Are health care markets healthy? Are they efficient, and do they provide the care that people need? These questions occupy the minds of the many people who study health care. Efficiency questions arise because of the high costs that people must pay for health care. Are these costs too high? Likewise, equity questions are raised because many people, certainly including the uninsured, face barriers in obtaining health care.

Compared to Canadians and Europeans, Americans will more likely find experts who favor competitive market solutions to health care system problems, though most here (as elsewhere) will argue that this approach is often ill-suited to the nature of health care markets. Canadians and Europeans are more willing to use government interventions, such as social insurance programs to address health care equity problems. The Clinton proposal to expand comprehensive social health care insurance to the general population died in Congress in the United States in 1994. However, Medicare reform and access for the uninsured remain centrally important, and many Americans find equity and efficiency in the health care system to be the fundamental issues.

A solid background in these issues requires a study of the economics of efficiency, the departures of many health care markets from the competitive model, the role of equity concerns, and issues of social justice theory. Because of the central role of “need” in health equity discussions, it also requires that we investigate the meaning of health care need. These subjects are the themes of the present chapter.

The chapter is primarily based on welfare economics, which is defined as the study of normative issues that bear on economics. "Normative issues" deal with how people...
believe the economic world should be, as opposed to "positive issues" that deal with how the world of economics functions in practice.

So, welfare economics defined as "the study of normative economic issues" would encompass those that are critical of existing markets and question the distribution of goods and services. This understanding, however, is itself disputed by some health economists (Hurley, 2000; Culyer, 1989) who argue that an "extra-welfarist" viewpoint is required, rejecting some or all of the philosophical principles on which welfare economics is based. Yet other theorists attempt, within welfare economics, to rework our understanding of the previously accepted conception of welfare and efficiency (Absolo and Tsuchiya, 2004).

While we focus on standard welfare economic theory, we will point to sources where students can explore the extra-welfarist view more fully. We describe the standard results for competitive markets, but also the many market flaws that cause markets to deviate from competition, causing many competitive efficiency propositions to fail. We will also explain and describe the role of need and need-based distributions in the health economy. Finally, we will present theories of social justice and explain why welfare economic claims must be grounded in a philosophical position on justice.¹

Efficiency and Competitive Markets

The meaning of economic efficiency can be made fairly clear within the context of the Edgeworth box for exchange. This approach shows theorems that are developed in more sophisticated mathematical models. The analysis here generates the First Fundamental Theorem of Welfare Economics and illustrates the Second Fundamental Theorem as well. The First Theorem demonstrates that competitive markets under certain conditions are economically efficient. The Second Theorem establishes that a society can achieve any desired economically efficient outcome by competitive markets if it starts from the appropriate initial endowments.

The Concept of Pareto Efficiency (Optimality)

A century ago, the economist Vilfredo Pareto defined the concept of efficiency most frequently used by economists today. According to Pareto, an economically efficient (optimal) outcome in society is one under which it is impossible to improve the lot of any person without hurting someone else. Pareto efficiency also implies that no further exchanges would be found that could improve the lot of everyone to some degree. An efficient economy necessarily would have exhausted all means for mutual gains.

The Edgeworth box, using a hypothetical two-person economy and showing exchanges between these two people, provides a context in which to make the idea of Pareto efficiency clear. The box also is convenient for describing the mutual gains from trade and for defining the Pareto concept of efficiency.

Suppose that persons A and B, say Abner and Belinda, inhabit a desert island, forming a two-person economy. Further suppose that only two goods are available on the island. Food, \( F \), is gathered and is available in a fixed total amount, \( F_0 \), and medicine, \( M \), is likewise available in a fixed amount, \( M_0 \).

To form the Edgeworth box, consider Figure 18-1. Abner's preference map (indifference curves) is illustrated in the southwest corner. There is no reason to draw the axes out further than \( M_0 \) and \( F_0 \), which represent the total amounts of medicine and

¹For an excellent alternative exposition of welfare economic issues, see Williams and Cookson (2000).
Belinda’s preference map is similar to Abner’s except that it starts at the northeast corner. It is also constrained by amounts $M_0$ and $F_0$.

Any point in the box represents a complete and exhaustive distribution of the island’s endowment of food and medicine. For example, point $B$ represents a distribution in which Abner has $M_B$ units of medicine and Belinda has $M_0 - M_B$ units of medicine. Similarly, at $B$, Abner has $F_B$ units of food and Belinda has $F_0 - F_B$ units of food. With this orientation, we ask whether point $B$ is an economically efficient distribution.

The answer to this question must be no. To see this fact, examine by comparison point $C$. Point $C$ lies on an indifference curve that is above (to the northeast of) indifference curve $U_{113}$ and, therefore, $C$ is superior to $B$ in Abner’s view. Similarly, point $C$ lies on an indifference curve that is above (to the southwest of) indifference curve $U_{BB}$ and, therefore, $C$ is superior to $B$ from Belinda’s view. Because point $C$ is attainable and improves the lot of both persons while harming neither, it follows that the original point $B$ is not economically efficient.

Geometrically, the analysis just completed regarding point $B$ can be repeated for any point that forms a “lens” from the indifference curves passing through it. A lens is formed by the indifference curves $U_{AB}$ and $U_{BB}$ from point $B$ to point $D$. Whenever such a lens can be found, it will be possible to identify one or more other points superior to the initial point. Reapplying this reasoning, point $C$ is also not Pareto efficient. Pareto superior moves, where the welfare of both improves, can be made from point $C$. In contrast, a Pareto efficient point in the box is a point of tangency between two indifference curves, such as point $E$. It is impossible to move from a point of tangency without harming the lot of one of the two persons.

Each of Abner’s indifference curves will have a point of tangency with one of Belinda’s indifference curves. The collection of all Pareto efficient points in the box is
called the *contract curve*, which is so labeled in the figure. For example, at point $0_A$, Belinda has all of both goods, and even if many or most people consider this inequitable, it is Pareto efficient.

**Trading Along the Budget Line**

Having defined efficiency in the context of the Edgeworth box, we next ask whether the competitive market generates an efficient equilibrium in exchange. In a competitive market, each person treats prices as given and responds to prices by choosing the utility-maximizing bundle subject to his or her resource constraint. The resource constraint depends on the person’s initial endowment of food and medical care. Let the initial endowment for this two-person economy be represented by $V$ in Figure 18-2. Either person may trade away from his or her initial endowment at the market prices. Thus, Abner’s resource constraint will be represented by a budget line that passes through point $V$. As with any budget line, the slope of this line is the negative of the ratio of the price of medical care to food.

The slope of the budget line represents the rate at which one can trade one good for another at market prices. The steeper the budget line is in Figure 18-2, the greater the price is of medical care relative to food. For example, budget line $AB$ represents a relatively lower price of medical care relative to food than does budget line $CD$.

**The Competitive Equilibrium**

To find the competitive equilibrium, we must identify how much each would be willing to trade. Abner’s offer curve, for example, is the collection of points representing his offer for trade at each possible set of prices. Start at point $V$. Given budget line $AB$, Abner stays at point $V$, the point of tangency between budget line $AB$ and the highest indifference curve that is attainable.

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**FIGURE 18-2** The Intersection of Offer Curves Determines the Competitive Equilibrium

![Diagram showing the intersection of offer curves to determine the competitive equilibrium.]
Suppose the price of medical care were higher relative to food, leading to the steeper budget line CD. Given budget line CD, Abner would trade some medicine for some food to go from point V to point N. With budget line EF, Abner would trade to point X. Connecting all such points generates Abner’s offer curve.

The figure also shows Belinda’s offer curve, beginning at endowment point V. The two heavily shaded offer curves represent voluntary trades for the two parties. For trade, as in a competitive market, to be mutually voluntary, the offers of the two persons must agree. The offer curves agree only at their point of intersection, labeled point X in the figure. Point X thus constitutes the competitive market equilibrium in exchange for this two-person economy, starting with the endowment of V.

The First Fundamental Theorem of Welfare Economics

Is the competitive equilibrium, X, Pareto efficient? Yes, and there are two reasons that it must be so for every competitive equilibrium. The intersection of two offer curves is reached by a single price line from point V. Each person is at a point of tangency between the budget line and the highest attainable indifference curve. At point X, Abner’s indifference curve (not shown) is tangent to the budget line. Likewise, at point X, Belinda’s indifference curve (also not shown) is tangent to the budget line. Because these indifference curves are tangent to the same budget line at the same point, they must be tangent to each other. Because they are tangent to each other at point X, this point is Pareto efficient. The same argument applies for any competitive equilibrium; therefore, we have shown the First Fundamental Theorem in this context, namely that the perfectly competitive market equilibrium is Pareto efficient.

The theorem makes the competitive market solution attractive. If perfect competition can be achieved, then the market forces left to their own workings will generate an efficient outcome—an invisible hand solution. However, the theorem evokes several serious questions: Can competitive markets be achieved in health care? Is the context of this theorem appropriate for health care? Would the competitive market solution be equitable or would it leave too many people without adequate health care? We will address each of these questions. However, we begin this process by exploring the issue of equity within the context of the Second Fundamental Theorem.

Redistribution of the Endowment

The applicability of the First Fundamental Theorem is extended by the Second Fundamental Theorem, which states that given an appropriate endowment, any Pareto efficient outcome can in principle be achieved by a competitive market. Figure 18-3 illustrates the significance of this theorem.

In Figure 18-3, suppose that the initial endowment is V, and suppose that this endowment results in the competitive outcome represented by point E. Point E is only one of an infinite number of Pareto efficient points. It may be an outcome that is viewed as inequitable by some members of the society, here either Abner or Belinda, or both. In real life, the society may have millions of members, and this market outcome may even be perceived as inequitable by a majority of people.

The Second Theorem, however, defines a central role for competitive markets, even in cases where some competitive outcomes are considered inequitable. This idea is illustrated in the figure. Suppose, for example, that society prefers outcomes in the vicinity of point F to outcome E. By the Second Theorem, a competitive market can achieve the desired outcome, but it requires a different initial endowment from point V. As shown, the endowment point W is a suitable point from which to achieve an equitable market outcome, point F. Seen this way, redistribution combined with
competitive markets generates an efficient and equitable outcome. This contrasts with command systems that reject free markets, as well as with alternative schemes, such as price discrimination.

**Price Discrimination**

An alternative method often proposed for achieving a more equitable outcome is to provide certain services to the poor at reduced, subsidized prices. It may be surprising to learn that such systems are not consistent with Pareto efficiency. Consider the proof of the efficiency of competitive markets. It was crucial that both parties achieve a point of tangency to the same budget line. If different prices for medical care are charged to the poor than to the rich, then the two face different slopes of their budget lines. The result would be a position such as point S in Figure 18-3, a point that is not Pareto efficient. For an intuitive argument, consider a situation where the poor are subsidized in purchasing bread. The poor would adapt to the subsidized price until the rate at which they were willing to trade bread for other goods was equal to the rate at which they could exchange the goods at the subsidized price. The result is that the poor would undervalue bread in comparison to the wealthy. It would be more efficient for the poor to buy up bread and sell it to the rich. Such a side market, which would improve efficiency in the bread example, is not possible for medical care, which is not easily transferable. Thus, subsidized prices for medical care would generate an inefficient equilibrium.

The two theorems, along with the inefficiency of price discrimination, suggest the superiority of income transfers as a solution to equity problems in health care markets.
In Figure 18-3, the following situation takes place: By transferring initial resources between the two persons, the market is allowed to achieve an efficient outcome within the equitable range.

**Trade-offs Between Equity and Efficiency**

The theoretical superiority of redistribution of income to programs, such as price subsidies, has led many analysts to favor income maintenance programs as policy tools to offset the problems of poverty, including the problems of access to health care. Income maintenance programs are government programs designed to provide cash subsidies to the poor so as to maintain their incomes at or above a preset floor. Despite continuing interest in such programs, policy makers often have hesitated to use large-scale income redistribution.

Economists explain a major criticism of income maintenance by appealing to Arthur Okun's (1975) analogy of the leaky bucket. The act of transferring wealth from one group to another in society may generate disincentives that discourage productive effort. The tax-paying group incurs a tax burden that may reduce work incentives, and the recipient group receives subsidies that may reduce incentives to work and to self-help. By analogy, when we transfer income, our task is similar to transferring water in a leaky bucket. The amount of income available to be redistributed may decline as a result.

Rebecca Blank (2002) challenges the equity-efficiency trade-off idea, arguing that situations exist where the efficiency costs of improving equity may be very small, such as when the group receiving the benefit is unlikely to change its behaviors. She further posits that in some cases equity and efficiency are complementary.

In past decades, the federal government sponsored large-scale experiments to investigate the degree of work loss induced by the incentives inherent in income maintenance programs. These experiments reported reductions in work effort on average of between 5 and 10 percent. However, the work reduction estimates were considerably higher for certain subgroups, such as "male nonheads" (meaning non-heads of families) and women. Also, results generated in an experimental situation make it difficult to predict the results if the program were to become universal and permanent.

**Deviations from the Competitive Model in the Health Care Sector**

Another major criticism of the applicability of our theoretical analysis concerns the question of whether health care markets are sufficiently competitive or whether they can be made to be sufficiently competitive for competitive outcomes to be obtained. Substantial differences exist between most health care markets and the theoretical model of competition. For the results to hold, several assumptions must apply.

**The Assumptions Under Perfect Competition**

The First and Second Theorems apply to competitive markets. For a market to be perfectly competitive, it must have free entry and exit, perfect information, a homogeneous product, and numerous buyers and sellers each with no power over price. Furthermore, the efficiency of competitive markets is derived under conditions where
competitive markets generates an efficient and equitable outcome. This contrasts with command systems that reject free markets, as well as with alternative schemes, such as price discrimination.

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no significant externalities, public goods, or natural monopolies exist. Finally, the actors in the competitive markets are alternatively consumers maximizing their utility or producers maximizing their profits.

Many have criticized the applicability of the theorems to the health care sector, claiming that health care markets are typically not perfectly competitive. Most of these criticisms are valid, and they have frequently been recognized in health economics writing. The health care markets depart from competition in several ways:

1. Barriers to entry exist in health care markets. Such barriers include licensure laws and health planning controls on prices and facility construction.
2. There are often few enough firms that those in the market have some degree of monopoly power.
3. Health care services are not uniform in quality or other characteristics.
4. Motivations other than pure profit are common in health care.
5. The model depicts the operation of markets under conditions of certainty. However, health events entail a considerable degree of uncertainty.
6. Information problems exist.
7. Externalities are prevalent in health care.

Several of the seven listed deviations need little further explanation. However, we consider three for extended discussion: the role of uncertainty, the role of information, and the role of externalities.

The Role of Uncertainty
The uncertain nature of health status gives rise to the demand for insurance coverage among persons who are risk averse. In the present context, insurance creates problems for the efficient functioning of health care markets. Four issues should be noted:

1. Insurance changes the price of care to the insured person, which in turn leads to the distortions described under price discrimination.
2. Insurance causes the price paid to suppliers to differ from the price paid by the consumer, and this distorts the efficient matching of production to consumption.
3. Large insurance companies and government programs negotiate payment rates, thus removing price determination, at least in part, from the market.
4. In some health care markets, insurance coverage is so complete as to distort the health care producer’s incentives to be efficient.

The Role of Information
The efficiency results for competitive markets depend on all parties having complete information available. As we have shown elsewhere, it is particularly problematic for markets to function when information is imperfect and asymmetrically available to the parties in the market. Potential problems of information and efficiency arise either when the physician is much more informed about the appropriateness and effectiveness of treatments and techniques than the consumer is, or when the consumer has more knowledge of his or her health status and health habits than the potential insurer does.

The Role of Externalities
Finally, health care markets are subject to prevalent externalities. A prominent externality will occur whenever participants in the market are significantly concerned about the health care received by others, not just their own health care. This externality may
be difficult to internalize in private charity markets, and it arguably causes health care markets to be inefficient. Because some analysts have identified externalities as the most important efficiency argument for social insurance programs in health care, we develop an extended discussion later in this chapter.

Promoting Competition in the Health Care Sector

If we could manipulate real-world markets as easily as we can change the assumptions of theory, then it would follow from our theoretical discussion that we should promote competition in health care markets whenever possible. Often the promotion of competitive elements in health care markets will prove useful. However, further theoretical grounds exist to qualify our statements.

The Theorem of the Second Best

One qualification involves the Theorem of the Second Best in welfare economics. Consider an economy in which there is more than one departure from the conditions of perfect competition. Consider further any policy that corrects one or more of these departures from perfect competition but does not correct all of them. It has been shown under the Theorem of the Second Best that such a policy may not necessarily improve society’s welfare.

An intuitive understanding of why this result is obtained can be gained by considering a market where there exists a pure monopolist (a departure from the conditions of perfect competition) who is also a polluter (a departure from the conditions under which competition is efficient). Basic theory shows that a monopolist will produce less output than a competitive industry would have under otherwise similar conditions. A policy that hypothetically converts the industry to perfect competition would resolve one discrepancy but not both because both output and pollution would increase. Societal valuations of the extra output versus the extra pollution could in principle determine whether the change worsened society’s well-being. Thus, correcting some economic “wrongs” but not all of them may not necessarily improve welfare.

This classic example of the monopolist polluter illustrates the idea of the theorem, but it does not make clear its applicability to the health sector. Consider a somewhat more controversial health-related example. Physician licensure laws grant licensed physicians a degree of monopoly power, a distortion from the competitive conditions. At the same time, however, health consumers have imperfect information on therapies and prices and are less informed than the physicians. This, too, is a departure from competitive conditions. If one eliminated the imperfection caused by licensure but did not simultaneously address the information problem, patient welfare could be worsened. This could happen because, without licensure restrictions on physicians, poorly informed consumers could be fooled by quacks and possibly dangerous treatments. This example also illustrates the Theory of the Second Best.

It would be a misapplication of the Theorem of the Second Best to conclude that all health care policies that improve competitive elements are incorrect. More properly, the theorem states that we cannot assume competitive policies will improve welfare. We necessarily operate in the world of second best because it will be impossible to convert all health care markets into the model of perfect competition. A competitive policy may improve the functioning of health care markets in a manner that improves society’s well-being. Each policy must be considered on its own merits, not solely on the grounds that it promotes competition. Thomas Rice provides a separate critique of the competitive model in Box 18-1.
The Rice Critique

Welfare economics warns that the benefits of competition require many assumptions that do not hold for the health economy. To fix one of these flaws by itself does not necessarily help society. Understanding these caveats, we noted that most health economists favor competitive markets when they do improve welfare. Thomas Rice (1998), however, makes the stronger case that too often health economists promote competition but fail to acknowledge the many market flaws.

His line of reasoning is essentially the same—that many needed assumptions are violated. However, his more extensive list illuminates additional basic issues:

1. The law of diminishing marginal returns may not hold.
2. Consumer utility may depend on factors other than goods and services.
3. Consumer tastes are not fixed but are often learned.
4. Consumers may not be rational.
5. Individuals may not be the best judges of their own well-being.
6. The social welfare function depends on more than individual consumption.

These issues, recognizable to economists, could raise serious questions for the analysis we have described. For example, if the assumption of rationality fails to approximate behavior, then most microeconomic theory needs to be reevaluated.

Items 5 and 6 further show how thorny the underlying normative issues are. U.S. society often makes choices that imply that individuals are not the best judges of their own well-being. Examples include motorcycle helmet laws, criminalization of drugs, and mandatory retirement contributions. Wide acceptance of these limitations suggests that Rice is correct on item 5 and possibly item 6. However, controversy always arises over where to draw the line.

A particular debate arises regarding those who are uninsured. Mark Pauly (1996) suggests that voters could probably be convinced that the value of certain reforms aimed at reducing the rate of uninsurance is worth the costs. However, he asserts that, “If we cannot convince the decisive voters of the value of what we value, then I think we need to accept the verdict of democracy” (p. 14). Uwe Reinhardt (1996) responds:

“I, for one, believe that, if this nation is ever to have truly universal health insurance coverage and a truly humane safety net all around, an elite espousing those goals would have to impose that state of affairs on a generally confused plebs that has quite unstable, often logically inconsistent and utterly malleable preferences on the matter (p. 24).”

Reinhardt echoes the frustration of many health economists on this point, but many also question Rice’s items 5 and 6 in the process. Plebs here means the general populace, but it shares the same root with the word plebiscite, a vote of the general populace. Would health policy “impose(d)... on a generally confused plebs” pass a plebiscite?

An Economic Efficiency Rationale for Health Care Programs Based on Externalities

An externality occurs when someone external to the market transaction—that is, someone who is neither the buyer nor the seller—is affected directly by the transaction and not compensated. A common example in health care occurs in the case of immunization for contagious diseases. Here, people outside the market transaction—people who are not presently being immunized—are affected by the immunization because the immunized person is less likely to become a carrier of the disease. This situation is an example of a beneficial consumption externality.
In the presence of a beneficial externality, the competitive market will tend to produce an inefficiently low level of output. The Pareto efficiency definition can be transformed in terms of a single market as the condition that marginal benefits equal marginal costs in equilibrium. Individuals in a well-functioning, perfectly competitive market in theory will use medical care until the marginal benefits, measured through the demand curve, equal marginal costs, which in equilibrium will equal the price. In Figure 18-4, this leads to an efficient level of consumption, $Q_{opt}$, in the absence of externalities.

A marginal external benefit to people in society must be added to the marginal private benefit, which is measured by the demand curve, leading to the marginal social benefit. In Figure 18-4, the marginal external benefit curve is shown as $MEB$. The marginal benefit to society as a whole is the vertical sum of the $MEB$ curve and the demand curve. The result is the marginal social benefit curve, $MSB$. Efficiency for society occurs at output level $Q_{opt}$ whereas the market would achieve an inefficiently low level of output, $Q_m$. Thus, on efficiency grounds alone, society may be justified in subsidizing immunizations.

Although immunization for contagious diseases illustrates the logic and role of beneficial consumption externalities in justifying subsidies for (or possibly public provision of) care, such as the polio immunizations of the 1950s and 1960s, it represents a fairly minor problem and could not in itself be used to justify large social insurance programs. However, an alternative health care externality, one that we have identified elsewhere as a charitable externality, can in principle be sufficiently important to justify such programs.

This externality would occur, for example, whenever people feel that some segment of society is receiving insufficient care in the sense that the charitably minded person would be willing to pay to help these people get care. Willing to pay here means that they would pay if it were so arranged that their contribution would be perceived as helping the poor to acquire health care. Such charitable feelings are probably widespread in most societies. As Pauly (1971) argued:

The desire to eliminate the diseconomy that the presence of curable but incurable disease or injury may exert on others does appear, in general terms, to be a common characteristic of human beings. At least at some levels, most of us would be willing to give up some of our income to help a suffering fellow.

**Figure 18-4** The Socially Efficient Equilibrium in the Presence of a Beneficial Externality

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**Figure 18-4** shows the relationship between marginal social benefit ($MSB$), marginal external benefit ($MEB$), marginal cost ($MC$), and marginal private benefit ($D$). The equilibrium occurs at $Q_{opt}$, where $MSB = MC$. The price ($P$) is determined by the intersection of the demand curve ($D$) and the supply curve (not shown).
Some may, of course, be immune to such feelings, but individuals may also be immune to contagious disease, and this should cause no insurmountable theoretical problems. (pp. 10-11)

This externality has a different source than the case of immunization and is probably more important, but the economic argument is of the same form. In Figure 18-4, consider the curve $MEB$ to measure this charitable externality. Then, as before, the efficient level of output, $Q_{opt}$, is greater than the market output, $Q_m$. Under certain circumstances, this efficiency may be sufficient grounds to intervene, for example, by providing a program of social insurance.

**Need and Need-Based Distributions**

Even if we can identify accurately the efficient allocation of health care, we nevertheless may find many people in society dissatisfied with the outcome because many people will not get the health care they need. If an efficient market cannot be created, the same concern will still exist in most people’s minds. That is, there will be additional concerns, over and above efficiency concerns, regarding equity. In the health care literature, the concerns for equity most often center on the question of whether people are getting the health care they need. Thus, health care needs must be addressed.

Unfortunately health care need is often either undefined or variously defined. The definitions employed may take either extreme, need being defined maximally or minimally. For example, Culyer and Wagstaff (1993) review several definitions of health care need; they conclude that a maximal need definition is superior, defining need as:

the expenditure required to effect the maximum possible health improvement
or, equivalently, the expenditure required to reduce the individual’s capacity to benefit to zero. (p. 436)

In contrast, some analysts or policy makers treat health care need as a minimal requirement or standard of adequacy. Federal health planning efforts in the 1970s sought to control the perceived proliferation of health care in order to control costs. Health planners at the time, as well as most health cost control advocates in any era, argued implicitly that consumers were getting more health care than they really needed.

Often the discussion of needs gets disconnected from the fact that the output of health care and the distribution of health care to meet people’s needs are chosen in the context of society’s choices of all its public goals. We present a construction of need that brings this to mind. Let health care needs be defined within the context of the choice of society’s goals for population health status as well as in the contexts of other goals, such as education and defense. To illustrate, we identify in Figure 18-5 the production function for health defined over the levels of a variable input, health care, given the conditions of environment, $E$; lifestyle, $LS$; and human biological endowment, $HB$. Here the technically maximal health status is $HS_{max}$. To achieve this health status level, a health care level of $HC_{max}$ is needed. However, society may choose a lesser health status goal than the maximum achievable, using the savings to further other goals. For example, if society through its choice processes selects health status goal $HS_p$, then health care level $HC_p$ is needed.

The choice of a health goal implies a needed level of health care, that is, a level of health care “utilization.” In the early 1990s, economists debated the issue of whether

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2 The exposition of need focuses on the consequences; Hurley (2000) describes this interpretation as strongly “consequentialist” and further describes alternative views.
Utilization or “access” was the superior choice for defining needs. The words equity of access, which frequently appear in public documents in various countries, suggest an equal opportunity, especially a financial opportunity (Mooney et al., 1992). For many health economists, however, access is difficult to define. While health care utilization is more easily measured, it is usually also the ultimate reason for our concern about access (Culyer, van Doorslaer, and Wagstaff, 1992a, 1992b).

**Health Care Needs and the Social Welfare Function**

How, then, is the health status goal selected? We depict this choice using the concept of a social welfare function.

**The Utility-Possibility Frontier**

The Edgeworth box shows the efficient choices available to society in allocating resources among people. Yet it is also apparent that at many points on the contract curve, Abner or Belinda may be allocated few or no resources. These points are unquestionably economically efficient, yet they may be indefensible within any definition of a humane society.

Economic theory suggests that a social welfare function reflecting society’s overall preferences is necessary to determine which of the efficient points is chosen. We can trace out a utility-possibility frontier, \( UU \), from the points in the Edgeworth box in Figure 18-1. Begin at the allocation where Belinda has everything and Abner has nothing. In Figure 18-6, we can assign Abner a utility of zero and evaluate Belinda’s utility as the intercept of the vertical axis.

We can then draw a \( UU \) curve by reallocating resources to Abner from Belinda as we move along the contract curve in Figure 18-1. Recall that the fundamental property of Pareto efficient distributions is that Abner’s utility can come only at the expense of Belinda’s utility. Therefore, the \( UU \) curve in Figure 18-6 must be downward sloping. The horizontal axis intercept summarizes the point at which Abner has all of the resources.

**The Social Welfare Function**

It is now up to society to decide which point on \( UU \) to choose. This decision must be made according to the rules by which societies operate, through debate, consensus, and maybe even dictatorial power. Economists define this as a social welfare function. Consider a society in which the consensus was that everyone’s utility level should be exactly the same, with no variations tolerated. We would recognize this as a set of right-angled social indifference curves along a 45-degree line from the origin. The optimum
allocation would be at point $A$, which is a tangency between the $WW$ curve and the $UU$ curve. This would indicate equal utility levels for Abner and Belinda. From point $A$, we can then return to the one point on the contract curve in Figure 18-1 in which the utility levels are equal, denoted $Z$. Selecting this point leads to the unique allocation of the two goods to Abner and Belinda (although not necessarily the same amounts to each, as shown in Figure 18-1).

Many would argue that the specific social welfare function (with equal levels of utility) discussed previously would be highly questionable. Humane societies might agree that everyone should be provided with enough resources for at least a minimal standard of living; for Abner this would be $U_{\text{min}}^A$ and for Belinda this would be $U_{\text{min}}^B$. This can be characterized as two constraints on the $UU$ curve in Figure 18-7. Such societies would consider no social welfare function that would provide Abner with less utility than $U_{\text{min}}^A$; this would be similar for Belinda regarding $U_{\text{min}}^B$. Even here, however, the answer depends on the exact social welfare function chosen. Societies in which people like Belinda are most influential may have social welfare functions with social indifference curves like $WW'$. In this case, people like Belinda would get larger shares of the resources than people like Abner. The optimum at point $B$, although providing subsistence living for citizens like Abner, would leave citizens like Belinda better off than the optimum in Figure 18-6.

**The Social Welfare Function and Health Care Needs**

Within this framework, we now discuss the various social choice processes that scholars and policy makers have proposed for the equitable provision of health care. Let the social welfare function of society ($SW$) represent the preferences of society as a whole. The function in a commonly used form:

$$SW = f(U_1, U_2, \ldots, U_n)$$  \hspace{1cm} (18.1)

where social welfare is characterized as a function of the utility levels of each of the $n$ persons in the society. Utility for each person as usual depends on his or her consumption
Belinda’s utility

Abner’s utility

of the available goods in society, including health care. In addition, we may suppose that each individual to some degree perceives an external benefit from the consumption of health care by others.

Society may be perceived to be efficient when it acts as if it were choosing among its variables to maximize the social welfare function. The choice process may be conceived graphically in Figure 18-7 as choosing the highest social indifference curve attainable given the utility possibility frontier. The level of health care needed can be defined within this context. The health care needed by each person in society is that which maximizes SW. Social welfare will be maximized when society chooses its optimal health status goals in conjunction with optimal levels of other goals. One example of a societal choice process is Williams’s “fair innings” proposal in Box 18-2.

The social welfare function has proved flexible within health economics because it can be used to formulate other conceptions of health equity. Some health economists propose that society’s health goal should be the maximization of community health and propose that the quality-adjusted life years (QALYs) that remain in the life expectancy of the community be used as the measure of health. Wagstaff (1991) showed how this concept, as well as equity adjustment factors, can be incorporated into the social welfare function framework. Bleichrodt (1997) attempted to make the QALY approach more concrete by demonstrating mathematical assumptions that give the utility of the QALY interpersonal comparability, making the social welfare function a matter of simply adding up all individual utilities. This is a return to utilitarianism of the eighteenth century, but also a novel use of the social welfare function framework.

Norman Daniels’s Concept of Health Care Need

To assume that health care need is determined by the same social choice mechanism by which society makes all its choices of social goals is to treat health status like all other goals. Some analysts argue that health is special and that health care needs have a more objective independent basis. Others argue that the standard economic conception of
Alan Williams (1997) proposes that people would generally agree to the principle that everyone is entitled to a normal span of life at a reasonable level of quality. The Williams metaphor fits on both sides of the Atlantic: Cricket has one or two innings and baseball has nine innings—generally that is all anyone gets—but everyone should get that much. This idea applies with most force to trade-offs in life years between the old and the young; in this context, it implies a rationing by age.

Consider two individuals, each of whom stands to gain eight good quality extra years of life after being "rescued" from a lethal disease by medical technology costing $100,000. Let one of these people be 80 years of age and the other 30 years of age. If resources are scarce, which individual should get the treatment? The "fair innings" concept would clearly require the treatment go to the younger person since the 80-year-old person has had his or her fair innings already.

Valuations by society in this fair innings scheme are generally not so simple. This central issue lies in how much society prefers to help the one versus the other. If we agree that the elderly facing illness and the young facing illness are not equal, then the question for Williams becomes "to what degree are we as a community averse to this inequality?"

Society's well-being is flawed. Its dependence on the individual's conception of his own well-being, its reliance on the Pareto principle, and its usual insistence that social choice issues depend solely on individual utilities have been criticized as "welfarism." Those making the criticism include recent Nobel economist Amartya Sen. To address the special role of health, the philosopher Norman Daniels (1985) has developed a health care needs definition, and we provide an outline of his approach here.

1. **Health care is special.** Under this view, health care can be separated from other goals. To make this separation plausible, health care must be viewed as a primary good that is special because it is central to the task of attaining or restoring a fair equality of opportunity. In this sense, it comes prior to other considerations.

2. **Species-typical functioning.** It is further argued that the human species has a range of functioning that is typical and appropriate to it. Disease here means the absence of health; health is defined as the ability to attain a functioning level typical to the species.

3. **Fair equality of opportunity.** Given the nature of society and the human species, there is a range of behavior opportunity that every person in society should have available. The range will vary somewhat from person to person inasmuch as we each have different endowments of skills and abilities, but all are entitled to their fair share.

To use the fair equality of opportunity standard of health care need, we must imagine that there is a degree of objectivity behind its construction, and that need so constructed would be observable in common by most people. We do not solve this matter here, but instead point out what Daniels's project entails. If Daniels's view was accepted as correct, then health care need could be identified separately from the context in which other goals for society are chosen. We leave as a discussion question the issue of whether this is possible.³

³The issue can be pursued further with Daniels's stimulating and controversial book (1985) and articles (1981, 1982).
Economic Criticisms of Need-Based Distributions

The ideas of mainstream economics often clash with need-based conceptions of the appropriate distribution of health care resources. The economic criticisms are directed to particular conceptions of need and can be understood as saying "if by need you mean X, then the following criticism applies..." Several criticisms of this sort are found in the literature.

1. The bottomless pit. Health is undoubtedly subject to diminishing marginal returns in production. Thus, if the technical maximum health status goal is chosen, the marginal unit of health care will have nearly zero effect on health status. Because it is doubtful that all societal goals can be attained maximally, social welfare generally would be improved if society would reduce health care use somewhat and use the freed resources for other goals. For that matter, health care needs at or close to the technical maximum also could exhaust most of society's resources and thus constitute a bottomless pit.

2. Needs should not be chosen independent of costs. Society's health status goals should depend in part on the costs of health and thus on the price of health care. This is so because the costs of health care resources determine the amounts of other goods that must be given up to attain health goals. No society is wealthy enough to attain the maximum amounts of all goals, and health has opportunity costs.

3. The role of scientific medicine in determining needs. From similar reasoning, it follows that health needs cannot be determined solely on the basis of scientific medical knowledge. The role of medical experts is critical in needs analysis, inasmuch as scientific data are required to determine the medical inputs needed to attain a given health goal. However, the appropriate health status goals themselves must be chosen with knowledge of society's economic constraints and its values. In some form, the political process is required to identify the trade-offs that society is willing to incur to attain any given goal.

4. Monotechnic needs. Finally, Fuchs (1974) has pointed out that when needs analyses are stated in terms of needed health resources per capita, they often implicitly falsely assume that only one available technique exists for pursuing a health status goal. More plausibly, many opportunities exist for substitution, not only among health care inputs but also among health care inputs and other inputs into the production function of health.

Horizontal Equity and Need

Health care need is also a central focus in attempts to answer questions about the equitable treatment of people with equal needs. Equal treatment of equals is known as horizontal equity. To understand the issues and findings, we draw on the work of van Doorslaer and Wagstaff (1992). These authors define inequity by beginning with the following equations:

\[ m_i = a_p + b_p h_i, \quad \text{if poor} \]  \hspace{1cm} (18.2)

\[ m_i = a_r + b_r h_i, \quad \text{if rich} \]  \hspace{1cm} (18.3)

In these equations, \( m \) is medical expenditure; \( a_p \) and \( a_r \) are constant levels of expenditure when healthy for the poor and the rich, respectively; \( b_p \) and \( b_r \) are constant coefficients of health status, \( h \), which equals 0 when the person is healthy and 1 when sick.
Horizontal equity occurs when $a_p = a_i$ and $b_p = b_i$; that is, when the expected average spending of the rich and poor are equal both when well ($h_i = 0$) and when sick ($h_i = 1$). Does this square with your own sense of what equity means? 

#### Comparing Horizontal Equity Among Countries

To generate a measure of the degree of inequity, the authors then calculate the standardized expenditure shares, based on equation (18.2), which are the groups' shares of total expenditure reflected by their spending. The final result is described graphically in Figure 18-8. Here, the curve labeled $g$ measures the cumulative standardized shares against the cumulative population arranged by income level. As shown in this hypothetical example, the poorest 20 percent of the population accounts for about 5 percent of medical expenditure, the poorest 40 percent accounts for about 11 percent of the expenditure, and so on. If spending favors the rich, the curve will lie below the diagonal, as in this case. When spending favors the poor, the curve will lie above the diagonal. The degree of inequality is measured as the ratio of the area of the ellipsoid $A$ to the total area under the diagonal. 

#### The Results

The van Doorslaer and Wagstaff results for inequity across countries are shown in Table 18-1. These data suggest that unequal use by people and income groups given health status is the common rule, not the exception. However, the negative numbers in the table show countries where the estimated inequality is in favor of the poorer people. Only in the Netherlands, Spain, the United Kingdom, and the United States does

1. Mooney et al. (1991, 1992) question whether equity means equal expenditure. An individual may differ from another because of different preferences, so even with equal access, the amount of expenditures on care will differ. Culver, van Doorslaer, and Wagstaff (1992a, b) respond to this objection.

2. If the curve lies above the diagonal, then the inequality is measured as the ratio of the negative area of the ellipsoid to the total area under the diagonal.
the distribution tend to favor the rich, although in the Netherlands the result is not statistically significant. When the elderly are left out of consideration in the United States, then the distribution even in the United States favors the poor. Although measurement and definition issues of horizontal equity may elicit disagreement, these numbers representing unequal use for a given health status across income groups are clearly defined and tell an important part of the story.

Theories of Social Justice

Inevitably, a treatment of what health care distribution is equitable and what health care needs should be met in a society depends on ethical theory. An ethical theory serves to identify a context and reasoning to determine what ought to be done, as opposed to mere positive analysis of what is the case. Ethical theories that serve to determine a fair or just distribution of economic resources are sometimes called theories of social justice. Seen this way, any notion of equity or need in health care, to be complete, must be connected to an ethical theory or perhaps to a theory of social justice.

Several theories of social justice have been proposed. It cannot be said that we have a consensus-accepted theory of social justice. Even without a consensus, however, theories of social justice help to illuminate the issues that must be addressed if a consensus is to be achieved. We offer a brief overview of three social justice theories, along with a selection of criticisms of each theory.

Utilitarianism

Utilitarianism became prominent in the nineteenth century and is still current in modified forms. It can be understood as the greatest good for the greatest number. In its classical form, it identified the social optimum coincident with maximization of the sum of utilities of all persons in society. Classical utilitarianism in effect defines the social welfare function as the sum of individual utilities.

In the form of utilitarianism promoted by Jeremy Bentham in the eighteenth and nineteenth centuries, an individual’s utility was conceived of as cardinally measurable, at least in principle, and comparable among individuals. The utilitarian ethic originally was conceived somewhat literally as maximization of society’s total satisfaction level.
Utilitarianism captures the idea of trade-offs among goals. Under this construction, society may choose to accept some harm for a few members in return for a greater good for the many. As such, it avoids the bottomless pit criticisms mentioned earlier. Health status would not generally be maximized for every individual in society under this view.

Some Criticisms of Utilitarianism
Classical utilitarianism came to be criticized within the economics profession early in the twentieth century. Economists generally rejected the idea that utility could be cardinally measurable and comparable among people. It is viewed as unscientific to suppose that one individual’s level of satisfaction could somehow be added to that of another person. Modern social welfare theory in economics has proceeded along ordinal utility lines. Utility in these theories retains the role of ranking preferences among alternatives, but the notion of a fixed quantitative measure of happiness was discarded in most modern theory.

Two other criticisms of utilitarianism illustrate some of the weaknesses identified in the theory. One is the question of domain—that is, whose utilities are to count? Utilitarianism does not itself identify where to draw the boundaries of membership in the society. Are foreign people or noncitizens to count? If not, why not? Are animals to count? Unborn future generations? Is the utility of the fetus to count or only that of the already born?

A second criticism raised by Robert Nozick (1974) poses a similar question regarding possibly malevolent individuals in society. For example, suppose an individual, because of bigotry or sheer malevolence, gets satisfaction out of the suffering of some other group in society. Is the malevolent utility of such a person also to count?

Rawls and Justice as Fairness
John Rawls (1971) approached the concept of social justice from a different viewpoint. Here, a primary principle of justice is that social choices must be fair. Rawls views it as unfair for social choices to be dominated by people with economic or political power who often have vested interests because of their circumstances in society. Instead, to be fair, we should make our choices from a position divorced from arbitrary special interestedness. Such a position, it is proposed, is one from behind the “veil of ignorance.”

The Rawlsian veil of ignorance is a hypothetical situation in which we can think rationally but for which our particularities of self and economic situation are as yet unknown. It is as if we could somehow contemplate life in society before we are born and before we know whether we will be rich or poor, black or white, male or female, tall or short, and so on. Rawls’s idea is that, so divorced from our vested interests of life, we would generally come to a consensus about principles of social justice, and specifically we would agree to the Rawlsian maximin principle.

Under the maximin principle, we would each reason that without knowing who we were to become in society, we would presume that we could be the person worst off. Under such circumstances, we would agree, argues Rawls, only to a system of justice in society that maximized the position of the worst off. This need not result in complete equality of incomes and resources including health care, but departures from equality would be permitted only if the lot of the worst off would improve. Health care under a

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6Olsen (1997) notes that Rawls’s maximin principle is the most prominent of a class of egalitarian social justice principles. Olsen’s exposition offers a diagrammatic depiction of each social justice theory prominent in health economics.
Rawlsian system of social justice would presumably also be provided if the needs of the worst off were regarded as a priority.

**Some Criticisms of Rawlsian Justice**

Rawls's theory of justice also has drawn criticism, and we illustrate some of these criticisms. It has been pointed out that Rawls assumes that each of us behind the veil of ignorance is extremely risk averse. Suppose that an alternative situation, A, offered everyone an income of $10,000, while alternative B offered one person $9,000 but everyone else $100,000. Under the maximin principle, persons behind the veil would choose alternative A, the alternative with the higher income for the worst off. Would people really be so risk averse as to forgo even extremely good odds of a large gain?

The Rawlsian theory of justice also appears subject to the bottomless pit argument. The instance of health care provides a good example of the problem in the views of Arrow (1973):

Thus there could easily exist medical procedures which serve to keep people barely alive but with little satisfaction and which are yet so expensive as to reduce the rest of the population to poverty. (p. 251)

Despite the criticisms, Rawlsian justice provides a prominent example of a theory of social justice that entails a strong presumption in favor of equality—a presumption that permits inequalities to arise only if they contribute to the lot of the worst off.

**Liberalism, Classical and Modern**

Classical liberalism refers to the political philosophy developed largely during the Age of Enlightenment, which centers on the eighteenth century. Led by the principles of John Locke (1660), it emphasizes the rights of the individual to his property and to himself. In this view, a person enters the state voluntarily, and he is free to choose what he deems best for himself and his family. The tradition was the intellectual guide to the American Constitution, as is well-known to American school children. These "classical liberals" also included Adam Smith and, later, John Stuart Mill and Friedrich Hayek. Liberty in this tradition was largely a matter of emphasis as opposed to a fixed constraint. These philosophers largely supported taxation and often mentioned favorably things, such as government programs, to improve the well-being of the community; Locke (1697, p. 4), for example, favored government aid to the poor, Smith favored public schooling for working class children (1976, p. III, II, 303), Mill applied a utilitarian calculus to public issues (1975), and Hayek, whose life spanned the creation of the New Deal, spoke favorably of social health insurance itself (1960, p. 298). Would classical liberals, in sum, support for example a modern universal social health insurance? Folland (2005) reasons that they might do so.

In contrast to the older, verbal tradition of these economic philosophers, the modern libertarian, Robert Nozick (1974), departs both in analytical style and by drawing stronger implications. Nozick asserts that government must limit itself to maintaining only the necessary services: the "minimal state."

Nozick proposes that natural rights suggest the necessity for a libertarian constraint. By a libertarian constraint, he means that any system of social organization should prohibit the coercion of others, and people are entitled to keep any property received through a voluntary transaction. From these principles, Nozick justifies the existence of a minimal state. He argues that these principles of justice necessarily limit the role of the state, and in consequence, social programs beyond the minimal functions of government in providing public police protection services would not be warranted.
It follows that social programs providing for health care also would not be warranted, and the health care needs of one person would not place obligations on any other person other than for what he or she voluntarily is willing to accept.

**Some Criticisms of the Modern Libertarian Theory**

A central focus of criticism is the assumed libertarian constraint itself. For those who do not accept the constraint as an implication or necessity of natural rights, it will be hard to see why we are not free to trade off some degree of liberty in order to make gains in efficiency. For example, the Food and Drug Administration restrictions on the availability of certain drugs represent restrictions on liberty, but at least, in some cases, they may be supportable on efficiency grounds. Pauly (1978) has argued that if the costs of conveying information to the public are sufficiently large, substantial efficiency gains may accrue simply by restricting access to a potentially dangerous drug. The restriction of access may in some cases require a physician’s prescription; in other cases, it may require banning the drug from the market.

Members of society frequently accept rules that restrict liberty somewhat but that are expected to improve outcomes. Wittman (1982) has discussed the potential efficiency of simple rules in day-to-day life and in sports. A traffic light restricts liberty but promotes the efficient and safe flow of traffic. If we accept the principle that liberties can be traded off to gain certain efficiencies, this raises the question of whether we must accept the libertarian constraint.

**Conclusions**

The three theories of social justice described here attempt to ground our understanding of the distribution of goods and services—including health care—in a system of ethics. The brief review of these theories cannot account for all arguments and rebuttals nor is it an exhaustive coverage of the many normative models available. Those interested in ethics, as it concerns economic distribution, should consult the original sources. The theories, however, serve to show how widely people’s understanding of appropriate distributions of health care differ, and their consideration suggests that we have as yet no consensus. Nevertheless, these issues of justice are raised whenever society wishes to modify the distribution of health resources on grounds of need and equity. The issues are no less important because there is disagreement.

The meaning of efficiency is more sharply defined. Here the issues of controversy involve the degree of efficiency attainable either with existing health care markets or with health care markets as modified by new policies. The theoretical model of perfect competition generates a Pareto efficient outcome. Health care markets in practice, however, differ in many respects from those that have perfect competition. Perhaps the most notable discrepancies of actual health care markets from the theoretical model arise because of the role of uncertainty, the problems of information, and the presence of externalities.

Perfection in either direction is not attainable. We must inevitably accept approaches to health care distribution that are second best, evaluating each proposal on its merits. While perfect competition is unattainable, proposals that improve the degree of competition in health care markets may nevertheless improve society’s well-being. On the other hand, proposals for providing social insurance programs to at least some segments of the population can be supported in principle on efficiency grounds whenever substantial charitable externalities are present. Alternatively, social insurance programs may be justified on the basis of one or more systems of social justice.
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SUMMARY

1. Pareto efficiency defines a situation where it is no longer possible to make mutually beneficial changes. It is Pareto efficient to exhaust all avenues for gains that benefit someone and harm no one.

2. Under theoretical conditions of perfect competition, the competitive market is Pareto efficient. In the Edgeworth box for exchange, regardless of the initial endowment position, a competitive free exchange will lead to a Pareto efficient point, a point on the contract curve. This is the First Fundamental Theorem of Welfare Economics.

3. The Second Fundamental Theorem of Welfare Economics also is illustrated by the Edgeworth box for exchange. The theorem holds that any Pareto efficient outcome can, in principle, be achieved by a competitive market, given a suitable initial distribution of resources.

4. Price discrimination is Pareto inefficient. This result includes that form of price discrimination arising when a favored segment of the population is provided reduced prices for health care so as to improve access.

5. The health care sector deviates from the conditions of perfect competition in many respects. These include major issues of the role of uncertainty, the role of information, and the role of externalities.

6. The Theorem of the Second Best suggests that promoting competitive features in health care markets is not welfare enhancing per se. Nevertheless, many competitive proposals in practice may be welfare enhancing.

7. Social programs for the subsidization or provision of health care can be theoretically rationalized on grounds of efficiency as well as equity. The usual efficiency argument posits the existence of a charitable externality in health care. The presence of externalities may, in principle, justify market interventions.

8. Need-based distributions of health care resources tend to be based on equity grounds and usually imply a rejection of market outcomes. Health care need may be understood as health care resources required to attain a given health goal chosen by society.

9. Society's optimal choice of goals may be summarized by the social welfare function, defined over all possible combinations of the individual utilities of society members. This leads to the optimal choice by selecting the point on the utility-possibility frontier that maximizes social welfare.

10. Norman Daniels's concept of health care need is based on the fair equality of opportunity. It argues that health care needs may be identified separately from other social decisions.

11. Several need-based distributions can be criticized on economic grounds. These grounds argue that health care needs should not be (1) the technical maximum, (2) independent of cost, (3) chosen solely on technical medical criteria, or (4) monotechnic.

12. A philosophical theory of justice is needed to provide an ethical grounding for a proposed distribution. There is no present consensus on such a theory of justice.

DISCUSSION QUESTIONS

1. At point $O_1$ in Figure 18-1, Belinda has all of both goods. Is this point Pareto efficient? Is it equitable? Discuss.

2. If society could clearly choose an equitable point reflecting a distribution of the two goods, is this point inevitably going to lie on the contract curve?

3. Choose an example of a health care market and identify ways in which it differs from the perfectly competitive model. Do you think that these deviations from competition could each be repaired by appropriate policies? Discuss.

4. We describe several economic criticisms of need-based distributions. Do any of these criticisms apply to Norman Daniels's conception of health care need?

5. Speculate on how each of the three described theories of social justice would view government programs designed to provide infant and child care to the poor using tax dollars.
6. Under utilitarianism, one maximizes the total utility of society. What does this imply about the marginal utility for each person? What does it imply about the total utility for each person?
7. Suppose society determined that it must provide a minimal sustained level of health to everyone. What would this imply regarding society's expenditures on health?
8. Insufficient health care for some often is seen as a problem of insufficient income to purchase health care. Discuss two alternatives to social programs that provide health care.

EXERCISES

1. Prove that point B in Figure 18-1 is not Pareto efficient.
2. Draw an Edgeworth box like the one in Figure 18-2 but with only these details inside: the point V and budget line AB through V. Using indifference curves, depict the utility-maximizing choice for Abner. Now let the budget line rotate to CD, drawn to reflect a higher relative price of medical care. Again identify the utility-maximizing choice for Abner.
3. Is it possible to find a point on the contract curve that is not a competitive equilibrium?
4. Let $Q_{opt}$ in Figure 18-4 represent the optimal level of health care in society under the external benefits rationale for social health care programs. Would members of society necessarily view $Q_{opt}$ as the equitable amount of health care?
5. If all tax-paying members of society became "hard hearted," feeling no external benefit in the health care provided to others, then what would be the optimal health care output under the external benefit rationale in Figure 18-4?
6. In Figure 18-7, which depicts the utility-possibility frontier, would society ever choose an inefficient point (inside $UU$) as the optimal point?
7. Suppose Fred has an income of $5,000 per year, and Harry has an income of $105,000 per year. If we tax $50,000 from Harry to give to Fred, will this represent a Pareto improvement for society? Why or why not? Would this improve society under some other criteria?