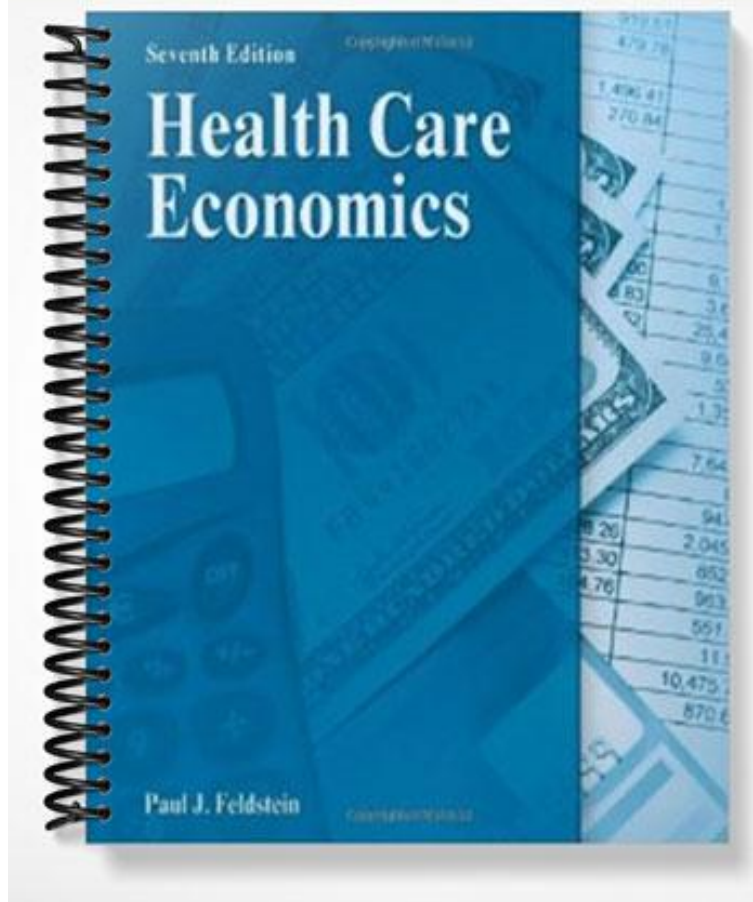


SOLUTIONS MANUAL



Instructor's Manual to Accompany

Health Care Economics

SEVENTH EDITION

Paul J. Feldstein



Australia • Brazil • Japan • Korea • Mexico • Singapore • Spain • United Kingdom • United States

**Instructor's Manual to Accompany, Health Care
Economics, Seventh Edition**
Paul J. Feldstein

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Library of Congress Control Number: 2011923718

ISBN-13: 978-1-133-13201-1

ISBN-10: 1-133-13201-4

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5 Maxwell Drive
Clifton Park, NY 12065-2919
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TABLE OF CONTENTS

| | |
|------------|----|
| Chapter 1 | 03 |
| Chapter 2 | 05 |
| Chapter 3 | 08 |
| Chapter 4 | 12 |
| Chapter 5 | 14 |
| Chapter 6 | 19 |
| Chapter 7 | 23 |
| Chapter 8 | 28 |
| Chapter 9 | 31 |
| Chapter 10 | 35 |
| Chapter 11 | 38 |
| Chapter 12 | 44 |
| Chapter 13 | 48 |
| Chapter 14 | 50 |
| Chapter 15 | 54 |
| Chapter 16 | 56 |
| Chapter 17 | 59 |
| Chapter 18 | 63 |
| Appendix | 67 |



REVIEW QUESTIONS FOR CHAPTERS 1–18 AND APPENDIX



CHAPTER 1

1. Every economy, as well as the medical care sector, must decide the following: what should be produced, how it should be produced, how it should be distributed, and how to allow for growth and innovation. With respect to the medical care sector, how are these choices currently made? How have they changed over time? What are the assumptions and value judgments underlying each of these choices?

What should be produced?

Currently, the determination of output of medical services is mainly based on the assumption of consumer sovereignty and the use of price competition for producing the goods and services desired by consumers. Consumer sovereignty assumes that consumers know best what is in their interest as compared to having their consumption of medical services determined by producers or the government and that they have sufficient information to make such decisions. Consumer behavior reflects their perception of the marginal benefits and the marginal costs of different goods and services, so that marginal benefit per dollar spent (MB/P) will be equal for all commodities. Consumer choices have changed over time as more information on the benefits of medical care treatment has become available and the prices of such services have been reduced as a result of more comprehensive health insurance coverage.

How it should be produced?

Providers of medical services attempt to minimize the cost of production by considering both the relative price of inputs and the relative marginal productivity of these inputs. By competing in the marketplace or facing a fixed, regulated price set by government, providers have an incentive to be efficient and to respond to changing consumer demands. Producers are assumed to have information and make rational choices on benefits and costs of producing medical services. In certain prior periods, standards or fixed ratios of inputs, such as the number of beds per thousand population, were proposed; however, this approach was not widely accepted and is generally no longer used.

How it should be distributed?

Decisions on how to distribute medical services depend on the value judgment of society that consumers, rather than government or health professionals, should determine the amount to be spent on medical services. Under the concept of consumer sovereignty, consumers should be able to buy as much (or as

little) of medical care as they desire and can afford. For those who cannot afford to buy as much medical care as society believes they should have, society also makes a value judgment as to the size of the subsidy they should receive and the method of providing that subsidy. Federal medical assistance to different population groups started at the federal level in the 1960s with the enactment of Medicare and Medicaid.

How to allow for growth and innovation?

Determinations for growth and adoption of innovation can be achieved under different approaches. One approach, relied upon in the United States, is to allow technology to develop based on the profit motive. If a producer can innovate and purchasers believe that innovation is sufficiently valuable that they are willing to pay for an improved product, then the developer of that innovation will make money. Implicit in this approach is that purchasers can spend their funds to have access to that technology. An alternative approach is to have government decide what technologies should be made available to the population. The government's judgment of the value of the innovation is substituted for that of the purchaser. This country has relied upon the first approach for technology development and the adoption of technology, with the government monitoring the safety of those innovations, as when the FDA provides approval for new prescription drugs and medical devices before they can be marketed. In other countries where the government pays for medical services, the government determines whether or not they will pay for new technologies. Government decision-making is likely to place a greater emphasis on cost-reducing technologies rather than benefit increasing ones.

2. What are the two basic tools of economics? Give an example of each with respect to health, medical services, and hospitals.

The two basic tools of economics are optimization techniques, which are based on marginal analysis, and supply and demand analysis, which is used for predicting new equilibrium situations.

Marginal analysis (optimization techniques) requires specifying the appropriate criteria to minimize cost or maximize output given resource constraints.

Application to health: government agencies can use marginal analysis to determine the most efficient allocation of medical and nonmedical inputs (considering each program's marginal benefits and marginal costs) to achieve an increase in health status of a defined population.

Application to medical services: determine which combination of institutional settings is less costly for treating particular types of patients.

Application to hospitals: determine which set of health manpower, such as registered nurses and licensed practical nurses, etc., given their relative productivity and wages, are least costly (quality held constant) for producing patient care on a nursing unit.

Supply and demand analysis is used to predict new equilibrium situations.

Application to health: predict the effect of redistributive policies, such as an increase in health insurance coverage, on access to care for the uninsured population.

Application to medical services: predict the effect of a change in demand for a service, due to, for example, an increase in income or aging of the population, on the prices and quantity of medical services.

Application to hospitals: forecast hospital prices and expenditures based on changes in demand for hospital care or the increased cost of providing care.

3. Explain how the two tools of economics are interrelated.

Marginal analysis and supply and demand analysis are interrelated because of the underlying assumption that both producers and consumers seek to maximize their respective satisfaction or output (producers), subject to resource constraints. The consumer has limited income and faced with the prices and marginal benefits of different choices, the consumer attempts to choose those goods and services to maximize their satisfaction. If the prices of those goods and services change (as a result of changes in demand and supply of those goods and services) the consumer must reallocate their expenditures to maximize their satisfaction. Similarly, producers combine inputs based on the marginal productivity of those inputs and their relative prices or wages to produce their output at minimum costs. Changes in input prices resulting from changes in the supply and demand for inputs will change input prices, causing producers to reallocate their inputs so as to minimize their costs. Changes in consumer preferences, thereby changing perceived marginal benefits or changes in input productivity, will, through the optimization process, result in changes in demand and supply. How each decides to allocate its resources has an effect on the supply and demand for medical care.

4. Prices serve various purposes. For each purpose, give an application of the use of prices, or its lack thereof, in the medical care industry.

Prices are used, together with the consumer's perception of marginal benefits, to determine how the consumer will allocate their resources across different goods and services. For example, if the price of brand-name drugs increases, the consumer may switch to a less expensive generic drug.

Prices similarly are used by producers, together with the marginal productivity of inputs, to determine which combination of inputs is least costly for producing a given level of output. As the wage of registered nurses increase relative to other types of nursing personnel, the producer will substitute other types of nurses for RNs.

In each of the above examples of optimization, prices allocate resources.

Prices are also used in supply and demand analysis. Prices equilibrate supply and demand, otherwise shortages or surpluses will occur. When physicians' fees are regulated by the government and are below the equilibrium price, demand for physician services exceeds the supply of services at the regulated fee.

Prices also affect the demand for substitutes and complements, as when the price of hospital care increases, the demand for a substitute, outpatient surgery centers, increases.

Prices also serve as incentives to consumers and producers. When the price of physician services increases, consumers demand fewer such services. Higher prices for physician services provide physicians with an incentive to supply more services. When producers compete among themselves to supply services at the lowest price, as when hospitals compete to be included in an insurer's provider network, prices serve as the basis for competition.

5. What are the economic criteria for an optimal rate of output? How well is this criteria met with respect to the medical care sector?

The economic criteria for an optimal rate of medical services output is when the purchaser's marginal benefits are equal to the marginal cost of producing that good or service, the rate of output is optimal. In medical care, the consumer often lacks information on the marginal benefits of medical care, hence the use of services; thus, the marginal benefits of their use of services may be different than if they had more complete information. Further, the out-of-pocket price charged may be artificially lowered because of health insurance so that the marginal benefits are different (their use of services is greater), hence the marginal benefits of that additional use is lower than if the price was not subsidized. Physicians, who provide information to patients concerning the marginal benefits of treatment, may have limited knowledge about the latest advances in treatment of a condition; thus, the true marginal benefits of treatment may be different from that prescribed by the physician. With respect to marginal costs, entry restrictions, such as licensing, restrictions on tasks different professionals can perform, and barriers to the entry of facilities into a market, likely increase the marginal cost of producing medical care. For these reasons, both the marginal benefits and marginal costs in medical care are likely to result in a nonoptimal output.

CHAPTER 2

1. Explain the economist's definition of the correct or optimal rate of output.

The optimal rate of output occurs when the marginal benefit of the last unit equals the price of that unit, which in turn equals the marginal cost of producing that last unit. Further, in a competitive market when demand equals supply, the industry supply consists of the sum of the individual firm's marginal cost curves and industry demand equals the sum of individual demand curves, each of which represents the marginal benefit curves of the purchaser. At the equilibrium price, therefore, marginal benefit equals marginal cost.

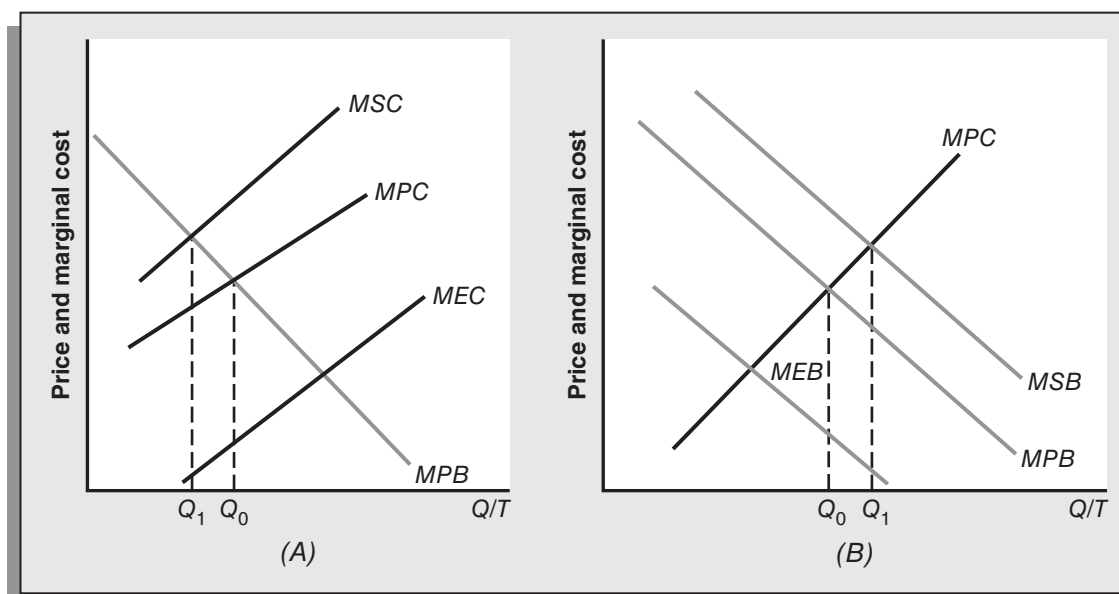
2. Define externalities. Why do they occur? What are examples of externalities in the health field? Explain why the presence of externalities will, in the absence of some collective action, lead to a suboptimal rate of output. What type of collective action is called for?

Externalities arise when an action undertaken by an individual (or firm) has secondary effects on others, which may be favorable or unfavorable. The reason externalities occur is because of a lack of ownership or property rights. Externalities result in a nonoptimal amount of output being produced because individuals or firms consider only their own benefits and costs when making a production or consumption decision.

Vaccination programs, polluted rivers, clean water supplies, air pollution, and medical research are examples of goods that result in externalities.

A nonoptimal rate of output will occur when there are externalities, since output will either be too small (external benefits) or too large (external costs). As shown in the figure below, when there are external benefits (MEB), these will not be taken into account by an individual when (s)he makes a decision based on their own calculation of the (marginal private) benefits (MPB) expected from a purchase. The resulting output level is determined by the intersection of the marginal-private-benefit (MPB) schedule and the marginal private costs (MPC) of producing that service. (The marginal private benefit curve is the demand curve for that service.) The resulting level of output, Q_0 , would be smaller than if the external benefits to others (MEB) were included. If the marginal private benefits and the marginal external benefits were added together (to result in the marginal-social-benefits [MSB] curve), the resulting level of output would be Q_1 , which is greater than Q_0 .

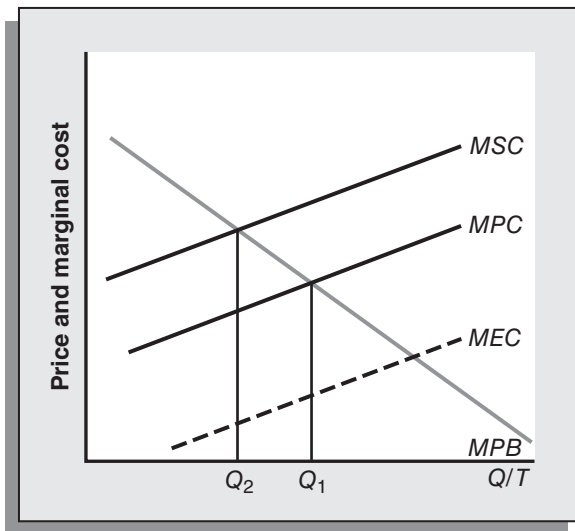
Because of the lack of ownership rights, collective, non-market decision-making is needed to incorporate external costs and benefits into the private decision-making calculus. When large numbers of persons are involved, it becomes difficult to make voluntary arrangements that are satisfactory to all concerned. Group or collective decision-making, in which all persons must abide by the decision, is required to determine both the optimal level of output and to whom the compensation is to be paid (and on whom the taxes should be assessed). It is a legitimate role for government to serve as the group's agent in a nonmarket situation.



Externalities in production and consumption: (A) a case of external costs, (B) a case of external benefits.

3. Is there an optimal amount of pollution? What would occur if the government were to mandate the elimination of all pollution?

Yes, there is an optimal amount of pollution. As shown in the figure below, when the MEC of pollution is added to the MPC of producing that product, the optimal rate of output occurs at the point where the MSC equals the MPB (= MSB). At that rate of output, some pollution is being produced. It is that quantity of pollution to the left of Q_2 , indicated by that part of the MEC curve.



If all pollution were eliminated, then possibly none of the product would be produced or the amount produced would be too little, since it would be less than at the point where $MSC = MSB$. To achieve the optimal rate of output for automobiles or electricity might require the production of some pollution. To eliminate all pollution might require eliminating all electricity or autos.

4. If a cost-benefit analysis is “favorable,” does this suggest that the government should always undertake such an expenditure? In your answer, discuss the criteria that should be used, who should undertake such projects, and how they should be financed.

It is not appropriate for the government to undertake *any* program that has “favorable” cost-benefit ratios. For example, with respect to personal medical programs that have no external effects, the analyst may propose government subsidies based solely on a finding of a favorable cost-benefit ratio. If there are no external effects and the individuals involved do not wish to spend their own funds on the program, it is inappropriate to have the government intervene, unless one is willing to declare that the individuals making the decision are not rational. More likely, the individuals do

not share the same values or perception of benefits as does the analyst.

When externalities exist, it is important to determine how the externalities should be financed—who will be compensated and who will be taxed. For example, air pollution is an external cost imposed on others. The government should determine the magnitude of the external costs and then place a unit tax (equivalent to the size of the external costs) on those who are producing the particular product that is causing the pollution. The per unit tax will cause an increase in the polluters’ costs of production and a consequent decrease in production and pollution. The proceeds of the tax can then be used to reimburse those who bear these external costs. Similarly, when there are external benefits, as in the case of medical research, those receiving the external benefits should be similarly taxed and the proceeds used to subsidize an increase in medical research.

The principal underlying financing should attempt to affix the taxes and subsidies to those who generate the external costs and benefits. A system of financing based on ability to pay would be inappropriate unless such a system reflected the extent of the external benefits and costs. Further, not all nonmarket decision-making should be at a federal level. For some health programs, the benefits and costs are purely local in character (e.g., water fluoridation); the appropriate level of financing, therefore, should be local.

5. What are the economic rationales for different types of government intervention in health care?

There are two traditional areas where government is acknowledged to have a role in a market-oriented system. The first is when there are inefficiencies in the marketplace. An important example is when there are barriers to entry. Similar in its effects are attempts by providers to monopolize the market. Both of these imperfections will result in too small a rate of output. The role of government when there are market imperfections is to attempt to have the market approximate a competitive market.

The second role of government is when there is market failure. Even if the market could be competitive, the existence of externalities is likely to result in government intervention to achieve an optimal rate of output.

6. Explain the rationale for requiring everyone who can afford it to purchase, at a minimum, catastrophic health insurance.

Requiring everyone to purchase at least catastrophic health insurance can be justified on grounds of externalities. If a person who can afford it decides not to buy insurance, other persons are bearing part of the cost of that decision. If the person who self-insures is unfortunate enough to incur catastrophic medical expense that (s)he is unable to pay, the

community (through welfare payments) will have to reimburse the medical providers for that person's medical services. The rest of the community will have to bear part of the cost (in terms of higher taxes) of that individual's decision to self-insure (or purchase less than catastrophic insurance). It would be more equitable, therefore, if these costs were borne in full by individuals at risk.

7. What economic arguments support government financing of personal health services to certain population groups?

The "externalities in consumption" argument supports financing of personal health services to low-income families. If healthier and wealthier individuals do not want to see persons less fortunate than themselves go without necessary medical care and are willing to contribute to their medical care, an externality in consumption is said to exist. This is because the utility of individuals depends not only upon the quantity of goods and services they themselves purchase, but also upon the amount of certain goods and services (such as medical care) purchased by others. Under such circumstances, if some contribute to the medical services of the less fortunate, then other persons, who similarly would have been willing to contribute, receive an external benefit; everybody receives the benefit of seeing the less fortunate receive medical care, even though everybody did not necessarily contribute. Theoretically, each person who receives an external benefit should contribute according to the size of the external benefit. Unless there is some form of non-market decision-making, it will not be possible to collect from all the persons who receive an external benefit.

8. If the objective is one of redistribution, what are the welfare implications of achieving this redistribution by providing

cash supplements versus medical care to the desired beneficiary group?

If the objective of the subsidies were the redistribution of income, direct cash supplements would be a more efficient means to this end. The recipients of the subsidy would always prefer cash, which can be used to satisfy their most important needs (housing, nutritional foods, or medical services), rather than a subsidy that can be used for only one of their needs, a need that may not represent their highest priority. When in-kind subsidies are provided to low-income groups, the objective is not to maximize the utility or satisfaction of the recipient but instead the donors.

9. "We all benefit by having physicians available in case we need them. Therefore the government should subsidize medical education." Critique this justification of governmental subsidies based on an externalities argument.

Not all externalities require government intervention. Externalities may exist in a market, however, they may be relatively small so that, when the MEB is added to the MPB curve, the sum of the two curves intersect at a point to the left of the intersection of the MPB and MPC curves. Thus, the private market will produce the optimal rate of output; it will produce more than the amount demanded by the MEB curve. For example, with reference to the figure below, adding the MEB curve to the MPB curve (which is also the MSB curve) does not change the optimal rate of output, which is $MSB = MSC$. Thus, the optimal rate of output is unaffected by including the MEB. When the market produces more than the amount demanded by the MEB, then this is referred to as "infra-marginal" externalities.