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THE FLOW OF FUNDS THROUGH THE HEALTH CARE SYSTEM

Applying Economic Principles to Health Care

Starting Point

Go to www.wiley.com/college/getzen to assess your knowledge of the flow of funds through the health care system.

Determine where you need to concentrate your effort.

What You'll Learn in This Chapter

- ▲ The role of health care economics in society
- ▲ The value of following money through the health care system
- ▲ What factors influence the flow of funds
- ▲ Important economic principles that are necessary for the study of health care economics
- ▲ Important health principles that influence people's health care decisions

After Studying This Chapter, You'll Be Able To

- ▲ Assess the economic issues that are exclusive to the health care industry
- ▲ Prepare a list of factors that influence the flow of funds through the health care system
- ▲ Analyze major issues in health care financing
- ▲ Analyze medical decisions, using basic economic principles
- ▲ Evaluate the field of health care, using basic health principles

INTRODUCTION

Who gets a heart transplant? Why does surgery cost so much? Will insurance pay for AIDS treatment? How many children get immunized? Is Senator Smith's health plan worth voting for? People grapple with these sorts of questions every day in hospitals, in doctors' offices, in the halls of Congress, and in their own homes. These questions are the subject of health economics, along with the more ordinary decisions that together have an even greater impact on an individual's personal health: how much exercise to get, the value of reducing cholesterol in the diet, whether to study until 3 a.m. or get a good night's sleep, and so on.

In this book we discuss hospitals, nurses, ambulances, drugs, sex, extortion, kickbacks, government, family ties, love, international trade, sports injuries, and the next generation—the makings of several box office hits. We look at all these topics from the perspective of an economist, seeing them in terms of economic concepts, such as opportunity cost, budget constraints, monopoly, and marginal productivity. Some people claim that this takes all the fun out of drugs, sex, and business intrigue. Not so. Economic principles provide the motivations that shape this story, giving it character development and structure rather than just one scene after another, as in some forgettable action movie.

At its most basic level, health care is a handful of economic transactions, in which patients purchase insurance, physicians and hospitals provide services, pharmacies provide medications, and insurance companies pay for those goods and services. So to understand health economics, you must follow the money. In this book, we look carefully at how people engage in financial transactions with physicians, with hospitals, and with each other to improve their health. Following the trail of money, or what economics call the *flow of funds*, through the health care system makes it possible to apply economic principles to situations involving life and death, not-for-profit organizations, professional licensure, addiction, and other issues. We will look at how medical transactions are like and yet unlike most of the rest of the economy.

When someone says *economics* or *economic behavior*, the sorts of things that probably come to mind—interest rates, unemployment, stock markets—seem far removed from the hospital emergency room. If I asked about your most recent contribution to the health sector of the economy, you might not even think of the little line on your paycheck stub labeled “HI” or “FICA:M” or “Medicare.” Yes, that's 1.45 percent of your gross income that's taken out for Medicare. No, it's not your health insurance because you don't become eligible for Medicare until you reach age 65 or become permanently disabled. Health care doesn't always easily fit the standard models economists use to analyze buying and selling wheat, or renting property, or the price of gold. However, money drives the health care system just as it does many other activities in society.

The flow-of-funds approach to health care economics allows us to follow the trail of money through the health care system to study the financial transactions that take place between patients, doctors, hospitals, and third parties, such as private insurers and the government. Who pays for what has changed dramatically in the past 60 years. Whereas in the past, the majority of individuals paid their medical bills with private funds, today insurance companies and other third parties cover the majority of payments, with individuals paying only a small fraction of the total flow of funds with private money. Just as the source of funds has changed, so has the use of those funds. Increasing intensity in the quality of medical services has resulted in increases in medical spending that surpass increases in inflation, wages, and even the use of health care services.

Several factors affect the size and direction of the flow of funds, including the value we place on our health, the quality of medical care we seek, and medical innovations. When any of these factors take on greater or lesser importance, they affect how much money flows through the system and to whom it flows.

Economists readily acknowledge that health involves more than money, but a few health principles fall within the economic realm. For instance, it's true that health is priceless, but how much money we have often plays a large role in determining our health. The final section of this chapter touches on these and other health principles related to the field of economics.

1.1 What Is Economics?

The essence of economics is trade, or “making a buck.” Economists focus on the **market**, which is the point at which buyers and sellers exchange dollars for goods and services. Without buyers and sellers, there would be no economy—no wealthy surgeons, no insurance companies, no hospital billing departments. The following sections offer a brief overview of important economic principles and concepts.

1.1.1 The Fundamental Theorem of Exchange

For a surgeon to be a seller, the patient must be a buyer. They must agree on a price so that an exchange can occur. The surgeon would probably prefer that the price be higher, and the patient would probably prefer that it be lower, but both must be satisfied in order for a trade to take place. Economists observe that because a transaction takes place, there must have been mutual agreement that made both the buyer and the seller better off. If the surgeon would rather have watched television than perform another operation, she would have turned down the case. If the patient would rather have saved the money or gone to a different surgeon, he could have done so. The insight that both parties must be benefiting if they freely agreed to make a trade is central

to an economic vision of the world and is known as the **fundamental theorem of exchange**.

1.1.2 Trade

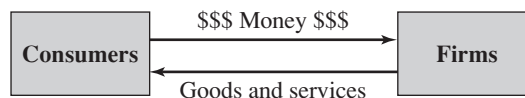
The **terms of trade** specify what the buyer is to give to the seller and what the seller is to give to the buyer in return. When you buy a common item in a store, such as aspirin, a price of \$2.29 per bottle of 50 may tell you everything you need to know about the transaction. For services, and for medical care in particular, the transaction is apt to be much more complex. For example, consider the transaction for an operation to implant an artificial intraocular lens (IOL) in a patient's eye to replace a natural lens that has become clouded by cataracts. The patient is to pay a \$200 deposit up front and \$800 more within 30 days after the surgery is completed and all sutures are removed. Reduced to its simplest level, the terms of trade in this exchange can be expressed as a monetary price of \$1,000 for the IOL implant. Yet much more than the \$1,000 is being agreed to in this transaction. The physician agrees to provide not just any artificial lens but to choose the correct one, continuously monitor the quality of the operation, and control adverse reactions to postoperative medications. The patient agrees to make payment in two parts, with a time limit, and may assume that the operation will be redone without further charges if the first attempt isn't satisfactory. Many of the agreed-upon conditions (that the physician is licensed, will use only qualified assistants, will not try to boost the bill needlessly to increase her fees, and will keep the patient informed of any possible adverse consequences, and that the patient will wear bandages as long as necessary and not go skydiving) will never be specified explicitly unless some disagreement and subsequent legal action force the doctor and patient into court.

The simplest form of trade is a **two-party transaction**, as shown in Figure 1-1, in which consumers buy from businesses, exchanging money for goods and services:

- ▲ Consumers make up the **demand side** of this simple market.
- ▲ Sellers (often referred to as *firms*) make up the **supply side**.

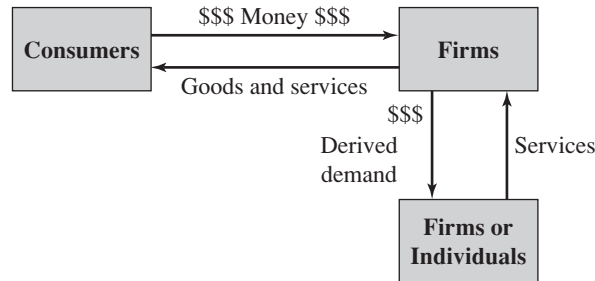
When you purchase a bottle of aspirin from Walgreens, you are engaging in a two-party transaction. Similarly, when Walgreens purchases the aspirin from a wholesaler or directly from the aspirin manufacturer, it is involved in a two-party transaction.

Figure 1-1



Two-party transaction.

Figure 1-2

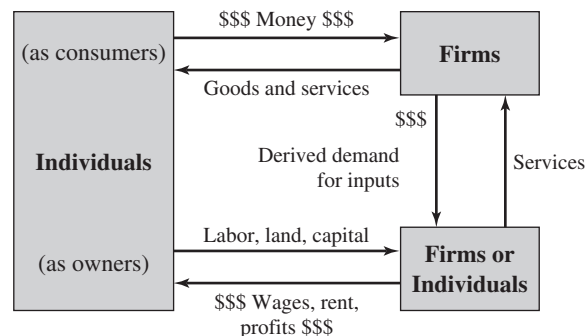


Derived demand between firms.

To get the labor, land, and other supplies needed for production, the firm (the seller) in Figure 1-1 must also be a buyer, as shown in Figure 1-2. These secondary two-party transactions are examples of **derived demand**, purchases made as a step in the production process rather than for final consumption. Continuing with our aspirin example, the aspirin manufacturer must buy the ingredients to make the aspirin, as well as the bottles to hold the tablets and labels to identify them. It must also hire employees to run the equipment that produces the aspirin. These exchanges are all examples of derived demand.

Firms are owned by individuals (or other firms) who provide the capital (money), labor, and organizational effort necessary to get them started and keep them running. Thus, every dollar that a consumer gives to a firm, whether used for wages, profits, or purchase of goods and services from another firm, ultimately ends up in the hands of someone who wants to spend it. When workers or owners spend money, they become consumers and therefore complete the **circular flow of funds** through the economy, as shown in Figure 1-3.

Figure 1-3



Circular flow of funds.

In a very basic model of marketplace behavior, price is the only thing that matters in a transaction, and both the buyer and seller are “price takers.” That is, there are so many buyers that whether one person buys or not has little influence on the price in the market; therefore, buyers must “take” the price as given. Similarly, there are so many firms selling the same product that no single firm can affect prices; hence, all firms must take the price as given.

This uncomplicated model of the marketplace comes close to capturing what happens when you buy a bottle of aspirin. The model works reasonably well for most of the purchases made by consumers, so it can be used to understand the economy as a whole. Yet most medical decisions are far more complicated than buying a bottle of aspirin, and this simple model fails to capture many of the essentials when life-and-death decisions are being made. Organizations adapt creatively to the special demands of health care. Studying such adaptations reveals the potential of economics as a discipline in a way that the analysis of more standard markets cannot.

1.1.3 Contracts

A **contract** is an agreement to trade. In most daily transactions, the contract is often so simple that it’s never written down and can be stated in only a few words (e.g., “Will you take \$5 for that lamp?”). Buying a new car is more complicated. There’s almost always a sales agreement, the terms of which must be agreed to by a manager, and the real seller isn’t the salesperson but a corporation. Taxes must be paid. The buyer has a warranty against defects and malfunction, and in some states has a legal right to return the car without penalty within the next three days. Buying a house entails an even more intricate set of contracts, with obligations involving many firms and the government.

The shape and responsiveness of an economy—its information structure—is determined by the contracts that link parties. It is made up of all the contractual entities: people, partnerships, corporations, government agencies, courts, constitutional conventions, legislatures, and so on.

Medical care is part of, and contractually connected to, the larger economy as a whole.¹ Medicine is more special than most other types of economic activity, however, because of extreme information requirements and risks entailed in treating disease. No one needs a prescription to rent a DVD. You don’t have to have insurance or sign a consent form to have your car’s fuel pump worked on, and almost anyone can cut your hair without a license. The degree of trust in a surgeon, and the reliance on professionals to enforce standards and maintain quality within the operating room, is quite special. To meet such special needs, society has introduced a wide variety of contractual structures, including professional licensure, hospital staff bylaws, and regulatory review.

FOR EXAMPLE

Where Economists Get Their Data

To analyze U.S. health care, economists must have access to information on health care spending. One reliable source of information is the National Health Expenditure Accounts series, which is the most comprehensive source of health care expenditure data in the United States. Published by the U.S. Department of Health and Human Services, it aims to “identify all goods and services that can be characterized as relating to health care in the nation and [to] determine the amount of money used for the purchase of these goods and services.” The series is available online at www.cms.gov/statistics/nhe.

SELF-CHECK

- Explain the role that **contracts** play in the market.
- Give an example of **derived demand** and the **circular flow of funds**.
- Describe a **two-party transaction** and identify the **supply side** and the **demand side** of the transaction.
- State the **fundamental theorem of exchange**.
- Explain how **health care economics** differs from most other market-place behavior.

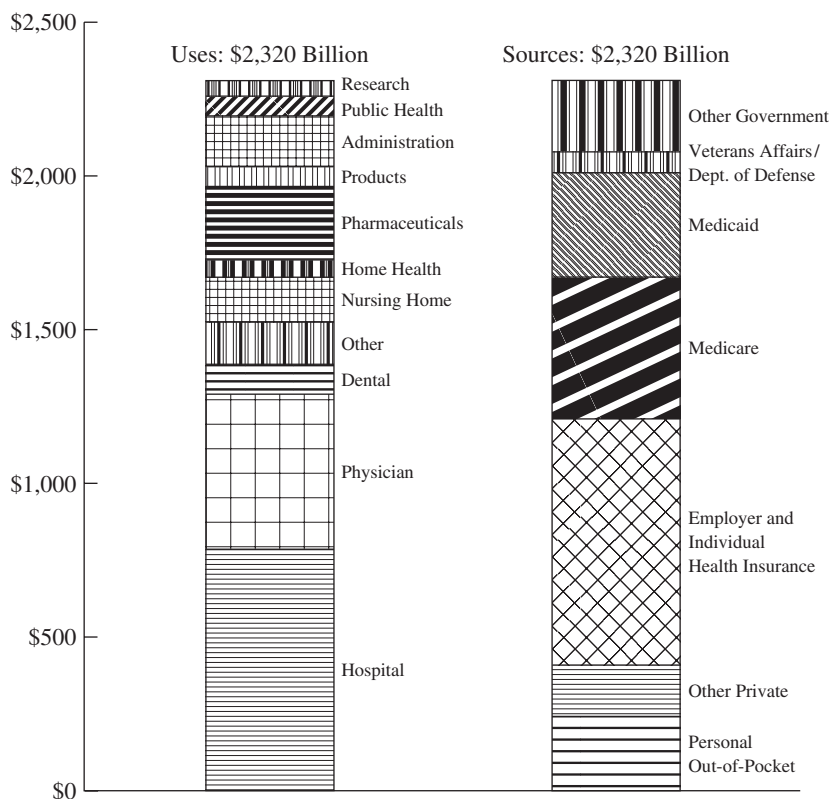
1.2 The Flow of Health Care Funds

To follow the flow of funds through the health care system, we must not only understand *how* transactions take place between buyers and sellers but also *how much* money flows through the system, the sources of those funds, and how those funds are used (see Figure 1-4).

1.2.1 Health Care Spending in the United States

Medical care in the United States is a trillion-dollar business, with an estimated average of \$7,556 spent per person in 2007.² The 307 million citizens of the United States received services from more than 4,000 hospitals, 30,000 nursing homes, 750,000 physicians, 2.2 million registered nurses, and 8 million other health care workers. The major sources and uses of health care funding in 2007 are indicated in Table 1-1. Individuals paid \$262 billion, or 11 percent of total funding; private (mostly employer-based) health insurance paid 35 percent; and the government, the largest payer, paid 47 percent (19 percent Medicare, 15 percent Medicaid,

Figure 1-4



Sources and uses of health care funds, 2007.

13 percent other government programs). The remaining 7 percent of total health care funding came from a variety of other private sources (i.e., philanthropy, industrial clinics, interest and rental income of providers). The largest use of funds was the \$709 billion spent on hospital care, which accounted for 31 percent of the total.

Every dollar spent by a patient, an insurance company, or a government is recorded as a cost but is also recorded as income to a physician, a hospital, an agency, an administrator, or another health employee. The flow of money is circular. Money itself is only a way of keeping track of all the obligations within the economy. Every dollar spent by one person is, of necessity, a dollar of income for someone else. Tracing the flow of funds through this complex system provides some sense of the forces that shape the economy.

1.2.2 Sources of Funds

Health care spending has grown enormously. In 2007, it was 16.8 percent of the U.S. gross domestic product (GDP). That growth is due in part to the shift from

Table 1-1: U.S. Health Care Spending, 2007*\$2,320 billion total; average of \$7,556 per person*

<i>Uses of Funds</i>	<i>Percentage of Total</i>	<i>Amount per Person</i>	<i>Sources of Funds</i>	<i>Percentage of Total</i>	<i>Amount per Person</i>
Hospital	34%	\$ 2,585	Medicare	19%	\$1,442
Physician	22%	\$ 1,652	Paycheck deduction		\$ 937
Dental	4%	\$ 330	Medicaid	15%	\$1,131
Other	6%	\$ 429	VA & DOD	3%	\$ 214
Nursing home	6%	\$ 474	Workers comp.	2%	\$ 135
Home health	2%	\$ 187	Other govt.	8%	\$ 604
Drugs	10%	\$ 771	Total government	47%	\$3,526
Products	3%	\$ 199	Employer insurance	35%	\$2,626
Admin. costs	7%	\$ 535	Self-paid	11%	\$ 853
Public health	3%	\$ 235	Charity, etc.	7%	\$ 550
Research	2%	\$ 159			

*Based on a projected U.S. population of 307 million.**Source: U.S. Office of the Actuary, National Health Projections, <http://www.cms.gov/NationalHealthExpendData/>*

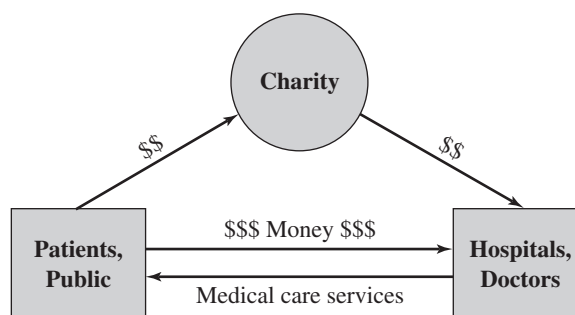
individual payments to third-party financing, such as private insurance companies and government. In 1929, 81 percent of medical expenditures came directly from individual “out-of-pocket” payments and only 19 percent from government and other third-party organizations (see Table 1-2). This ratio has long-since been reversed, with individuals in 2007 paying only 11 percent directly and the remaining 89 percent of funds flowing through third-party transactions involving government, not-for-profit organizations, and insurance.

All the important features of health care (physicians, hospitals, insurance, and so on) in 2007 were present in some form 100 years ago, but their relative importance to the flow of funds has changed so much that the transactions look entirely different today.³ Physicians, who in 1900 were tradespeople sometimes making do with partial payment in eggs or flour, have become highly paid and technologically sophisticated professionals who rarely talk to their patients about paying the bills. Hospitals, once minor supports for a few disabled and disadvantaged individuals, are now technological palaces of intensive treatment and the largest users of U.S. health care funds. Whereas in 1900 hospitals were financed by a few donors and some patient fees, they are now financed almost entirely by third parties: either by government insurance such as Medicare and

Table 1-2: Sources of Payment in 1929, 1970, and 2007

	1929	1970	2007
Total health spending (millions)	\$ 3,656	\$ 75,111	\$2,319,640
Adjusted for inflation (2002 dollars)	35,900	320,756	2,319,640
Per capita (adjusted)	295	1,525	7,556
As a % of GDP	3.5%	7.2%	16.8%
Percentage paid by			
Self (out-of-pocket)	81%	33%	11%
Third parties	19%	67%	89%
<i>Government</i>	13%	38%	47%
<i>Private insurance</i>	<1%	21%	35%
<i>Philanthropy, other</i>	6%	8%	7%

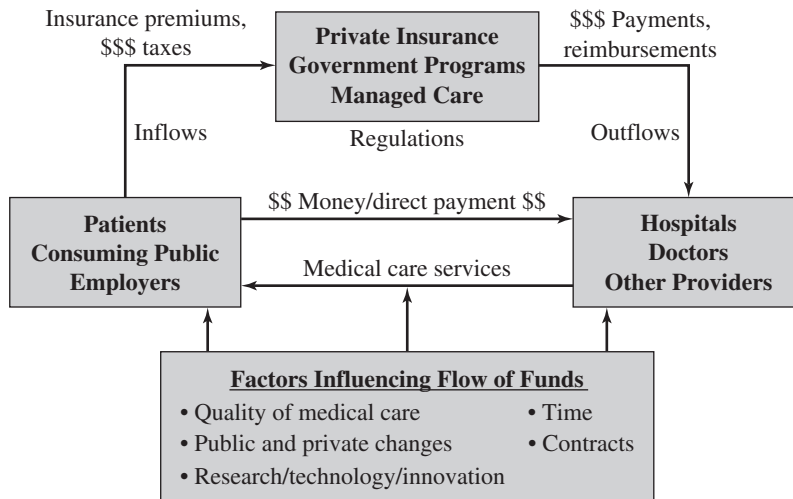
Medicaid or by private insurance provided through employment or purchased directly by consumers (see Figures 1-5 and 1-6). For every \$100 spent in the hospital, less than 2 percent comes from charitable donations. And much of the 3 percent paid for by patients out-of-pocket consists of copayments, deductibles, and other fees related to third-party insurance payments.

Figure 1-5**Health care flow of funds, circa 1900.**

Health care spending has grown rapidly for a number of reasons, including the following:

- ▲ As people become wealthier, they are willing to spend more money on all goods and services. After people's basic necessities, such as food and housing, are taken care of, they are willing to spend extra on health care.

Figure 1-6



Health care flow of funds, circa 2007.

The picture isn't altogether rosy, however, as it's also the case that record numbers of people are unable to pay their medical bills.

- ▲ Technological advances make modern medicine more desirable. For instance, arthroscopic knee surgery makes it possible for surgeons to make a small incision and insert a tube-like instrument into the knee to diagnose and repair tissues. The shorter recovery period of this less-invasive procedure makes it more appealing than traditional knee surgery requiring large incisions.
- ▲ An aging population favors health care over other goods. An 80-year-old woman suffering from arthritis is likely to spend her limited income on pain medicine and other treatments rather than on a plane ticket to Bermuda.

FOR EXAMPLE

Going Broke for Health Care

According to a study by researchers at Harvard University, the average out-of-pocket medical debt for those who filed for bankruptcy was \$11,854. Surprisingly, 68 percent of those who filed for bankruptcy had health insurance. In addition, the study found that 50 percent of all bankruptcy filings were partly the result of medical expenses. The average debtor was a 41-year-old woman with children and at least some college education. Most debtors owned their homes and were predominantly middle or working class.⁴

INSURANCE: A WRENCH IN THE TWO-PARTY TRANSACTION

Insurance shifts the burden of paying for health care from the individual to a third party. Because of this “cost-shifting” in the payment system, almost no one knows who is paying for what.⁵ Billed charges bear little resemblance to what is paid or what the health care provider receives, and provider revenues are usually identified not as “income” but as “reimbursement.” Third-party payments are made with the following funds:

- ✓ Taxes paid to government agencies
- ✓ Employer and employee payments to commercial insurance companies and for-profit and not-for-profit managed care firms, including health maintenance organizations (HMOs), preferred provider organizations (PPOs), and other organizations
- ✓ Philanthropic contributions to charities

These major categories of third-party payments all have a similar purpose: pooling funds from many people to pay the bills of the few patients who need care. Who gets care and what kind of care are decisions made according to the rules of the group and the opinions of the professionals who run the health care system. In each case, indirect third-party payment weakens the monetary linkage between buyer and seller that characterizes the direct two-party transactions typical in most other sectors of the economy. For most medical transactions, there is no exchange of money between the recipient of services and the provider. The patients (or their families) pay insurance premiums and taxes, and the doctors and hospitals are paid by the government and insurance companies. In the absence of a direct link between the amount paid and the resources used in treatment, “prices” become more ambiguous and less important to the transaction than ongoing relationships of trust and professional behavior. One of the purposes of this textbook is to explain how economic forces continue to operate when prices don’t function in a normal way and how other organizing principles (e.g., professionalism, licensure, regulation) serve as replacements.

- ▲ Insurance now covers more of the cost. Shifting the financial burden from individuals to third parties through insurance not only changed the way funds flowed but made more funds available so that the health care system could grow rapidly and absorb an ever-larger share of total economic output.

1.2.3 Health Care Providers: The Uses of Funds

Payments by patients, government, and insurance companies have increased 200-fold over the past 60 years; thus, payments received by doctors, hospitals, and other care providers have increased by the same amount (see Table 1-3). In

general, both the public, as users of the system, and providers, as suppliers of care, have been happy with this large increase in spending. The public has gotten a health care system that is technologically advanced and responsive to their needs. Providers have gained glory in the fight against disease and substantial gains in income, making them eager to continue the struggle.

After adjusting for changes in inflation, health care wages, and use of services, spending has still increased dramatically over the past 30 years—more than 250 percent. How can spending increase so much more rapidly than the increase in the number of services or in the wages of those who provide them? The intensity and quality of services have increased. More tests are done for a patient in a modern intensive care unit during a single day than were done for a patient

Table 1-3: Changes in the Use of Health Care Funds Over Time

	1929	1970	2007
<i>Spending per person (in 2002 dollars)</i>	\$295	\$1,525	\$7,558
Percent usage			
Hospital	23%	44%	34%
Physician	36	20	22
Dental	12	6	4
Drugs	18	7	10
Other	1	3	6
Nursing home	N/A	5	6
Home health	N/A	N/A	3
Products	3	6	3
Admin. and insurance costs	3	4	7
Public health	3	2	3
Research	1	3	2
Total	100%	100%	100%
Hospital days per person	0.9	1.2	0.6
Hospital employees per patient	<0.5	3.1	8.3
Physician visits per person	2.6	5.0	3.9

over the course of a month in his or her wooden bed in 1929. Many of those tests (e.g., MRIs, blood glucose tests, heart monitoring tests) weren't available back then. The physician who drove to the patient's house and worked alone out of a black bag has been replaced by a team of therapists, technicians, and support staff assisting a group of physicians, many of whom are specialists using a wide variety of sophisticated medical equipment.

Another factor that explains some of the growth in spending is that, as some common, acute (short-term) diseases have become curable or preventable, medical care is increasingly applied in cases of chronic diseases that were once considered hopeless. The shift from simple caring to technologically sophisticated curing is reflected by shifts in the categories of expenditure; more is going to institutional care in hospitals and nursing homes, while the share devoted to personal services by doctors has declined. The fraction of the health care dollar spent for manufactured goods such as drugs has also fallen, while the cost of labor-intensive services has risen.

SELF-CHECK

- How much do experts estimate will be spent on medical care per person in the United States in 2007?
- List four reasons why health care spending has increased in the United States.
- Explain why health care spending has increased so much more rapidly than the number of services or the wages of those who provide them.

1.3 Major Issues in Health Care Financing

When tracing the flow of funds through the health care system, it's important to be aware that the money trail is constantly shifting, changing direction (e.g., who makes the payments and who receives them) and size (e.g., how much money flows through the system). The following sections identify several of the factors that influence the flow of funds.

1.3.1 The Value of Health

Why does health care cost so much? Because we place great value on our health. Health is so precious to us that its value exceeds that of the things we possess. After all, what benefit do I get from spending my money on books or art or cars or clothes if I am dead? Sick and in pain, confronted with the possibility of death,

people would be willing to spend almost any amount of money to get their health back. Health care costs so much because people are willing to pay for it. The many years a surgeon spends in training, the billions of dollars government spends on public health, and the comprehensive health insurance plans provided by employers are consequences of the value we as a society place on health care. They're effects rather than causes. We're willing to spend so much on physician training, public health, and health insurance because what they produce is valuable to us.

1.3.2 Time: A Scarce Resource

Time is more limited than money. You have just 24 hours each day. To use your money as a consumer, you must have time. Given time, you can get money. Or you can spend your time meditating, hunting for berries in the woods, or writing poems in the sand. At least you're alive. If you have money but no time, the money is worthless. Death is the ultimate budget constraint. When your time is up, there are no second chances, no credit advances, and no more decisions to make. While all economists acknowledge that a lifetime is a scarce resource, health economists are acutely aware of this fact because the business of medical care centers on life-and-death decisions.

It is difficult to improve your health after it has deteriorated. Spending money on medicine when you are seriously ill is a little like spending money on your car after the engine has begun to burn oil: Regular maintenance is a lot cheaper. How healthy you are when you get old depends not so much on the medical care you get then as on what you have done to and for your body over the years. Taking some of your time each week to exercise and giving up some tasty junk food (e.g., donuts, fries, ice cream sundaes) can help you live longer and feel better in the future. Some people would call such behavior health consciousness or following a healthy lifestyle. As economists, we call it savings and investment. If I reduce consumption now (less ice cream), I can consume more (have greater enjoyment) in future years. I invest in my body by exercising, just as a firm invests in a manufacturing plant by doing maintenance and construction. Most readers of this textbook are studying now for a future reward: knowledge, grades, a degree, career advancement. You are investing, giving up time (and money) now to obtain more value in the future.

Medical school is a form of investment, usually a very good one. Similarly, the research done by pharmaceutical companies is an investment: forgo current profits to discover a new drug that will begin to sell 15 years from now. In a society, the money used for medical schools and research, the loss of life due to trials of experimental drugs, and the difficult learning curve of surgeons in training (somebody has to be the first patient) are investments in the future of medical care. Losses are real, and staggeringly large, but the rewards exceed the losses. Imagine how many of your parents or your classmates would be dead if we decided as a society to stop the losses and practiced the best nineteenth century medicine for the next 100 years.

1.3.3 How Quality Factors In

Medicine often involves life-and-death decisions. In these situations, quality is crucial, and quantity doesn't matter. It doesn't help if a mediocre surgeon offers to give you a second operation at half price. A patient usually consumes one and only one "unit" of care—an operation, in this case—for each illness. The only trade-off made is in the quality, not the quantity, of the procedure. Having budget decisions made over quality rather than quantity tends to make the economist's job more difficult. While it's reasonable to assume for most other goods that price per unit remains constant as the quantity increases or decreases, any change in quality must change the price. Quality cannot simply be added up or multiplied to arrive at a total spending limit the way quantity can.

The quality of medical care has increased over the past 30 years. But has it increased as much as, or more than, the cost? While measures such as the consumer price index (CPI) attempt to deal with these issues, there is no consensus on how accurate they are, or even on what these measures should be. Can quality be measured by the number of lives saved, the number of lives saved per dollar spent, the number of tests or services provided, the level of physician knowledge (and should this count if the patient dies?), or patient satisfaction? Historically, most emphasis on quality was at the level of the individual: a procedure, a patient, or a physician. Was the surgery done properly? Did the patient heal well and was he satisfied with the care he received? Was the doctor adequately trained for the procedure, with a certified supporting staff? Recently, economists have shifted the focus from the individual to the group. The tools of population health allow economists to ask the following kinds of questions: What percentage of patients suffer infections as a result of surgery? What percentage of patients require a second operation? How do these rates compare with those of surgeons and hospitals in other states or countries?

Even though quality of care can mean the difference between life and death, it's important to remember that medical care can't permanently save a life because we will all die eventually. What medical care can do is prolong a life and make it more productive. The extension of life isn't, however, unambiguously good. Increasingly, we are asked to make decisions about end-of-life care, release from suffering, and quality of life not in terms of morbidity and mortality but in terms of relationships, social connections, and spiritual concerns.

1.3.4 Public vs. Private Goods

For some goods, there is only one unit, which we consume collectively. The atmosphere is an example. It doesn't make sense to talk about quantities of atmosphere. Having "more" by breathing deeply, turning on a fan, or opening a window doesn't add value if the problem is pollution. *Quality* is the only thing that matters. When discussing goods, it is important to distinguish between those goods shared by the public collectively and those owned by people individually.

- ▲ Air quality, the legal system, national defense, cancer research, transportation, and other goods that are similarly universal in consumption are known as **public goods**.
- ▲ Unlike public goods, **private goods** can be owned and consumed individually.

Just because public goods are universally consumed doesn't mean that they can't become scarce. Scarcity of air quality (i.e., pollution) can be addressed through various improvements, each of which has a cost. Public funds, although much greater than those of any individual, are still subject to budget constraints. The price of better air must be paid by giving up some other public goods or by all of us giving up some of our private goods by paying higher taxes.

"Private" and "public" are polar concepts. Few goods are so purely private that they're entirely unregulated regarding safety, ingredients, and disposal, and few goods are so public that there are no differences among individuals regarding use or quality.⁶ Medical care clusters more services toward the public end than is immediately apparent. Even though each of us goes individually to the hospital emergency room, in a small city, we must all go to the same emergency room, and we therefore get pretty much the same quality of care. In a large city with many hospitals, there is somewhat more variation, but patients are rarely able to choose their surgeon, nursing staff, or room. Contrast that with the purchase of a coat, a birthday cake, or even a wheelchair, in which case there are many more choices and there is much more individual control over quality.

Payment systems also tend to make medical care a public good. All employees in a firm often have the same insurance plan. Therefore, the mail clerk and the executive vice president are equally valued customers of the hospital. In Chapters 4 and 5 we examine how the pooling of funds through insurance can make medical care into a form of public good even though services are provided and consumed in private transactions between doctors and patients.

1.3.5 Research, Technology, and Innovation

Technology has been the driving force in the health care system—saving babies, lengthening lives, creating hospitals, linking medical records worldwide, and raising the American public's willingness to spend more than \$2 trillion a year. One can easily imagine that spending would be doubled again without complaint if the research laboratories could come up with a vaccine for AIDS, a cure for cancer, and a reversal of Alzheimer's disease. Medical discoveries have often been unexpected outgrowths of other activities (e.g., Pasteur's discovery of bacteria grew out of an investigation into the causes of spoiled wine and beer) or the refinement of insights from patient care. Historically, what little direct funding there was for research came mostly from philanthropists. Today, taxpayers are the largest source of pure research funding, through support of the National Institutes of Health and similar government-funded programs. However, a much larger portion

FOR EXAMPLE

National Institutes of Health

The National Institutes of Health (NIH) is the primary federal agency for conducting and supporting medical research. It is composed of 27 institutes and centers, including the National Cancer Institute, the National Eye Institute, and the National Institute on Aging. The NIH received \$28.6 billion in federal funding in 2006. What do U.S. taxpayers get for their money? NIH scientists investigate ways to prevent disease as well as the causes, treatments, and even cures for common and rare diseases. Eighty percent of NIH funding is distributed as research grants to all 50 states and several foreign countries. Based in Bethesda, Maryland, the NIH employs 18,627 people.

of research funding is hidden in the cost of patient care, as the work of physicians to develop and refine new technologies is covered through reimbursement. Similarly, most of the research and development (R&D) at pharmaceutical companies is buried as an overhead cost in the production of drugs.

The cost of continually innovating and changing medical treatments and delivery systems is staggeringly high, yet the cost of *not* innovating is much greater. What athlete injured today would wish to forgo arthroscopic knee surgery and accept a hot mustard plaster? Senior citizens may say they want to turn back the clock to the good old days, but any politician who threatens to take away Medicare, or even to cut benefits slightly, gets defeated at the polls. The American public demands a modern, constantly updated health care system. Research into new therapies and new forms of organization is the force that has made it worth spending \$2.3 trillion today versus \$4 billion 100 years ago. Yet the flow of funds into research is hard to trace, and the connection between spending and benefits is difficult to make.

SELF-CHECK

- How does the value we place on our health influence the cost of health care?
- Distinguish between **public goods** and **private goods**.
- In life-and-death situations, which is more important—quality or quantity?
- What is the largest source of funding for pure research? List two other sources of funding.

1.4 Economic Principles as Conceptual Tools

The question of whether the side effects of a course of highly toxic chemotherapy are worth the possibility of living another eight months is highly personal, yet the principles involved are common to most economic problems: balancing costs and values within a set of constraints imposed by the situation. It can be analyzed like other decisions, such as whether to apply to graduate school, how many risks to take while skydiving, and the choice between buying health insurance and taking a vacation. A list of principles that are useful as “conceptual tools” for analyzing decisions is provided in the following sections.

1.4.1 Trade: Benefiting from Exchange

People engage in trade—exchanging things, time, favors, money, and information—because it makes them better off. Both sides must benefit, or they wouldn’t agree to trade. This is the fundamental theorem of exchange and perhaps the most basic principle of economic reasoning.

1.4.2 Choice: Are Benefits Greater Than Costs?

Every decision involves a trade-off, giving something up in order to get something else, choosing the option that means more to the individual. This is obvious when you engage in trade with someone else. It’s true whenever you make a choice, even though you “trade” only with yourself (e.g., giving up a workout at the gym in order to study, passing up a new CD in order to buy dinner at a restaurant, giving up some of your savings in order to take a trip to Cancun). Economists assume that people tend to make choices that make them better off in a way they value (not necessarily financially). This is known as the **benefit–cost principle**.

1.4.3 Opportunity Cost: What Do I Have to Give Up?

The best measure of what something costs is what one has to give up to get it, which is what economists call the **opportunity cost**. The opportunity cost of a trip to Cancun might be \$750 in savings; the opportunity cost of an extra weekend date might be an A as your grade falls to a B+ because you gave up study time. Conversely, you might say that the decision to study to get an A cost you a date. The decision you make, not the price tag or money, determines the opportunity cost of something. The primary cost of attending this class is the time it takes (the fun you could have had and/or the money you could have earned), not the amount spent on tuition and books.

FOR EXAMPLE

A Scarcity of Nurses

Registered nurses (RNs) make up the largest group of health care providers in the United States. In 2000, 59 percent of RNs were employed in hospital settings, with a smaller percentage of RNs working in health care settings such as ambulatory care, home health care, and nursing homes.⁷ Authorities have warned that the United States could fall 275,000 nurses short by 2010. The predicted shortage will be due in part to increasing health care demands from a growing elderly population and in part from dissatisfaction among RNs, who often complain of understaffing and low pay and benefits. In the face of these shortages, many hospitals and other health care institutions are recruiting foreign nurses from less developed countries, such as Mexico, the Philippines, and India.⁸

1.4.4 Scarcity: Working Within the Limits

Why does a decision always involve giving something up? Because reality imposes limits, or constraints, on what you can do. The most basic limit is time. You have only 24 hours per day, and when your days are gone (due to death) you have no more life to use in production or consumption. Your income and your bank balance, the place you live, the things and friends you have, and even your credit rating all put limits on what you can do to make yourself better off. Economists call them budget constraints. This term applies not only to money but also to time, things, relationships, and any other kind of constraint.

SELF-CHECK

- Explain the **benefit–cost principle**.
- Indicate what defines the **opportunity cost** of any action.
- List three typical budget restraints.

1.5 Health Principles

Medicine isn't entirely, or even mostly, about money. Science, caring, professionalism, and even religious concerns regarding birth and death can be more important than dollars. Economics gives one important and clear perspective, but it's a limited view—similar to the kind of limited view that an x-ray provides of a person. Economics has expanded to examine social relationships, politics,

and the financing of technological advances. Yet no matter how powerful economics is for analyzing decisions, it still remains just one piece of a larger picture. Most of medicine and health lies outside the scope of this textbook, but five simplified health principles within the expanding realm of economics are noted here.

1.5.1 Health Is Priceless

In a crisis, people pay almost anything for medical care. The opportunity cost is too great to bargain over “how much” when your mother’s or daughter’s life is at stake. People don’t want to make difficult decisions regarding trading off dollars for health. This is why virtually every modern economy offers emergency medical care on demand and extensive programs of health insurance.

1.5.2 Money Still Determines Health

Although demographic factors such as age, sex, and race are important in determining health, money plays a big role. Everywhere we look, the rich are typically healthier than the poor. In unsophisticated rural villages and modern cosmopolitan cities, with health insurance or without, the rich tend to do better in terms of both mortality (i.e., death rates) and morbidity (i.e., illness rates). A particular rich person may be in worse health than a poor person, but in general, money has a strong positive impact on physical condition.

1.5.3 Health Risks Are More Public Than Private

Your income depends more on the economy into which you were born than on your individual skills and effort. So, too, does the state of your health. Compared with starting your life in Switzerland, being born in a rural village in the Sudan severely limits both your earning power and your life expectancy.

1.5.4 Individual Choices: Lifestyle Is More Than Medicine

People’s lifestyle plays a large role in their health care choices. The United States has a high-quality and highly regulated health care system, and so our choices regarding “better” care usually have a lot more to do with personal satisfaction than they do with whether we live or die. Branch Creek Hospital versus University Hospital? Generic naproxen sodium versus Aleve? Doctor at the local health department clinic versus specialist in private practice? Our choices don’t tend to have a major impact on death rates, although they may have a lot to do with personal satisfaction and the quality of the experience. Flying first class on a major carrier is more comfortable than flying cut rate in economy class, but the safety (i.e., the likelihood of dying in a crash) is about the same.

FOR EXAMPLE

Medical Bargains or Boondoggles?

Prices for medical procedures are often far lower abroad than in the United States, but there's no guarantee that the quality elsewhere will be on par with procedures here. Would you be willing to have a coronary bypass done in South Africa to save \$63,000? Here are a few price comparisons to consider:

<i>Procedure</i>	<i>Cost in the United States</i>	<i>Cost Elsewhere</i>
Coronary angiogram	\$25,600	\$ 2,450 (Singapore)
Coronary bypass	\$86,000	\$23,000 (South Africa)
Knee replacement	\$36,300	\$ 2,100 (Mexico)
Hip replacement	\$40,800	\$ 7,200 (Singapore)
Facelift	\$ 6,800	\$ 3,000 (India)
Lasik (per eye)	\$ 2,000	\$ 750 (Thailand)
In vitro fertilization	\$12,000	\$ 7,800 (Canada) ⁹

1.5.5 Measurable Differences in Quality over Time or Regions Are Greater Than Most Differences in Choices Faced by Patients

Heart surgery in 2007 will be so much better than the kind practiced in 1962 that no one would choose the latter. Rich patients may fly from Guatemala to the United States for superior medical care, but few U.S. tourists would decide to have knee replacement surgery done in Guatemala while on vacation to save a few dollars. Individual market choices for quality are important and persistent for goods such as clothing and housing, but medical care is more like the market for computers and video equipment: Most people pay for what is newest.

SELF-CHECK

- List and explain five health principles.
- Briefly explain how a person's lifestyle influences his or her health care decisions.

SUMMARY

For people to get what they want from the health care system, patients and health care providers must engage in trade. Health economics is the study of how those transactions are made and of the bottom-line results.

The terms of trade are the specifics of a transaction. Only in a very simple exchange are all the terms of trade captured in the money price. The fundamental theorem of exchange states that for a trade to take place, both the buyer and the seller must believe that the trade makes them better off.

Goods and services are only worth as much as people are willing to pay for them. Health care costs so much because people place so much value on their health. As a wealthy country, the United States will spend more than \$2 trillion on health care in 2007, supporting a dynamic and technologically sophisticated health care system. Health care costs have consistently risen 3 to 5 percent more rapidly than incomes and now account for 16.8 percent of GDP. Government is the largest provider of health care funds (47 percent), and hospitals are the largest users (34 percent). Research into new drugs and treatments is very expensive, but the forgone opportunity cost of not innovating would be much greater.

Economists must tackle two major complexities when studying the economics of health. First, most people make health care choices based on quality rather than price or quantity. Second, the effects of medical care on health are uncertain.

KEY TERMS

Benefit–cost principle	The principle that people tend to make choices that make them better off in a way they value.
Circular flow of funds	A system in which every dollar that a consumer spends ultimately ends up in the hands of someone else who wants to spend it.
Contract	An agreement to trade.
Demand side	The consumer.
Derived demand	Demand for a good due to its use rather than for itself (e.g., the demand for x-ray film is derived from the demand for medical diagnoses, which in turn are derived from a consumer's demand for health).
Fundamental theorem of exchange	A theorem stating that any voluntary exchange between persons must make both of them better off because they willingly agreed to trade.
Market	The point at which buyers and sellers exchange dollars for goods and services.

Opportunity cost	Something that must be given up in order to do or obtain something; the highest valued alternative which must be foregone. For example, the opportunity cost of taking a final exam may be missing out on a trip to Bermuda.
Private goods	Goods that are consumed or financed individually.
Public goods	Goods that are consumed or financed collectively (e.g., clean air, national defense, discovery of penicillin) either because it's impossible to include/exclude any consumer who doesn't pay or because once the goods are produced, there's no additional cost for additional consumers.
Supply side	The seller.
Terms of trade	Terms that specify what the buyer is to give the seller and what the seller is to give the buyer in return.
Two-party transaction	An exchange between a buyer and seller, usually trading money for goods or services.

ASSESS YOUR UNDERSTANDING

Go to www.wiley.com/college/getzen to evaluate your knowledge of the flow of funds through the health care system.

Measure your learning by comparing pre-test and post-test results.

Summary Questions

1. A contract is the point at which buyers and sellers exchange dollars for goods and services. True or False?
2. Most medical decisions can be captured by a simplified model of marketplace behavior in which price is the only thing that matters. True or False?
3. The fundamental theorem of exchange states that
 - (a) every dollar that a consumer spends ultimately ends up in the hands of someone else who spends it.
 - (b) the essence of economics is trade.
 - (c) both parties in a transaction must be benefiting if they freely agreed to make a trade.
 - (d) to understand health economics, you must follow the money.
4. In a two-party transaction, consumers make up the supply side and sellers make up the demand side. True or False?
5. The largest single share of total personal health expenditures in the United States comes from
 - (a) out-of-pocket spending by consumers.
 - (b) private insurance.
 - (c) Medicare.
 - (d) Medicaid.
6. The largest single share of expenditures for health services in the United States is for
 - (a) physicians.
 - (b) hospitals.
 - (c) drugs.
 - (d) long term care.
7. The primary cause for the high price of health care is
 - (a) the many years a surgeon spends in training.
 - (b) the billions of dollars government spends on public health.
 - (c) the comprehensive health insurance plans provided.
 - (d) the value we place on our health.

8. You go to a free beach, put on suntan lotion, and play music on your radio. Which of the items in this scenario are public goods and which are private goods?
 - (a) Public goods: lotion, beach; private goods: music
 - (b) Public goods: lotion; private goods: beach, music
 - (c) Public goods: beach; private goods: music, lotion
 - (d) Public goods: beach, music; private goods: lotion
9. The best measure of what something costs is what one has to give up to get it. This is what economists call
 - (a) the cost–benefit principle.
 - (b) opportunity cost.
 - (c) a budget constraint.
 - (d) the fundamental theorem of exchange.
10. People tend to make choices that make them better off in a way they value. True or False?
11. Because health is priceless, economic factors such as wealth don't have any influence on people's well-being. True or False?

Review Questions

1. List some contractual structures society has introduced to handle the complexity of health care transactions.
2. Have health care costs increased or decreased in the past 100 years? List explanations for the change.
3. Explain how insurance weakens the monetary linkage between buyer and seller that characterizes the direct two-party transactions typical in most other sectors of the economy.
4. The text speaks of a “derived demand” for inputs. Is the demand for health services a derived demand? Why or why not?
5. If good health is priceless, why are there prices for doctor visits, hospital stays, and drugs?
6. In 1929, 81% of health spending was out-of-pocket, which means it didn't involve the huge administrative costs associated with insurance or government payment programs. What caused us to move to an apparently less efficient system in which less than 20% of health spending is out-of-pocket?
7. List an example of quality of care in the delivery of medical care and discuss why a patient might be willing to pay more for it.

Applying This Chapter

1. Compare the terms of trade when purchasing a pair of reading glasses for \$7.99 from a drug store versus buying a pair of prescription glasses for \$159.99 from an optician.
2. Approximately how much was spent on health care costs for you in the past year? What percentage did you pay out-of-pocket? What percentage did private insurers pay? What percentage did the government pay? How does the total amount compare to the national average for 2007?
3. What is the opportunity cost of going to a doctor to be examined for skin cancer?
4. What is the primary budget constraint facing an 84-year-old billionaire?
5. Would eliminating research reduce or increase the cost of U.S. health care? Why?

YOU TRY IT

Laser Eye Surgery

Laser eye surgery to correct poor eyesight is an elective operation that often costs from \$1,500 to \$5,000 and is rarely covered by medical or vision insurance. When such surgery is successful, however, patients are no longer required to buy and wear glasses or contacts—and the surgery has a high success rate, although there is some healing time, and the procedure itself is daunting for many people. What are the costs (financial and opportunity costs) of choosing to undergo laser eye surgery over wearing glasses or contacts? Conversely, what are the costs and benefits of sticking with glasses or contacts?

Health Care as a Drain on the Economy

Automaker General Motors employs approximately 150,000 people. In 2005, the company spent \$5.4 billion

in health care costs. Those expenses account for about \$1,500 of the cost of each vehicle produced in the United States. Such expenses are often characterized as a “drain on the resources” of General Motors and of consumers who buy cars. For instance, if General Motors didn’t have such high health care costs, it could price vehicles more competitively and thus work to regain market share lost to foreign automakers. Similarly, the \$1,500 of consumer money that goes to GM’s health care costs could instead be used to pay for college tuition or to purchase other goods and services to help fuel the economy. In a brief essay, consider how such health care expenses might be recharacterized as contributing to, rather than draining from, the economy.