer valuations. Then other methods are used to elicit valuations from consumers or potential consumers. Some critics of cost-benefit analysis, mainly noneconomists, are suspicious of placing value on such intangibles as the value of a life year, which is often done in cost-benefit analysis.

Chapter 14 discusses how costs should be measured in cost-benefit or cost-effectiveness analysis. Cost measurement depends in large part on the perspective of the analyst. The perspective of the government will differ from that of a private payer. Not all relevant costs are explicit, such as the value of time spent in receipt of services, and we discuss alternative ways of valuing such inputs. A major task of chapter 14 is to describe cost-effectiveness analysis and how it has been implemented in health care in practice.

The difference between cost-effectiveness analysis and cost-benefit analysis is that in the former, benefit is measured as a nonpecuniary value, whereas in benefit-cost analysis, the metric of benefit is cast in pecuniary terms. Benefit measurement is quite complex. In a sector in which outputs have prices that result

from the workings of competitive market forces, the market price is an adequate measure of benefit. However, given market imperfections, in particular, because personal health care services are covered by insurance, price is not an adequate indicator of value or benefit. Thus, value must be imputed.

As described in chapter 15, the value of a life year can be inferred from market data. For example, the higher hourly wage paid to workers who bear an additional risk of death on the job (e.g., workers who wash windows of tall buildings versus workers with desk jobs) reflects workers' marginal willingness to pay to avoid the additional risk of death. Estimates of the added compensation from assuming additional personal job-related risk are used as estimates of value of life in benefit-cost analysis. Similarly, market values of safety devices, such as devices that detect radon, are assumed to reflect individuals' willingness to pay to reduce the probability of death.

An alternative approach uses estimates of maximum willingness to pay to avoid risk, derived from willingness-to-pay ("contingent valuation") surveys. People are asked how much they would be willing to pay at most to avoid specific risks. As described in the chapter, each approach has its pluses and minuses.

In many countries, especially those with a relatively high per capita income, population health and longevity increased substantially over the twentieth century. In others, trends in health indicators are far less favorable. Improved health may have important benefits in terms of improving market productivity as well as being of value in its own right. In public discussions aimed at a lay audience, countries are compared based on their citizens' life expectancy and per capita spending on health care. In chapter 16, which focuses on the contribution of personal health services to longevity, population health, and economic growth, we argue that although these comparisons are easy to understand, they can also be misleading. In particular, they imply that countries with higher per capita spending on health care have inefficient health care systems. Many factors affect population and health and longevity. Spending on personal health care services is only one of several potential determinants of health and longevity. Several recent rigorous studies quantify the effects of personal health services in the aggregate and particular health services on national output or health and longevity. Chapter 16 analyzes the interaction between the health and economic sectors, viewing the health sector's role in the national economy, for example, as an employer (but not only as an employer). How the health care system is structured has important implications for other macroeconomic outcomes, such as precautionary saving, labor market outcomes (e.g., job lock in the United States), and deadweight losses associated with higher rates of taxation, which may in turn discourage the entry of business enterprises in a country.

The final chapter, chapter 17, concludes our book by providing our final thoughts on five health economic controversies: (1) Are people and institutions really rational and forward-looking in decision making, as economists generally

assume? (2) How do people and institutions obtain information relevant to their decisions? To what extent does asymmetric information actually affect the performance of health care markets, including markets for private health insurance? (3) How does the way that health care providers are paid and how they compete affect the performance of providers, and social welfare more generally? (4) How does the regulatory process affect the behavior of regulated health care firms? (5) How do physicians really make clinical decisions, and how do these clinical decisions affect the substantial geographic variation in expenditures within and between countries?

1.6 CONCLUSION

Health economics has grown as a field for various reasons that this chapter has identified. Various institutional features of the health sector provide a fertile field for intellectual innovation.

KEY CONCEPTS

- incentive
- health insurance
- moral hazard
- adverse selection
- externality
- merit want
- public good
- asymmetric information
- professional norm
- efficiency
- equity
- technical (or X-) efficiency
- allocative efficiency
- market failure

REVIEW AND DISCUSSION QUESTIONS

- 1.1 Explain the term “moral hazard” in your own words. Moral hazard pertains not only to health insurance. Explain how moral hazard may operate in markets for homeowners’ insurance (insurance against loss incurred by homeowners on their own home and property) and in automobile liability insurance.

- 1.2 Define adverse selection. Give three examples of adverse selection in markets other than for health insurance and explain the rationale for each choice.
- 1.3 How might adverse selection arise in the market for used cars? What is likely to be the effect of adverse selection in the used car market if it were to arise?
- 1.4 How do professional norms apply to your life as a student?
- 1.5 Explain the distinction between economic efficiency and equity. Is there always a trade-off between efficiency and equity as economists use these terms? Give examples of instances of (1) a trade-off and (2) no trade-off between efficiency and equity. What is a pure externality?
- 1.6 Compare treatments for infective and chronic diseases and explain which one is more likely to create health externalities to society and which one is more likely to impose financial externalities to society. Is there any different implication for government intervention to control for infective and chronic diseases from the viewpoint of externalities?
- 1.7 Explain the term “asymmetric information” between physicians and their patients. Please give two examples of how physicians could use the advantage of asymmetric information to earn more profits or raise the price of their services.
- 1.8 Using hospital care as an example, explain the distinction between technical efficiency and allocative efficiency.

EXERCISES

- 1.1 Suppose the government in a middle-income country announced its policy goal to implement a universal health insurance program within five years. Would implementation of this policy increase the demand for health economics research in this country? List at least three factors to justify your answer no matter whether your answer is “yes,” “no,” or “maybe.”
- 1.2 Health economics has enjoyed several decades of remarkable growth, but will this growth continue? Using your country as an example, list at least three reasons to support your answer.

ONLINE SUPPLEMENTAL MATERIAL

ENCYCLOPEDIA OF HEALTH ECONOMICS

http://www.dictionaryofeconomics.com/article?id=pde2008_H000031 (*The New Palgrave Dictionary of Economics Online*)

http://en.wikipedia.org/wiki/Health_economics

HEALTH ECONOMICS EDUCATION

<http://www.economicnetwork.ac.uk/health>

HEALTH ECONOMICS INFORMATION RESOURCES

<http://www.nlm.nih.gov/nichsr/edu/healthecon/>

<http://www.herc.research.va.gov/home/default.asp>

<http://www.york.ac.uk/res/herc>

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