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### Summary Article: **Health Economics**

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Health economics is the study of the supply and demand of health and healthcare services. While there are many types of healthcare services, health economics focuses on those related to medical care even though factors such as diet and exercise may be equally or more important determinants of health. Health economics provides a framework for identifying the determinants of the supply and demand for healthcare services and describes how the structure of the market for these services interacts with the supply and demand to determine the price and quantity of healthcare services. Defining the efficient use of healthcare services and how it can be achieved is the ultimate, normative goal of health economics. The second major focus of health economics is the broader study of the supply and demand of health. Notably, there is no market for health per se, and the supply and demand for health is largely determined by individuals.

### **Supply and Demand of Health**

A key distinction in health economics is that between health and healthcare. There is no market for “health” where health can be purchased. Instead, health is produced by individuals and families using healthcare services, time, and other market goods such as exercise. This focus on health production is the basis of the *human capital model* of health. Moreover, health is a *durable good* that yields a flow of services over time. As such, health depreciates with time as an individual grows older. Purposeful changes in health are achieved through investments in health, such as the use of healthcare services and time spent exercising. Therefore, health at any particular age is a consequence of all past investments in health and past rates of *health depreciation*.

Another important tenet of health economics is that health is simultaneously a *consumption good* and an *investment good*. As a consumption good, good health is valued by the consumer for the physical pleasure it brings and for facilitating the enjoyment of life's other activities. As an investment good, however, good health also enhances a person's ability to learn and earn, which leads to greater consumption of all goods. In addition, because health is a durable good that yields a flow of future services, health is similar to other types of investments that require initial outlays in return for future benefits.

The canonical model of the supply and demand for health was developed in the early 1970s. In this model, a consumer desires health and other goods and chooses the optimal amount of health and other goods depending on the price of those goods. The unique thing about health, however, is that it is not purchased. Health is produced by the consumer using medical care, time, and other goods. The price or supply of health is determined by the cost of producing health, which depends on the costs of inputs used to produce health such as the cost of a person's time (e.g., wage), price of medical care, and productivity of inputs used to produce health. The optimal amount of health, or the optimal stock of *health capital*, is chosen to equate the *marginal benefits* to the *marginal costs* of health capital. The marginal benefits of health are the discounted lifetime benefits of an additional unit of health capital and include the psychic value of better health and the increase in earnings resulting from better health. The

marginal costs of health are the costs of investment in health.

The human capital model of health results in three main predictions that can be used to explain differences in health. These predictions relate to the relationships between the depreciation of health capital and health, wages and health, and education and health. The first prediction from the human capital model of health is that higher rates of depreciation of health capital will cause health to be lower. The rate of depreciation of health increases with age, and therefore, health decreases with age. At some point, the consumer will find it too costly to offset the growing rate of depreciation (sickness), and health will deteriorate to the point of death. Rates of depreciation may be lower because of genetic and biological factors, which are largely impervious to social intervention, or because of environmental factors, which are amenable to social intervention. For example, government programs that improve the physical and social environment of people may reduce the rates of depreciation of health and result in an increase in health. The rates of depreciation are likely to be higher and health worse in less developed countries because of harsher environments and the biological disadvantages resulting from poorer maternal health.

The second prediction is that higher wages will improve health. Higher wages increase the marginal benefits of health by increasing the value of earnings capacity resulting from better health. Therefore, persons with higher earnings capability will invest more in health and be healthier. Higher wages also imply greater lifetime wealth and better health.

Finally, education will be positively associated with health. Those with more education will be more productive at producing health, which lowers the cost of investing in health. Thus, more educated persons will be healthier. Moreover, because more education raises wages, those with more education will invest more in health because being healthy and able to work will be more valuable.

Recently, researchers have developed an alternative model of the demand for health; it emphasizes several issues that, historically, had been largely ignored by health economists. This model focuses on the *complementarities* that affect the demand for health. Most important, those with a greater life expectancy will invest more in health and be healthier than those with a lower life expectancy. This point is most easily illustrated in the context of the differences in health between the developed and less developed countries. Persons in less developed countries have relatively low life expectancy. They are more likely to be affected by a variety of illnesses and accidents and to die at a relatively young age. Therefore, their incentives to invest in health, the benefits of which occur in later life, are lower than for persons in more developed countries with higher life expectancy. A similar dynamic occurs between ages and between diseases. Raising the expected probability of surviving childhood increases the incentive to make investments that improve health at older ages. Advancements in treating one disease increase the incentive to make investments in health that decrease the probability of contracting other diseases.

In summary, the human capital model of the supply and demand of health provides a useful framework to analyze and explain observed differences in health and the potential value of health interventions. The human capital model of health is relevant to the most salient health policy issues such as racial and ethnic health disparities and how to improve the health of developing countries. Researchers have widely used the human capital model of health to assess the importance of different determinants of health, most notably medical care and education.

## **Supply and Demand of Healthcare Services**

The second major focus of health economics is to analyze the market for healthcare services, in particular physician services and hospital markets. Kenneth Arrow wrote the seminal article for this topic in 1963, which provides an early description of what makes the market for healthcare services unique. Several aspects differentiate the health services market from the standard economic model: (a) the uncertainty of demand caused by the uncertainty of illness; (b) the absence of free entry and exit of firms; (c) the dominance of nonprofit firms, particularly in the hospital industry; and (d) the nonobservability of quality of care. In sum, these factors clearly describe the ways in which the market for health services departs from the simple, competitive model of supply and demand.

Perhaps the most important departure from the competitive model is the fact that providers have market power—that is, competition does not drive the price of healthcare to marginal cost. Market power stems from several sources, with the first being the personal relationship between the patient and the provider. Patients may be comfortable with and trust a specific physician, making them reluctant to switch providers. This gives the provider some power to price above marginal cost, as consumers do not choose providers solely on the basis of price. In addition, market power stems from the patient's lack of information about his or her health and healthcare needs. The physician has better information about the patient's illness and treatment (quality and quantity of care) than the patient. The physician is the patient's agent, and this lack of information ties a patient to a provider. The physician is likely to have better information about the nature and type of illness than even the insurer, and therefore, even third-party payers cannot obtain prices that equal marginal cost. Finally, because information is costly to obtain, search costs are significant, and third-party insurance deters patients from obtaining better information about the prices and quality of providers.

The ability of providers to price above marginal cost is one of the most widely studied issues in health economics. Some of the narrower topics of interest in this area are (a) whether providers can induce demand (i.e., get consumers to use services that are unnecessary); (b) whether physicians respond to financial incentives in ways that are not clinically appropriate; (c) understanding the effect of competition, mergers, and concentration on physician and hospital prices; and (d) understanding the effects of government regulation on the prices, quality, and quantity of physician and hospital services.

The dominance of nonprofit firms in the hospital industry is also a major concern of health economics. Few other industries in the United States are characterized by a mix of for-profit and nonprofit firms as is the hospital sector. Health economics seeks to explain this characteristic of the market. There are several prominent explanations for the dominance of nonprofit hospitals. The first arises from asymmetric information, which has promoted a greater level of trust in nonprofit hospitals than in for-profit hospitals. Because the consumer does not know his or her diagnosis, the optimal course of treatment, or the quality of care provided, the consumer may trust a nonprofit hospital more because it does not appear to have the same financial incentives to exploit this lack of information. While nonprofit status, therefore, is a signal of trust and implies higher quality of care, this explanation is inconsistent with the for-profit physician services market where information asymmetries are equally important.

The second explanation for the dominance of nonprofits is due to their provision of a *public good*. The positive externalities or social benefits associated with medical research, public health, and uncompensated patient care requires public subsidies. This explanation suggests that for-profit firms are only interested in profit and will not undertake the production of goods beneficial to the community, whereas nonprofits can make the production of these goods goals of the organization.

This is inconsistent, however, with the absence of regulatory oversight about the nature of nonprofit hospitals' output (e.g., there is no requirement that uncompensated care be provided).

Finally, *cartel theory* or *interest group theory* has also been used to explain the dominance of nonprofit hospitals. This explanation is predicated on managers, physicians, employees, or other stakeholders running the hospital for their own gain (for-profits in disguise). Nonprofit status allows surplus or profit to be larger than in for-profit enterprises because of public subsidies that lower costs. Nonprofit status makes it easier to “hide” rent due to the diffuse nature of ownership where there are no explicit shareholders.

There is still much debate over which of these explanations is the most appropriate, and research suggests that there is little difference between for-profit and nonprofit hospitals in terms of the quality of care they deliver and the amount of charity care they provide.

## Health Insurance

A third major focus of health economics is examining the demand for and consequences of health insurance. The uncertainty of illness is one of the most important features that characterize choices regarding health and healthcare. The study of insurance in health economics builds on a long tradition in economics, dating back to Arrow's study in 1963, that studies the effects of uncertainty on economic decisions.

The demand for health insurance stems from the uncertainty associated with illness and disease. It is assumed that consumers are risk averse and that people prefer a sure bet to a risky outcome even if, on average, the two alternatives would leave the consumer equally well off. Consumers are, therefore, willing to pay to reduce risk; insurance is a good that reduces the financial risk—and to some extent the physical risk—associated with illness. Health economics uses this simple theory of insurance to analyze patterns of insurance and why people do or do not have insurance. Consumers are expected to purchase more health insurance as the potential loss from illness (i.e., the severity of illness) increases, as the uncertainty of illness increases, and as an individual's level of risk aversion increases.

There are two major issues that dominate the study of health insurance: *moral hazard* and *adverse selection*. Moral hazard is the term used to describe a change in consumer behavior due to insurance. In the context of health insurance, there are two types of moral hazards, *ex ante* and *ex post*. *Ex ante moral hazard* refers to taking action that changes the probability or severity of illness. Insured persons may invest less in preventing disease or the severity of disease because health insurance will pay for the costs of treatment. There is little study of the extent of *ex ante* moral hazard on the prevalence of illness. *Ex post moral hazard* refers to actions the consumer takes after contracting a disease.

Insurance may lead them to consume more healthcare services than they otherwise would. The latter type of moral hazard raises the cost of insurance, which will cause some people to be uninsured. The extent and consequences of *ex post* moral hazard is one of the most widely studied issues in health economics.

*Adverse selection* refers to the view that consumers pay the wrong price for health insurance. From an economics perspective, the price that the consumer pays for health insurance should reflect the true risk of illness: Those with a greater risk of illness should pay more for insurance than those with a lower risk of illness, because those with a greater risk of illness could end up using more healthcare services. The risk of illness, however, is not fully observable and this results in pricing such that some consumers,

usually the healthy, pay relatively more for insurance and other consumers, usually the sick, pay relatively less for insurance. A consequence of adverse selection is that it—in addition to other factors—causes the price of insurance to be high, which may contribute to the numbers of the uninsured. Probably the most important reason why there are uninsured persons in the United States is that the price of insurance is often too high.

## Future Implications

After nearly 50 years of analysis, many of the basic questions that are central to health economics remain largely unanswered. For example, there is still much debate over what determinants of health are the most important, and therefore, what accounts for differences in population health within and between countries. Related to this is the question of how population health affects economic growth. Will improvements in population health lead to faster rates of economic growth and subsequent improvements in health? How important is population health to economic growth? Similarly, there is relatively little, credible research on the consequences of competition in physician services and hospital markets. Does hospital concentration result in higher prices and lower quality of care, or does it lead to lower costs because of greater economies of scale? And it is still not known whether nonprofit or for-profit hospitals provide better care. In the near future, research in health economics will continue to try to answer these fundamental questions. Furthermore, in the future, health economics is likely to continue to integrate advances in medical science in the areas of genetics and neuroscience to improve and expand analyses of the supply and demand of health and healthcare services. Medical science may also change the landscape for health insurance as the risk of illness becomes more knowable.

## See also

Economic Barriers to Healthcare, Healthcare Markets, Health Insurance, Market Failure, Moral Hazard, Nonprofit Healthcare Organizations, Public Policy, Supplier-Induced Demand

## Web Sites

AcademyHealth: <http://www.academyhealth.org>

American Economic Association (AEA): <http://www.vanderbilt.edu/AEA>

American Society of Health Economists (ASHE): <http://healthconomics.us>

International Health Economics Association (iHEA): <http://www.healthconomics.org>

National Library of Medicine (NLM), Health Economics Information Resources:  
<http://www.nlm.nih.gov/nichsr/edu/healthecon>

World Health Organization (WHO), Health Economics: [http://www.who.int/topics/health\\_economics/en](http://www.who.int/topics/health_economics/en)

## Further Readings

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