

LECTURE NOTES

For All Health Science Students

# Introduction to Health Economics



**Ethiopia Public Health  
Training Initiative**

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University of Gondar

In collaboration with the Ethiopia Public Health Training Initiative, The Carter Center, the Ethiopia Ministry of Health, and the Ethiopia Ministry of Education

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# PREFACE

Health economics is concerned with the alternative uses of resources in the health services sector and with the efficient utilization of economic resources such as Human resource, material and financial resources. Every health worker needs to acquaint him/ her self with the basic concepts of economics and its application to the health sector in order to manage health institutions and health delivery system efficiently.

“Health economics” as a course is meant to give medical, health officer and other paramedical students basic principles regarding economics and its application to the health sector. Therefore, this material should be regarded as an introduction to health economics rather than to economics.

The lecture note on “Health Economics” is prepared in line with the set curriculum, which is currently in use in health professionals training institutes.

The materials in this lecture note are compiled from different books that are published by different authors and also from internet.

Most books in the field emphasize only on some detailed and specific aspects of health economics. The objective of updating this lecture note is, therefore, to improve the basic

concepts of economics and their application to the health sector and not to exhaustively present all that is important about the subject matter of health economics. Thus, the need for supplementary reference books could be of paramount importance.

Concepts and the analyses presented in this document will help to serve as working material so that students and others could understand and apply basic ideas of economics to the health sector.

The compiling of this material was made possible through the teaching and learning process of the course “Health Economics’ at the University of Gondar. Updating of the document should be understood as a process of making amendments of lecture materials. I do not claim that the material is an original work, hence due gratitude is extended to the previous authors of those lecture notes and books that served as sources for this instruction material.

## **ACKNOWLEDGMENT**

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The preparation of these lecture notes is made possible by the first lecture note made by Mr Gezachew Ashagrie.

I also extend many thanks to the local intra and inter institutional reviewers Ato Esayas Haregot from Mekelle University, Dr. Vilasini Devi from Jimma University and Ato Mesfin Mengistu from Hawassa University. In addition, I would like to pass my deepest gratitude to national reviewers, Dr Damen H/ Maraim and Dr Abdulhamid Bedri Kello, Health Economists, from Addis Ababa University, Medical Faculty and College of Development Studies.

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Finally, I would like to express my hart felt thanks to all public health Faculty Authorities for permission to work on this lecture note besides the routine activities of the Faculty.

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# CHAPTER ONE

## INTRODUCTION TO ECONOMICS

### Learning Objectives

At the end of this chapter, the student will be able to:

1. Understand the meaning and purpose of economics
2. Know the major branches and approaches of economics
3. Be able to identify and understand the basic instruments of microeconomic analysis
4. Understand the implication of economics for business decision making and its role in changing the performance of the national economy.
5. Appreciate the importance of economics to the resource allocation, planning and management of the health sector.

### 1. Introduction

#### .1 Definitions of Economics

- ❖ The study of how men and society end up choosing to employ scarce resources that could have alternative uses” (Samuelson)
- ❖ Economics is the study of how people allocate their limited resources in an attempt to satisfy their unlimited wants.

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- ❖ As such, economic is the study of how people make choices.
- ❖ It is also the study of scarcity and choice, finally helps how to use scarce or limited resource.
- ❖ The subject matter of economics lies on the production, distribution and consumption of economic goods. How much should be spent on education, health, books, travel, food or clothing is of course a matter of political, social or simply personal judgment as well as a question for the economist. However, as soon as people have the necessity to choose between having relatively more in the way of health services at the cost of having relatively less leisure or less to spend on education, they are “economizing”.

One way in which an economy operates is by permitting the price of services and of goods to reflect the costs of rendering those services and producing the goods. When this happens, we have a private enterprise economy or economic system. An alternative method of determining what shall be produced is for the state to plan or dictate industrial and other management boards the various levels or targets to be aimed at.

### **.2 Branches of economics**

#### **1.2.1 Macroeconomics versus microeconomics**



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A major distinction is made between macroeconomics, which studies the functioning of the economy as a whole, and microeconomics, which analyses the behavior of individual components like industries, firms and households.

**1. Macroeconomics:** The study of the behavior of the entire economy and concerned with the behavior of the economy as a whole or with the broad aggregate of economic life such as national output, income, the overall price level, unemployment, and foreign trade. It examines such historical issues as why did production and prices in some countries and the rest of the industrial world collapse during the great depression of the 1930s.

In addition to helping people in their personal lives, economics is required to understand key national issues and to make progress in dealing with them.

Economics plays two distinct roles in promoting the understanding of national economic issues. First it helps to describe, explain and predict economic behavior-as for example when it helps us understand the causes of poverty. But for many people the pay-off from such economic knowledge comes when it is applied to a second task, that of improving economic performances. This distinction between description and prescription is central to modern economics.

**2. Microeconomics:** Deals with the behavior of individual prices and quantities (Issues at individual level). Our knowledge of economics helps us to manage our personal lives, to understand society and to design better economic policies. The role of better economic understanding in guiding our individual lives will be as varied as are our personalities or physiognomies. Learning about the stock market or about interest rates may help people manage their own finances better; knowledge about price theory and antitrust policy may improve the skills of lawyer; better awareness of the determinants of cost and revenue will produce better business decisions. The doctor, the investor and the farmer all need to understand about accounting and regulation to make the highest profits from their businesses.

### **.2 Normative versus positive economics (Fact or opinion?)**

When using economics we must be careful to distinguish between normative statements (or value judgments) and positive (or factual) statements. In the world today, yet health care seems to be in almost permanent crisis – there are shortages of hospital beds and patients are left to lie in corridors, while politicians argue endlessly over whether more

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or less is being spent on the National Health System (NHS). Why is it that health care is such a controversial area? Why is there never enough money to give us the level of health care we want? To answer these questions we need to introduce and apply a range of economic concepts. How can we resolve the kind of dilemmas expressed in these Headlines?

A statement such as “Specialist in heart-lung transplants resigns from the national health system in protest at lack of funding” is a positive statement: it can be shown to be true or false and is not dependent upon the value system of the observer. In contrast, “Health care is a basic right and should be provided free” is a normative statement. It cannot be proved true or false: our view of it depends on our value system. One of the things which make the debate over the provision of health care difficult to resolve is that positive and normative issues are very much intertwined. Sorting out fact from opinion is a first step, but it does not explain why there are not enough beds in hospitals or why people might be refused treatment. Economists believe that it is important to distinguish questions of fact from value judgments and opinions.

**1. Positive economics:** describes the facts and behavior in the economy. What percentages of teenagers are unemployed? How many people earn less than Birr 6,000 a

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year? What will be the effect of higher cigarette taxes on the number of smokers? These are questions that can be resolved only by reference to facts; they are all the realm of positive economics.

**2. Normative economics:** involves ethics and value judgments. Should the government give money to poor people? Should the public sectors (government) or the private sector (business) provide extra jobs for unemployed teenagers? Should higher taxes or lower spending reduce the budget deficit? These are questions involving deeply held values or moral judgments. They can be argued about, but they can never be settled by science or by appeal to facts. There simply is no right or wrong answer to how high inflation should be, whether society should help poor people or how much the nation should spend on defense. These questions are best resolved by political decision, not by economic science.

### 1.3 Basic concepts of supply and demand analysis

**1. Definition of Demand:** Need + ability and willingness to pay for a commodity

- The schedule of amounts of any product that buyers will purchase at different prices during some stated time period

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- Desire refers to people's willingness to own a good.
- Demand is the amount of a good that consumers are willing and able to buy at a given price.

**2. Definition Supply:** the amounts of a good producer are willing and able to sell at a given price.

For many people the word market conjures up a picture of a town square with lots of small stall holders selling everything from fruit and vegetables to meat and fish. For economists, the term has a much wider meaning. It is used to describe any process of exchange between buyers and sellers. Formally, a market can be defined as any set of arrangements which allows buyers and sellers to communicate and thus arrange exchange of goods, services or resources. A free market is where such exchange occurs without interference from the government. Information is a vital ingredient for any market. Both buyers and sellers need to have access to sufficient information to allow them to make rational decisions.

So a market for health care must involve two groups: the buyers and the sellers, who interact to trade health care. Who would the buyers and sellers be in such a market? We all want good health and so most of us would be prepared, if necessary, to purchase medical treatment to cure an illness. This suggests that everybody is potentially a buyer (or consumer) of health care. More precisely, at any moment, a buyer would be any body who was ill or who wanted

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preventative medical treatment such as vaccination or who wanted guidance about their health. The sellers would be those people who could provide medical and health care services, such as doctors, nurses, physiotherapists, dentists and high street chemists.

In Ethiopia, Bone setters (Wogeshas) provide an example of a health care market which corresponds quite closely to the textbook model of a market. Bone Setters (Wogeshas) manipulate and massage bones, muscles and ligaments which have been twisted or strained in some way. Increasingly, they specialize in dealing with the kind of sprains and strains that people get from sporting activities or other injuries. The concept of supply and demand analysis helps to understand exactly how this spending of money operates in a market system.

The answers to these and a thousand other questions can be found in the theory of supply and demand. This theory shows how consumer preferences determine consumer demand for commodities, while business costs underpin the supply of commodities. Finally, we will see how supply and demand are brought into balance by the movement of prices – by the price mechanism.

### **Needs and demand**

Table 1.1. An important distinction between Need and Demand

Need	Demand
<ul style="list-style-type: none"> <li>❖ Someone's subjective idea (may be based on a formula applied objectively, but the choice to use the formula was someone's subjective idea).</li> <li>❖ Money is not a factor.</li> </ul>	<ul style="list-style-type: none"> <li>✚ Objectively observable as behavior in the market.</li> <li>✚ Money is a key factor. "Demand" is also called "effective demand," because it's expressed only by spending money.</li> </ul>

### 3. The Demand curve

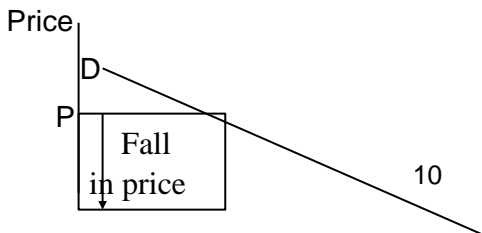
The relationship between price and quantity demanded allows us to define demand formally as the quantity of a good or service that buyers are willing and able to buy at every conceivable price. The demand curve (see Figure 1.1 below) shows this relationship graphically. DD shows the quantity of Bone setting treatments that consumers are prepared to buy at every conceivable price. A change in price leads to a movement along the demand curve. When the price is P consumers will buy Q. If the price falls to P' then the quantity demanded will rise to Q'. A change in price has led to a movement along the demand curve. It is commonly observed that the quantity of a commodity that people will buy at any one time depends on its price. The higher the price charged for an article, the less of it people will be willing to buy; and

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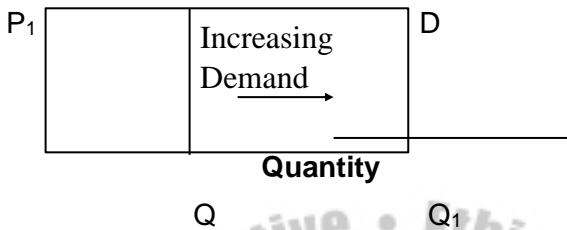
other things remaining equal, the lower its market price, the more units will be demanded (Table 1.2) .

**Table 1.2. Demand Schedule for X commodity**

Price per X Commodity (Birr.)	No of x of commodity per Consumer per day	Symbols representing per price-quantity combination
8	2	A
7	3	B
6	4	C
5	5	D
4	6	E
3	7	F
2	8	G







**Figure 1.1. Demand curve**

Thus, there exists at any one time a definite relationship between the market price of goods and the quantity demanded of those goods. This relationship between price and quantity brought is called the demand schedule, or the demand curve. Quantity demanded and the price is supposed to be inversely related. The curve slopes downward, going from northwest to southeast. This important feature is given a name: the law of downward sloping demand. It implies that when the price of a commodity is raised (and other things held constant) buyers tend to buy less of the commodity. Similarly, when the price is lowered, other things being equal, quantity demanded increases. The rational behind the law of downward sloping demand is that consumers will generally substitute less expensive goods for other goods. Apart from the price of a given commodity there are a number other factors affecting the demand for that commodity, average levels of income, the size of the population, the prices and

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availability of related goods, individual tastes and other special factors.

What else will influence how much Wogesha services we buy? The answer is our income, our preferences and the prices of other goods. Bone setting is a normal good so if our income rises we will buy more treatment at each price, and if it falls we will buy less. If our preferences change, we will buy more or less services at each price. If we decide we are keen on bone setting services, then we will buy more of it. If we go off the idea of this service, then the amount we buy will drop. Our demand for bone setting will also be affected by the prices of related services. An obvious example is the price of physiotherapy, which is an alternative (or substitute) treatment for many of the conditions treated by bone settlers. If the price of physiotherapy falls, then, some people are likely to switch from bone settlers to physiotherapy, so the demand for bone settlers would fall.

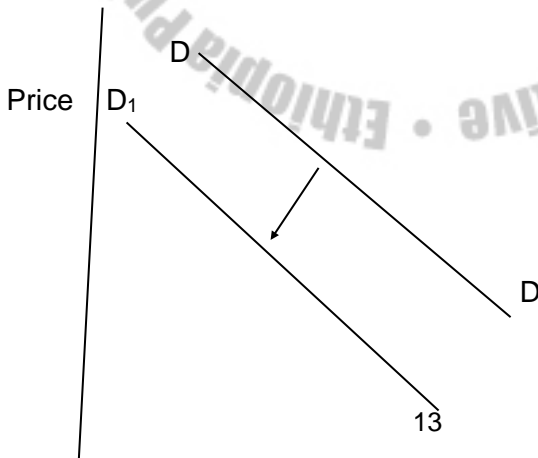
Our demand for goods and services is also affected by changes in prices of complementary goods. These are goods and services, which tend to be bought together. For instance, if the price of eye tests rose significantly, then many people would not bother to get their eyes checked regularly. This would lead to a fall in the demand for spectacles. Whenever income, preferences or the price of a related good or service

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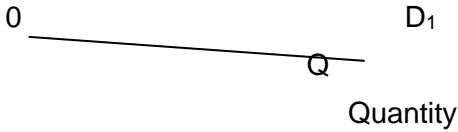
changes, the demand curve shifts you can try out the effects of changes in the table and graphs below.

**Table 1.3: Price and Quantity Demanded**

Price of Commodity X (Birr per unit)	Quantity of X demanded by			Market demand
	A	B	C	
10	4	2	0	6
8	8	4	0	12
6	12	6	10	20
4	16	8	4	28
2	20	10	6	36
0	24	12	8	44



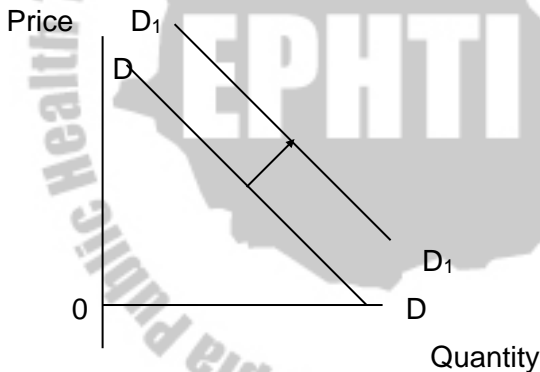
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**Figure 1.2. Inwards shift in demand curve**

Demand curves shift inwards from  $D$  to  $D_1$  as a result of:

1. A fall in income
2. A fall in preferences
3. A fall in price of substitute
4. A rise in price of complement



**Figure 1.3. Outward shift in demand curve**

Demand curve shifts outwards from  $D$  to  $D_1$  as a result of:

1. A rise in income
2. An increase in preferences

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3. A rise in price of substitute

4. A fall in price of complement

- The average income of consumers is a key determinant of demand. As people's incomes rise, they tend to buy more of almost everything.
- The size of the market-measured, say, by population- clearly affects the amount demanded at each price
- The price and availability of related goods will influence the demand for the commodity. A particularly important relationship exists among substitute goods-ones which tend to perform the same function, such as pens and pencils, cotton and wool or oil and natural gas. Demand for product 'A' tends to be low if the price of substitute product 'B' is also low.
- In addition to these objective factors, we must add a set of subjective factors such as tastes or preferences

The demand curve, as indicated in the figure 1.3.above, slopes downward to the right. The downward slope of the demand curve shows the law of demand, i.e. the quantity of commodity demanded per unit of time increases as its price falls and vice versa. The reasons behind the law of demand or the inverse relationship between price and quantity demanded are as follows:

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When the price of a commodity falls, prices of all other related goods, particularly of substitutes, that remain constant become relatively constant; or the commodity whose price has fallen becomes relatively cheaper. Since consumers replace costlier goods with cheaper ones; demand for the commodity whose price has decreased, increases. This increase in demand is known as the substitute effect.

As a result of a fall in the price of a commodity, the real income of its consumers increase, or in other words, the purchasing power of consumers increase since they are required to pay less for the same quantity as they used to buy before the fall in price. This increase in real income or purchasing power encourages demand for the commodity with a reduced price. The increase in demand resulting from increased real income is known as the income effect.

Marginal consumers who earlier were not in a position to consume the commodity because of its higher price, start consuming it due to the decrease in its price. With these new demands for the commodity, its market demand increases.

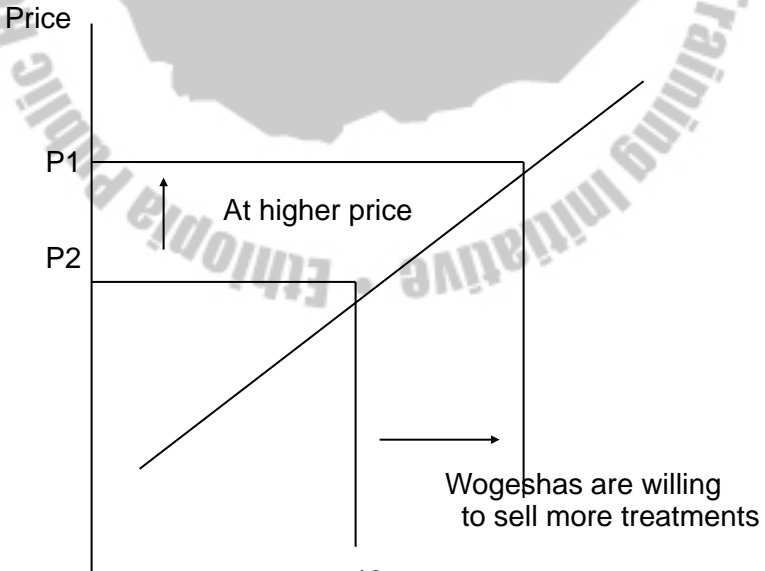
#### 4. The supply curve

- ❖ By supply we mean the quantity of goods that supplier is willing to produce and sell.
- ❖ More precisely, we relate the quantity supplied of a commodity to its market price, holding other things to be equal, such as the cost of production, the price of substitute goods and the organization of the market.
- ❖ The supply schedule of a commodity refers to the relationship between its market price and the amount of that commodity that producers are willing to produce and sell.
  - The supply curve slopes upward and to the right, rising from southwest to northeast.
  - In contrast, the demand curve slopes downward.
    - ✓ One reason for an upward sloping supply curve is the law of diminishing returns. If society wants, more teff then more and more labor will have to be added to the same limited hill sites suitable for producing teff. Each new worker will, according to the law of diminishing returns, be adding less and less extra product; hence the price needed to coax out additional product will have to rise. By raising the price of teff society can persuade grape farmers

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and wine merchants to produce and sell more wine, and the supply curve for teff therefore is upward-sloping.

The sellers in this market are the Bonesetters (Wogeshas) we described earlier. We assume that these Bonesetters (Wogeshas) want to maximize their profits. What are profits and how can they be maximized? Bonesetters (Wogeshas) earn money (revenue) by selling their services e.g. by massaging away muscular strains. Out of this revenue, they need to pay for the factors they use to produce the treatment (costs) e.g. pay their receptionist, pay the rent or pay for a new ultrasound machine. Profit is the excess of revenue over costs.







**Fig. 1.4. The supply curve**

The fundamental point to grasp about business' supply behavior is that firms supply commodities for profit, not for fun or charity. As a result, a competitive farmer will supply more corn when prices are higher since it is more profitable to do so, conversely, when the corn price falls between the costs of production, as it did in the mid 1980s it was global crisis, farmers plant other crops or even sell the farm or go into bankruptcy.

- ✚ We see that a key dominant factor lying behind supply decisions is the cost of production.
- ✚ When the cost of production of a particular commodity is low relative to the market price, then it will be profitable for producers to produce a great deal.
- ✚ When production costs are very high relative to price producers will produce little or may quit production altogether.
- ✚ Among the forces affecting production costs are technology and input cost. Technological advances will certainly affect costs.
- ✚ A second major factor affecting supply stems from the prices of production of substitutes; these goods are ones that can be readily substituted for one another in the production process.

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- ✚ If the price of one production substitute rises, this will decrease the supply of the other substitute. Farmers can produce wheat as well as corn; when the price of corn raises many farmers are attracted towards the production of corn and tend to produce more corn and less wheat, since the inputs that may be used for wheat production are shifted to the production of corn.
- ✚ A third factor affecting supply is the market organization. If a market becomes monopolized this would tend to raise the price at each level of output.

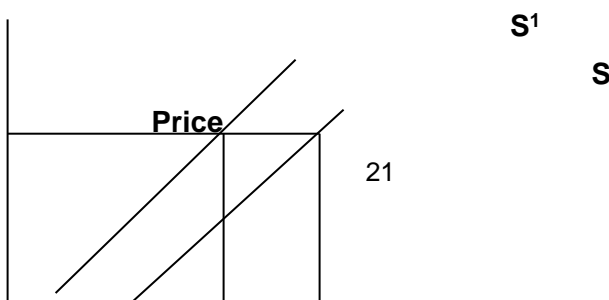
### 4.1 Maximizing profits

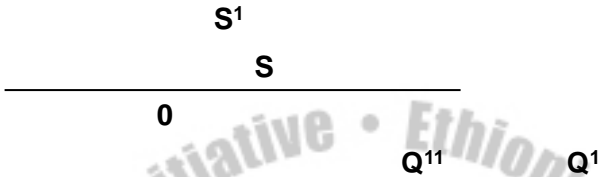
Seeking to maximize profits leads each Bonesetter (Wogesha) to want to sell more care at higher prices. There is a reliable and predictable positive relationship between price and quantity supplied. Formally, supply is defined as the quantity of a good or service that a population of sellers is willing and able to sell at every conceivable price. This positive relationship is shown graphically by the supply curve - SS. If the price changes there is a movement along the supply curve (see Figure 1.4 above). At price P, the Bone setting population is prepared to sell Q treatments. When the price raises to P' the Bone setting population is prepared to sell Q' treatments - this might be since more people become Bonesetters when it becomes a more profitable job.

### .2 Change in costs

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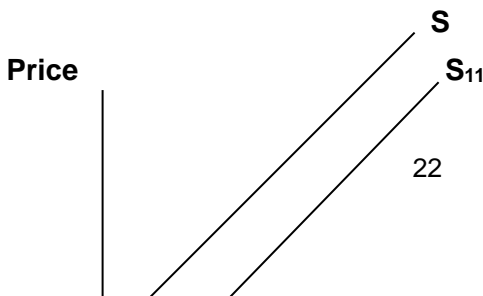
If the level of factor costs changes, then the supply curve will shift. For example, nurses' wages could go up or the rent could fall. Let us look at the effects of these. In Figure 1.4. above, SS is the initial supply curve for treatments. Imagine that nurses' wages rise pushing up bone setting' costs. The bonesetters react by being prepared to supply fewer treatments at each price (this may be because there are fewer Bonesetters (Wogeshas). At a price such as P' Bone setters (Wogeshas) are now only prepared to sell Q" treatments rather than Q'. The supply curve shifts inwards to S'S'. Now imagine that rents fall. The profit of Wogeshas will increase for each treatment. The Bonesetters (Wogeshas) population will react by being prepared to supply more treatments at each price. See Figure 1.5. below.

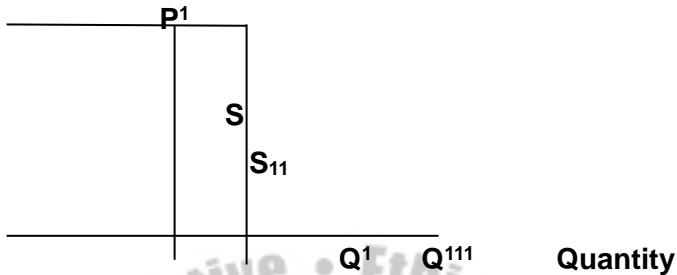




**Figure 1.5. the supply curve shifts inwards to S' S'.**

At the price P' Bone setters are now prepared to sell Q''' treatments rather than Q'. The supply curve shifts outwards. Figure 1.5 SS is the initial supply curve for treatments. Now nurses' wages rise, pushing up bone setters' costs. Wogeshas react by being prepared to supply fewer treatments at each price. The supply curve shifts inwards to S' S'. At a price such as P' bone setters are now only prepared to sell Q'' treatments rather than Q'.





**Figure 1.6** the supply curve showing shifts outwards to S' S".

Figure 1.6. SS is the initial supply curve for treatments. Now rents fall and Bone setters (Wogeshas) react by being prepared to supply more treatments at each price. The supply curve shifts outwards to S' S". At a price such as P' Bone setters are now prepared to sell Q''' treatments rather than Q'.

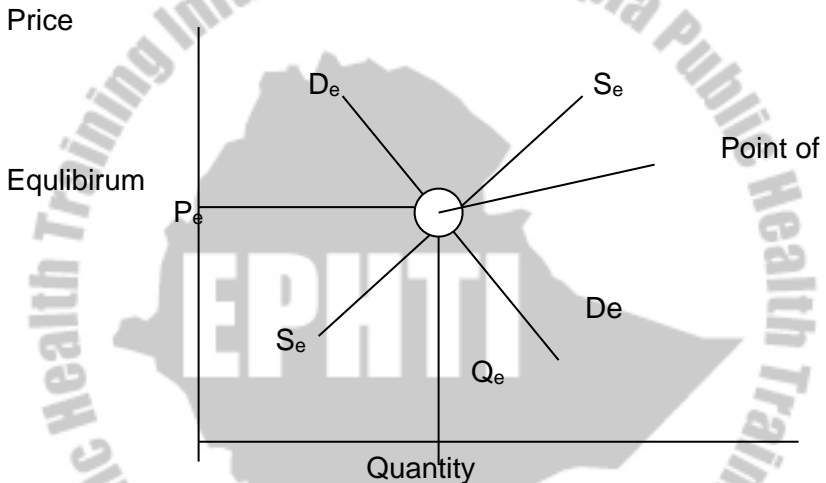
## 5. Market Equilibrium

**5.1. Definition of Equilibrium:** the situation when quantity supplied equals quantity demanded at a particular price.

- The supply and demand forces in the market place will produce an equilibrium price and equilibrium quantity, or market equilibrium.
- The market-equilibrium comes at that price and quantity where the supply and demand forces are in balance.

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- At such a price and quantity the amount that buyers wish to buy is just equal to the amount that sellers wish to sell.
- At the equilibrium price and quantity tend to stay the same, as long as other things remain equal, until something operates to change supply and demand.



**Fig. 1.7. The market equilibrium**

We can now put the demand and supply curves together. This will give us a picture of the market for Bone setters (Wogeshas). This is shown by Figure 1.7 above. Notice that there is only one price at which the quantity of treatments people want to buy is the same as the quantity the services want to sell. This is called the equilibrium price  $P_e$ . The corresponding quantity is the equilibrium quantity -  $Q_e$ . The

equilibrium is a state of rest where there is no pressure for change. At any other price either buyers or sellers are dissatisfied and act to change the quantity demanded or supplied.

### **5.2. Price mechanism to a Pareto efficient allocation**

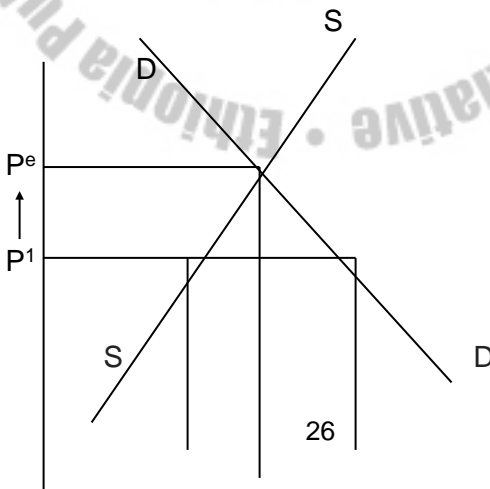
For the consumer, the price they are willing to pay measures the benefit or utility that the consumers expect to receive from consuming the last unit. To be precise, the demand curve reflects the marginal utility (extra benefit) that consumers receive from consuming the last unit. Consumers only buy something if it is worth as much as or more than the other things that the same money could buy. So, if the price of something is greater than the benefit they get from consuming it, they will not buy it. For the producer or seller, the price they are willing to accept measures the cost of the resources involved in the production including the supplier's own time and effort. Again to be precise, the supply curve reflects the seller's marginal costs (the cost of producing an extra unit). Thus, when a market is in equilibrium marginal benefit equals marginal cost equals price. The benefit received from the last unit consumed will exactly equal the resource cost of producing that unit. This fulfils the condition for allocative efficiency. Competing producers chasing maximum profits will always choose the least cost combination of factors to

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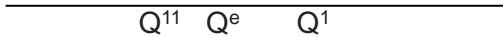
produce a given output. Consequently, the free market will also be productively efficient.

### 5.3. Excess Demand

If there is excess demand, consumers bid up the price. In the Figure below, at price  $P'$  consumers demand  $Q'$ . The price is low so a lot of people are willing and able to buy treatments. However, the low price means that there aren't enough osteopaths prepared to provide this amount of treatment. They are only prepared to provide  $Q''$ . The excess demand ( $Q' - Q''$ ) causes the consumers to bid the price up to the equilibrium. Price  $P_e$ .



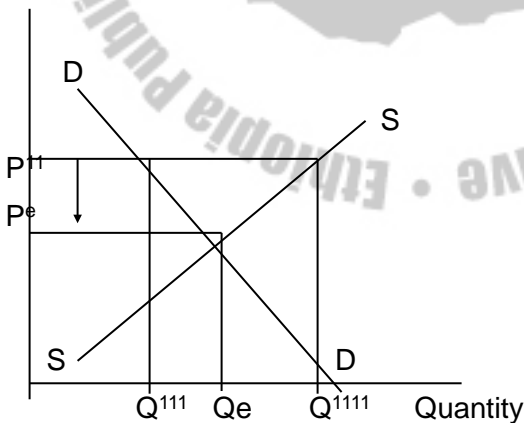




**Figure 1.8. Excess Demand**

### 5.4 Excess Supply

In Figure below at  $P''$  the price is too high. Consumers only demand  $Q''$  treatments. However, the Bone setters want to sell more treatment:  $Q'''$ . So there is an excess of supply ( $Q''' - Q''$ ). This will lead to Bone setters having to cut their prices (to encourage more consumers to buy treatment). As sellers, they will have to reduce their prices until they reach the equilibrium price  $P_e$ . So the free interaction of buyers and sellers in the market automatically leads to a single price at which the quantity traded 'clears' the market, i.e. the quantity supplied equals the quantity demanded.



## Figure 1.9 Exesses Supply

### .4 Elasticity

Elasticity provides a way of measuring how sensitive demand or supply is to factors such as a change in price. Take the relationship between price and quantity demanded. We know that if price rises, then people will buy less, but we do not know how much less. Price elasticity of demand allows us to calculate this.

#### 1.4.1 Elasticity of demand

We have seen the nature of the relationship between demand and its determinants. What is important is the extent of the relationship or the degree of responsiveness of demand to the changes in its determinants i.e. elasticity of demand. The concept of elasticity of demand plays a crucial role in business-decisions regarding maneuvering of prices with a view to making larger profits. For instance, when the cost of production is increasing the firm would like to pass the incremental cost onto the consumer by raising the price. Firms may decide to change the price even without a change in the cost of production. However, whether this action will prove beneficial or not depends on:

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- a. The price elasticity of demand for the product. i.e. proportionate change in its demand in response to a certain percentage change in its price and
- b. Price-elasticity of its substitute, since when the price of a product increases its substitutes become automatically cheaper even if their price remains unchanged. Raising prices will only be beneficial if,
  - Demand for a product is less elastic (i.e. percentage change in demand is less than the percentage change in its price) and
  - Demand for its substitute is much less elastic
  - Similarly, a firm finding it is not feasible to increase prices during a period of growth in consumer income would like to increase production. The additional production can be determined only through the income elasticity of demand for the product, other factors remaining the same.

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### Features of price elasticity of demand

#### Features

#### Elastic goods

#### In elastic goods

- A rise in price means

- A large fall in demand

- A smaller fall in demand

- No of substitutes

- Many

- Few

- Type of good

- Luxury

-

Necessity

- Price of good

- Expensive

-

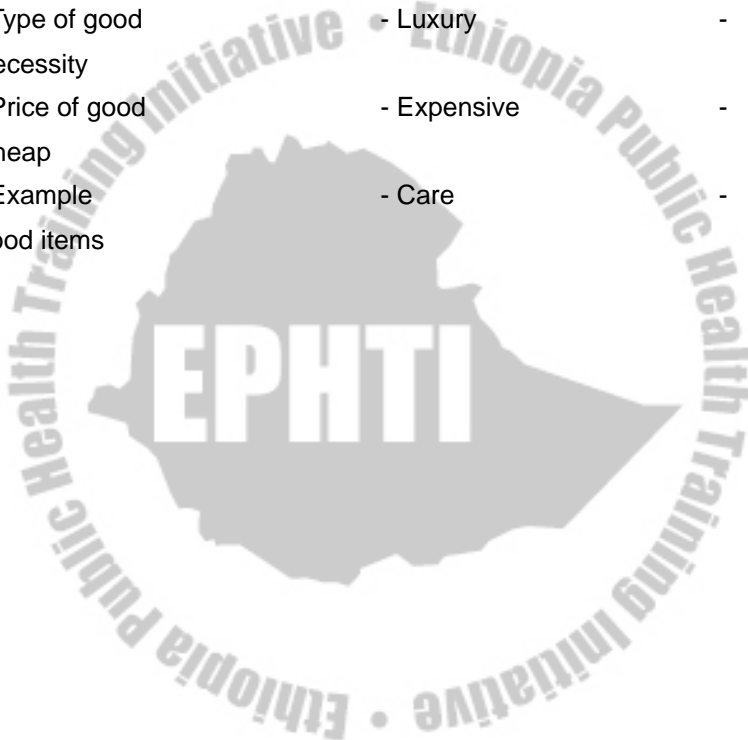
Cheap

- Example

- Care

-

Food items



## Introduction to Health Economics

- ◆ Price elasticity of demand measures the responsiveness of demand to a given change in price.
- ◆ The concepts of demand elasticity used in business decision are, among others:
  - Price-elasticity of demand
  - Cross-elasticity of demand
  - Income-elasticity of demand

### ❖ **Measuring demand elasticity**

#### **1. Price elasticity of demand**

Price elasticity of demand is generally defined as the responsiveness or sensitiveness of demand for a commodity to changes in its price. More precisely, elasticity of demand is the percentage change in demand for a commodity due to a one percent change in one of the independent variables. The price-elasticity of demand for a product is thus the percentage change in the quantity demanded that results from a one percent change in its price.

The formula for price elasticity of demand (PED) is

$$\frac{\% \text{ change in quantity demanded}}{\% \text{ change in price of the good}}$$

So, if the price of osteopathy rose by 10% and the quantity bought fell by 5%, then the PED would be  $-5\%/+10\% = -0.5$ . This tells us that demand for osteopathy is not particularly sensitive to changes in price. It is what economists call **price**

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**inelastic.** Take another example, if the price of eye tests fell by 20% and the quantity of eye tests bought rose by 30% then, the value of PED would be  $+30\%/-20\% = -1.5$ . In this case, the demand for eye tests is **price elastic**, i.e. sensitive to changes in price. Notice several things about PED. First, the value of PED is always negative reflecting the inverse relationship between price and quantity demanded. Second, PED is just a number; it is not expressed in terms of any particular units. How do we know whether demand is elastic or inelastic? The rule is: Demand is price inelastic whenever the % change in price leads to a smaller % change in quantity demanded. This gives PED values between 0 and  $-1$ .

Demand is price elastic whenever the % change in price leads to a larger % change in quantity demanded. This gives PED values between  $-1$  and  $-\infty$ . Price elasticity of demand allows us to predict what will happen to spending when price changes. Take the example of the increase in the price of osteopathy used above. As the price of osteopathy rises, people will buy fewer treatments, but will they spend less?

**Example 1:** Suppose that the price of a treatment rose from 20 Birr an hour to 22 Birr (a price increase of 10%). At 20 Birr an hour, consumers were buying 1,000 treatments per week and spending 20,000 Birr. After the price rise they bought 950 a week (a fall of 5%), but their spending had risen to 20,900 Birr (=  $950 \times 22$  Birr). So the answer in this case is no. People

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spend more on osteopathy after the price rise because the percentage increase in price is greater than the percentage fall in sales volume. So although osteopaths sell fewer treatments, the higher price of each treatment more than offsets the lost quantity of treatments sold.

This gives us a general rule:

- ✚ If PED is inelastic; a rise in price will lead to people spending more, while a fall in price will lead to people spending less.
- ✚ If PED is elastic, a rise in price will lead to people spending less, while a fall in price will lead to people spending more.
- ✚ Price elasticity of demand allows economists to analyze and predict the effect of changes in prices on different markets. We can see an example of this by looking at the debate over cost sharing in health care.

**Example 2:** Cost sharing is the term used to describe different forms of direct charging for health care services. Increasingly, direct charging is seen as a way of reducing demand, but also as a way of raising revenue. How effective is this policy? For instance, in Ethiopia, many people have to pay prescription charges, which they have to pay a certain amount every time they want to have a prescription dispensed. What has been the effect of this charging? Estimates made by Hughes and McGuire have indicated that demand for prescriptions is rather

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price inelastic with a mean value of  $-0.32$ . This would suggest that prescription charges would be an effective way of raising revenue, but not have a great effect on the level of demand. Hughes and McGuire calculated, for instance, that the rise in prescription charges from 3.75 Birr in 1992 to 4.25 Birr in 1993 would have resulted in the generation of estimated 17.3 million Birr in extra revenue, but led to a fall of 2.3 million in the number of prescriptions dispensed. However, their research also suggests that demand for prescriptions is becoming more prices elastic as time passes. They found that PED was  $-0.125$  in 1969,  $-0.22$  in 1980,  $-0.68$  in 1985 and  $-0.94$  in 1991. This suggests that raising prescription charges is now likely to raise less revenue, but lead to greater reductions in use of prescribed medicines than it did in the past.

### 2. Income elasticity

The concept of elasticity can be applied to the impact of both income and changes in the prices of other goods on quantity demanded. **Income elasticity of demand (YED)** measures how demand reacts to changes in income.

The formula for **income elasticity of demand** is:

$$\frac{\% \text{ change in quantity demanded}}{\% \text{ change in income}}$$

If the result is positive, then the goods are normal, if it is negative then they are inferior. All the evidence suggests that health care is not only a normal good, but that it is income



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elastic, i.e. rising income leads to a greater % rise in demand for health care. Obviously the formula for measuring income-elasticity of demand is the same as the formula for measuring the price-elasticity. The only change in the formula is that the variable 'income' (y) has been substituted for the variable 'price' (p). Here, income refers to the disposable income, i.e., income net of taxes. Unlike price-elasticity of demand, which is always negative, income-elasticity of demand is always positive because of a positive relationship between income and quantity of product demanded. However, there is an exception to this rule. Income-elasticity of demand for an inferior commodity is negative because of the income substitution effect. The demand for inferior goods decreases with increases in consumers' income. When income increases consumers switch over to the consumption of superior commodities, i.e. they substitute superior goods for inferior goods. For instance, when income rises, people prefer to buy more meat and less potato.

**3. Cross price elasticity of demand (XED)** measures how demand reacts to changes in the price of other goods.

$$\text{Cross price elasticity of Demand} = \frac{\% \text{ change in quantity demanded of main good}}{\% \text{ change in price of other good}}$$

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- ❖ If cross price elasticity of demand is positive then this indicates that the goods are substitutes.
  - ❖ If it is negative, then the goods are complements.
- ✚ Finally, the concept of elasticity can be applied to supply.
- **Price elasticity of supply (PES)** measures how sensitive quantity supplied is to a change in the price of the good.
  - The formula for **price elasticity of supply** is:  
$$\frac{\% \text{ change in quantity supplied}}{\% \text{ change in price of the good}}$$
  - ❖ Price elasticity of supply is always positive, reflecting the positive relationship between price and quantity supplied.
  - ❖ PES becomes more elastic over time. This reflects the time it takes to switch resources into a market.
  - ❖ For instance, in health care the PES is likely to be fairly inelastic in the short run, but much more elastic in the long run. Even if price raise significantly, it will take time for firms to react and to produce more health care. For instance, to deliver more health care new hospitals will need to be built or existing hospital extended and extra doctors and nurses will need to be trained. All of this takes time. The concept of elasticity has helped to

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make our market theory more sophisticated. However, the model still suffers from being rather static.



◆ **Features of Elasticity of Supply**

**Features**

**Elastic goods**

**inelastic goods**

1. A rise in price means  
- A smaller raise in supply

- A larger rise in supply

2. The good is produced  
Slowly

- Rapidly

3. The time period  
days

-Months

4. The firm has  
Limited stocks

- larger stocks

5. Example  
Beef

- Screws

The logo for the Ethiopia Public Health Training Initiative (EPHTI) is centered on the page. It features a grey silhouette of the map of Ethiopia. Overlaid on the map is the acronym 'EPHTI' in large, bold, white capital letters. The full name 'Ethiopia Public Health Training Initiative' is written in a smaller, grey font around the perimeter of the map, following its shape.

- ◆ Price elasticity of supply (PES) measures the responsiveness of supply to a given change in price.

## **.5 Some concepts of macroeconomics**

In this section, an attempt is made to understand the meaning of central macroeconomic concepts, based on which one can study how output, prices and employment are determined.

### **1.5.1 Objectives and instruments of macroeconomic policy**

Four objectives are central to evaluating macroeconomic performance – those concerning output, employment, prices and the foreign sector.

- a. Output: The ultimate yardstick of a country's economic success is its ability to generate a high level of production of economic goods and services for its population.
- b. Employment: Providing good jobs at a reasonable pay to those who want to work is another objective of macroeconomic policy.
- c. Stable price: the third macroeconomic objective is to ensure stable prices with free markets. This objective contains two parts:
  - i. Price stability denotes that the overall price level does not rise or fall rapidly. Why do societies prefer stable prices? The reason is that price is a

## Introduction to Health Economics

common yardstick whereby economic values are measured. When the economic yardstick changes quickly during periods of rapidly changing prices, contracts and other economic agreements become distorted and the price system tends to become less valuable.

- ii. The second half of the objective of stable prices, maintenance of free markets, means that market forces should determine prices and quantities by supply and demand to the maximum possible extent. Free markets allow the economy to allocate resources efficiently and in a way that is responsive to individual tastes.
- d. Foreign economic relation: The last goal of macroeconomic policy is to promote a proper foreign economic policy. This aim has become increasingly important as the nations of the globe have become more closely tied by international trade and finance. They import and export goods and services; they borrow or lend money to foreigners; they imitate foreign technologies or sell their inventions abroad; their people travel to all parts of the world of business and pleasure. Declines in the costs of transportation and communication have made these international linkages even tighter than they were a generation ago.

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Some economies today trade over half their national output.

International economics involves trade between nations; countries export their products and import the products of other nations.

- ❖ The difference between the monetary value of exports and the money value of imports of a given country is called net exports.
- ❖ Nations also pay attention to their foreign exchange rates which represent the price of their own currency in terms of the currencies of other nations.
- ❖ When net exports turn to deficit or surplus, or when the foreign exchange rate rises or falls sharply, countries move to correct the imbalance in their foreign economic relations.

Few nations succeed in meeting the above four macroeconomic objectives, but most advanced countries are continually searching for the means of attaining them more fully.

### 1.5.2 Macroeconomic policy instruments

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A policy instrument is an economic variable under the direct or indirect control of government; changes in policy instruments affect one or more of the macroeconomic objectives. A nation has a wide variety of policy instruments that can be used to pursue its macroeconomic objectives. The major ones are:

- 1. Fiscal policy:** This consists of government expenditures and taxation. Government expenditures influence the relative size of collective as opposed to private consumption. Taxation subtracts from income and reduces private spending; in addition, it affects investment and potential output. Fiscal policy affects total spending and thereby influences GNP and inflation
- 2. Monetary policy:** This is operated by the central bank and sets the money supply; changes in the money supply move interest rates up or down and affect spending on items like machinery or buildings. Monetary policy has an important effect on GNP
- 3. Foreign economic policies:** Trade policies and exchange rate management attempt to keep imports in line with exports and to stabilize foreign exchange rates.

In addition, central bankers and political leaders need to coordinate their macroeconomic policies for the monetary and fiscal policies of different countries spill over to affect other countries. It used to be said, “When America sneezes, Europe



catches cold” suggesting the high degree of interdependence of European economies with the United States.

**4. Income policies:** A final set of macroeconomic policies are income policies, more accurately denoted as wage price policies. They are the most controversial of all macroeconomic policies. Income policies are government actions that attempt to moderate inflation by direct steps, whether by verbal persuasion or by legislated wage and price controls.

### **1.5.3 Measurement of national output and income**

Macroeconomics is the study of the behavior of the entire economy of national output and income, the overall price level, unemployment, foreign trade and so forth.

This section focuses on one of the most important concepts in all economics, the Gross National Product (GNP), which measures the total value of national output. With this measure, we can calculate the overall performance of the entire economy.

Measuring national output is indispensable for macroeconomic theory and policy. It helps to tackle the central issues concerning the economic growth of a nation, the relationship between economic activity and unemployment, along with the measurement and determinants of inflation.

## 1. Gross National Product (GNP)

What is a Gross National Product? It is a term denoting the total money value of the goods and services produced by a nation during a given year. GNP is used for many purposes, but the most important one is that it measures the overall importance of an economy. The Gross National Product (GNP) is the most comprehensive measure of a nation's total output of goods and services. It is the sum of the monetary values of consumption, investment, government purchases of goods and services and net exports.

$$\diamond Y = C + I + G_e + (X - M)$$

**Y** – Out put

**C** - Consumption

**I** – investment

**G<sub>e</sub>** – government purchase

**(X – M)** - Net export

With this preview, we now turn to a discussion of the elements of the national income and product accounts. We start by distinguishing between real and nominal GNP increases. Then, we turn to the different ways of measuring GNP, as well as the major components of GNP.

## 2. Real versus nominal GNP

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In defining GNP, we measure the monetary value of goods and services using the measuring rod of market prices of oranges, apples, machines and other commodities. However, prices change over time as inflation generally sends prices upward year after year. The problem of changing prices is one of the problems economists have to solve when using money as their measurement. Clearly, we want a measure of the nation's output and income that uses a stable measurement.

Economists correct that variable nature of prices using a price index.

- A price index is a weighted average of price of the thousands of items that enter into GNP.
- The price index used to remove the effect of inflation ('deflate' the GNP) is called the GNP deflator.
- It is defined as a weighted average of price changes of all commodities in the GNP, with each commodity given as a weight of its percentage importance in the total GNP.
- The GNP deflator is used to convert nominal GNP into real GNP.
- Real GNP measures the total quantity of output, while nominal GNP measures the current monetary value of output.
- The ratio of nominal GNP to real GNP is the "price index of GNP" which is called the GNP deflator.

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- Nominal GNP represents the total money value of goods and services produced in a given year where the values are in terms of the market prices of each year.
- Real GNP corrects nominal GNP by valuing output in terms of the prices of a base year, creating a constant money measure of output. Because we define the GNP deflator as the price of GNP, we have:

$$\text{Real GNP} = \frac{\text{nominal GNP}}{\text{GNP deflator}}$$

### .4 Measures of national product

How do we actually go about measuring GNP? GNP can be measured:

- ❖ As a flow of products
- ❖ As a sum of earnings.

In this introductory discussion, we will consider GNP measurement in an economy with no government or foreign sector and with no investment-taking place. For the moment consider an economy that produces only consumer goods, which are items that are purchased by households to satisfy their wants.

**1. Flow-of-product approach:** Each year, the public consumes a wide variety of final goods and services; goods

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such as apples, oranges and bread; services such as health care and haircuts. We include only final goods – goods ultimately bought and used by consumers. By adding all the consumption money spent on these final goods, we arrive at this simplified economy's total GNP.

Thus, in our simplified economy, one can easily calculate national product as the sum of the annual flow of final goods and services.

The gross national products are defined as the total money value of the flow of final products produced by the nation. Here in our simple economy GNP includes only consumption expenditures. When we complete our analysis GNP will include all final goods and services; that is, GNP is consumption, private investment, and government spending on goods and services and net exports to the rest of the world.

**2. Earnings or cost approach:** This is a second way of calculating GNP. It is the total of the factors of earnings (wages, interest, rents and profits) that are the costs of producing society's final products. These represent the factor earnings of land, Labour and capital and are the costs of production of the flow of products. Statisticians can measure the annual flow of these earnings or income and in this way they will again arrive at the GNP.

### **The problem of “double counting”**

Recall that GNP is the total sum of final goods and services. A final product is one that is produced and sold for consumption or investment by consumers, governments or foreigners. GNP excludes intermediate goods, i.e. ones that are used up to produce other goods. GNP therefore, includes bread, but not wheat and cars, but not steel.

For the flow-of-product, calculation of GNP excluding intermediate products poses no major complications. We simply include the bread and cars in GNP, but avoid including the wheat that went into bread or the steel and glass that went into the car. The wheat and steel are considered to be bought not by consumers and they never show up as final products in GNP.

- The problem of double counting is resolved by making use of the value added approach.
- Value added is the difference between a firm's sales and its purchases of materials and services from other firms.

In calculating value added business costs in the form of wages, salaries interest payments and dividends are included in value added, but purchase of wheat or steel are excluded from value added.

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- ❖ Why are all those purchases from other firms excluded from value added to obtain GNP?
- ❖ Because those purchases will get properly counted in GNP from the reports of other firms. That is to avoid double counting, we take care to include in Gross National Product only final goods and services not the intermediate ones that go to make the final goods.
- ❖ By measuring the value added at each stage, taking care of subtract expenditures on the intermediate goods bought from other firms, the earnings approach properly avoids all double counting and records wages, interest, rent and profit exactly at one time.

### .5 National accounts overview

Consider the table below to have a clear picture of the national income and product accounts. This table shows a summary set of accounts for both the product and incomes sides. If one knows the structure of the table and the definitions of the terms in it, one will be well on the way to understanding GNP and its family of components.

**Table 1.4 Summary of national accounts**

Product approach	Earnings Approach
Components of gross national product	Earnings or costs as sources of national product.
Consumption (C) +	Wages +

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Gross domestic investment (I) +	Interest, rent and other property income +
Government (G) +	
Net exports (x)	Indirect taxes +
	Depreciation +
	Profits +
Equals: Gross national product	Equals: Gross national product
Less: Depreciation	Less: Depreciation
Equals: Net national product	Equals: Net national product

The table above shows the major components of the two sides of the national accounts. The left side shows the components of the product approach; the symbols C, I, G and X are often used to represent these four items of GNP. The right side shows the components of the earnings or cost approach. Each approach will ultimately add up to exactly the same GNP and NNP.

Besides GNP, NNP is another measure of national income. The concept of NNP is closely associated with that of GNP. The GNP as defined above includes the value of all final goods and services including also that of total productive assets (produced during the reference period) which is used to replace the capital worn out in the process of creating GNP. Briefly speaking, in the process of production of goods and services a part of the total stock of capital is used up. The



term used to denote the worn out or used up capital is known as depreciation.

**Thus, NNP is defined as GNP less depreciation or**  
**NNP = GNP – Depreciation**

The NNP gives the measure of net output available for use by society (including consumers, producers and the government). The NNP is the real measure of the national income. Thus,  $NNP = NNI$  (net national income). In other words, NNP is the same as the national income at factor cost (costs for Labour, capital and other inputs). It should be noted that NNP is measured at market prices including indirect taxes. Indirect taxes, however, are not elements of actual costs of production and hence do not represent the creation of value. Therefore, to obtain real national income indirect taxes are deducted from the NNP.

Thus,  $NNP - \text{indirect taxes} = \text{National Income}$ .

### Relationship between national income concepts

We now present the relationship between the two sets of national income concepts based on product-flows and earnings-flows:

- ✚ GNP = NNP + Depreciation
- ✚ NNI = NNP – Indirect taxes
- ✚ GNP = NNI + Depreciation + Indirect taxes and
- ✚ GDP = GNP – net income from abroad

### **Investment and capital formation**

So far, we have talked of people wanting to consume bread, oranges and haircuts. In real life, however, nations devote part of their output to production of new capital goods for investment.

Investment involves the sacrifice of current consumption to increase future consumption. Instead of eating more bread now, people choose to build new ovens to make it possible to produce bread for future consumption. Investment (capital formation) consists of the additions to the nation's stock of buildings, equipment and inventories. It is the new houses, factories, trucks, and inventories produced in a year. To economists investment always means real capital formation-adding goods to the stock of inventories or production of new factories, houses, or tools.

### **Treatment of government**

Somehow, GNP must take into account the total product a nation collectively consumes or invests; we must include public goods along with private goods. To do this, we simply add all government expenditures on goods and services to the flow of consumption, investment and net exports. These government expenditures include costs of roads and missiles, spending on the services of teachers and judges, wages of

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soldiers and weather forecasters. In short, all the government payroll expenditures on its employees plus the goods (typewrites, roads and airplanes) it buys from private industry are included in this third great category of flow of products called 'government expenditure on goods and services'.

Exclusion of transfer payment: GNP includes only government spending on goods and services and excludes spending on transfer payments. Payments to individuals that are not made in exchange for goods or services supplied these governments such as unemployment insurance, veteran's benefits, old age or disability payments, income support to the blind and similar items. They are intended to meet some form of need. Since transfers are not for purchases of a current commodity or service, they are omitted from GNP. Thus, if one receives a payment from a government agency it would be a factor payment and be included in GNP if one receives welfare payments because one is poor, that payment is not for any goods or service, but is a transfer payment excluded from GNP.

Finally, we should not confuse the way the national accounts measure government spending on goods and services (G) with the official government budget. When the treasury measures its expenditures, these include expenditures on goods and services (G) plus transfers.

- ◆ **GDP:** Is similar to GNP except that it count all income produced within the borders of a country, including income earned by resident foreigners, but excludes income earned by citizens of the country who are residents a broad.

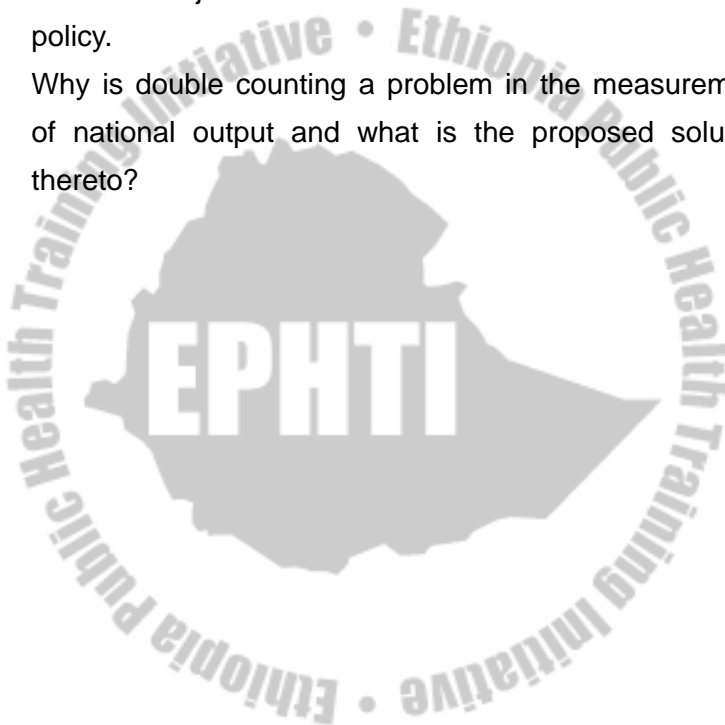
### Review Questions

1. Describe the basic problems of economics and show the relevance of economics as a field of study.
2. Outline the different branches and approaches of economics. Discuss the practical purpose of economics.
3. Define and discuss the meanings of the following terms and phrases:
  - a. Demand
  - b. Quantity demanded
  - c. The demand schedule
  - d. The demand curve
  - e. Elasticity
4. By making use of the demand and supply curves show the market equilibrium.
5. A given study has shown that the quantity demanded for Dashen Beer in Bahirdar Town has increased by 10%

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during the same period the income of the population of the town is assumed to have increased by 5%; based on the information provided:

- Calculate the income elasticity of demand
  - Discuss the business policy implications of the result.
6. Write the objectives and instruments of macroeconomic policy.
  7. Why is double counting a problem in the measurement of national output and what is the proposed solution thereto?

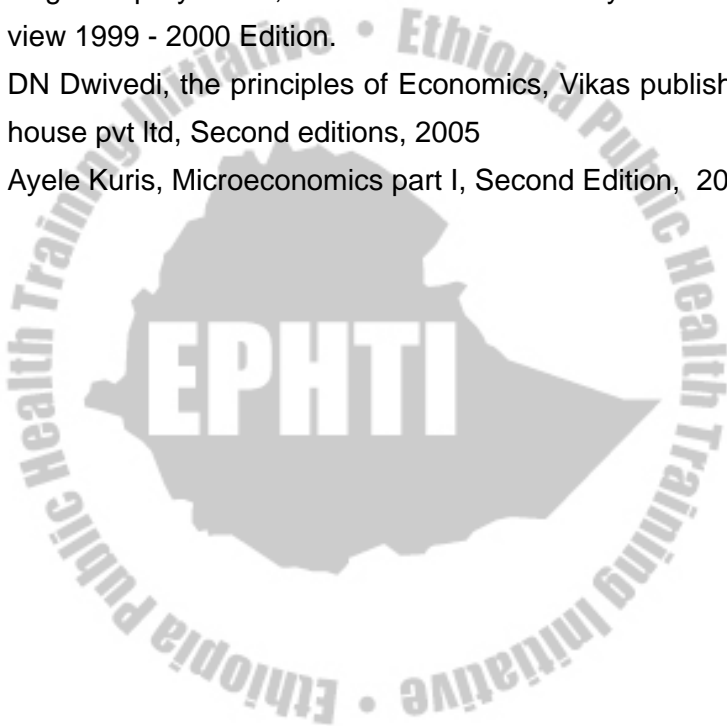


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## **CHAPTER TWO**

# **MAIN FEATURES OF THE HEALTH CARE SERVICE AND ITS RELATION WITH ECONOMIC DEVELOPMENT**

### **Learning Objectives**

At the end of this chapter, the student is expected

1. To understand health as one of the social sectors with economic implication.
2. To understand the specific nature of the health care service in implementing economic principles and techniques.
3. To be able to know the implications of economic development to the health care services.
4. To understand the effect of some economic factors on health status of society.
5. To identify the ways through which improvement of the health system can create conducive conditions for economic development and vice versa.



## 2.1 Health economics:

**“Health economics”** can be defined as the application of Economic theories, tools and concepts of economics as a discipline to the topics of health and health care. Since health economics is concerned with issues related to the allocation of scarce resources to improve health, this includes both resource allocation within the economy to the health sector and within the health care system to different activities and individuals.

In Ethiopia, the need for health care is increasing due to rapid population growth and changes in disease pattern. Related with this, health care costs are expected to be rapidly increasing. Apart from explosion of costs, inequity, misallocation and inefficiency are believed to be serious challenges to the health care system. These problems put a considerable strain on our limited health care resources. Health economics is now a term commonly used in public policy documents, in the medical and scientific literature, and in the lay press. There are also very visible signs of change in the health care market. Attention is shifting from the “passive” funding and administration of systems, in which physicians identify and provide appropriate care, to concerns about the resource costs of care and the health outcomes achieved from providing care.

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“What a buyer wants to know is the difference between this state of well-being with and without the commodity being considered for ordinary goods. The buyer has little difficulty in evaluating the counter-factual-that is what the situation will be if the good is not obtained not so for the bulk of health care... the noteworthy point is not simply that it is difficult for the consumer to judge quality before the purchase... but that it is difficult even after...” So, why is this economic perspective useful in the context of health care?

- Health economics examines the problem of scarcity as it arises with respect to health and health care.
- It examines how we as individuals and societies confront the fact that while the resources available to us are limited, the alternative uses for these resources are unlimited. Thus, health economists are interested in some very important questions. How is health produced? What role does health care play in its production? What is the value of health? How do we go about measuring health status? What influences demand for health and health care? What influences the supply of health care? How can equilibrium between demand and supply be achieved? The discipline of health economic is the study of these questions and the answers to them that individuals and societies have put forward.

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The principles of health economics consider supply and demand issues and how the two might interact given that the standard market solution generally fails due to problems such as:

- ❖ Adverse selection,
  - ❖ Moral hazard,
  - ❖ Asymmetric information
  - ❖ Supplier induced demand.
- **Adverse selections:** A situation often resulting from asymmetric information in which individuals are able to purchase insurance at the rates that are below actuarially fair rates plus loading costs. An event in healthcare whereby one party decides not to reveal the full extent of their risk profile to the other party (i.e. insurance model).
- **Moral hazard:** the possibility of consumers or providers exploiting a benefit system unduly to the disadvantages of other consumers, providers or the financing community as a whole.
- An insurance term that represents the disincentives created by insurance for individual to take measures that would reduce the amount of care demanded. In the health services literature, it is more commonly used to express the additional quantity of health care demanded, resulting from a decrease in the net price of care attributable to insurance.

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- Arises where the attitudes and behavior of a person or organization change once they are covered for potential costs or losses (e.g. healthcare consumption may be higher when insured.)
- **Asymmetric information:** Situations in which the parties on the opposite sides of transaction have differing amounts of relevant information. Doctors have more knowledge and information about medicine than patients /consumers, the individual may not be the best judge of his/her own interests, the doctor acts as an agent of the patients demand.

### 2.2 General features of the health Care

There are different understandings of health – each with different implications for the roles of government. It is important to recognize, first, the difference between health and ‘health care’. The term health refers to a state either of an individual or of a community. A number of factors including ‘health care’ may influence this state of health. However, other factors that affect health are poverty, level of education, food intake, access to clean water and sanitary and housing conditions.

The narrowest concept of health sees it as a measure of the state of the physical body organs. An individual is unhealthy if there is a malfunctioning of part of the body. A broader, but

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related, definition sees health just in terms of the mechanics of the different bodily organs, but in the ability of the body as a whole to function.

In contrast, the WHO definition of health as “a state of physical, mental and social well-being and not merely the absence of disease or infirmity” indicates a clear shift away from earlier narrow organic or functionally-based definitions of health to a more holistic view, it sees the health of an individual or community as being concerned not only with physical (and mental) status, but also with social and economic relationships.

How one views health will affect the type of intervention and planning that is possible. The narrowest definitions are closely associated with a medical model of health in which the role of health services is seen as paramount in restoring the functioning of the unhealthy body. Wider primary health care concepts suggest that broader interventions, including community empowerment and anti-poverty measures, are necessary to promote health.

We turn now to different perspectives on the importance of health and on to possible roles of the state in promoting it. Three perspectives can be distinguished.

### **1. Perspectives of Health**

#### **a) Health as a right**

Health is viewed by some as a right analogous to justice or political freedom. Indeed, the WHO constitution states that ‘... the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition’. Although it is difficult to believe that equal health status is attainable in the same way that equal political freedom may be, health is seen as so fundamental that constraints to its full attainment must be minimized. In part, this involves ensuring access to health care. The government is seen as having a responsibility to ensure this, comparable with its role in ensuring equal justice. According to such a view, a government will be particularly concerned with issues of equity in health and health care.

#### **b) Health as consumption good**

For others, health is seen as an important individual objective that is not comparable with justice, but rather with material aspects of life. Such a view often refers to health as consumption good. The government here has no special responsibilities in the promotion of health, but leaves decisions as to its comparative importance to individual consumers. The role of the state under such a view might be limited to ensuring that the health care provided is of an adequate

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quality (such as ensuring professional standards in the same way that it would monitor the quality of any good or service, such as food).

### **c) Health as an investment**

A third view of health is that it is important, but largely it affects the productive ability of the workforce. Illness may affect overall production, either through absenteeism or by lowering productivity through its debilitating effects.

## **2.3 Distinctive characteristics of the health Care services from other commodities**

### **17. Case against a free market:**

- ❖ Market failure
- ❖ Problems of Risk and uncertainty
- ❖ Unequal information – Doctor's agents
- ❖ Consumers as satisfaction maximisers
- ❖ Imperfect competition
- ❖ Externalities
- ❖ Equity and health care

Why not leave health care to the market?

Most people believe that you cannot buy and sell health care like other goods and services. They believe that health care is different. This is what is sometimes called a “common-sense”

approach to the issue. Look at the first activity in Questions and Activities to develop this idea further. Economists approach the same question rather differently. They analyze the question of health care and markets from a theoretical perspective. The main theory they use is called market failure. In this unit, we will look at the issue of market failure in general and then look in detail at the problems that health care markets face. After that, we will look at the issue of equity again.

### 1.1 Market failure

**Definition of Market:** For many people the word market conjures up a picture of a town square with lots of small stallholders selling everything from fruit and vegetables to meat and fish. For economists, the term has a much wider meaning.

- ❖ It is used to describe any process of exchange between buyers and sellers.
- ❖ Formally, a market can be defined as any set of arrangements that allows buyers and sellers to communicate and thus arrange exchange of goods, services or resources.
- ❖ A free market is where such exchange occurs without interference from the government.



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- ❖ Information is a vital ingredient for any market. Both buyers and sellers need to have access to sufficient information to allow them to make rational decisions.

In theory, markets produce the goods and services we want in the right quantities and at the lowest possible cost. This is why markets are so powerful. Nevertheless, in the real world markets do not always work in the way theory predicts. It is possible for a free market to produce a Pareto inefficient result - i.e. the market fails.

### **1. An information system**

A market is an information system. We get the right goods at the lowest possible cost since the market is able to transmit all the information about benefits and costs between producers and consumers. If this information is less than perfect, then the market will fail. Think about buying a CD. You know what a CD is, and you will have a good idea of the kind of music on the disc. Therefore, you are able to relate your benefit to the price of the CD. If we look at the market for CDs, people will go on buying CDs until the extra satisfaction from the last CD is exactly equivalent to the price of the CD. We have reached the situation where we as a society are consuming the 'right' quantity of CDs in the sense that we are gaining the maximum possible satisfaction from CDs given their price. However, health care is rather different from CDs. We face very acute

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information problems, which make rational purchasing decisions difficult if not impossible. For instance, most people do not know the best way to treat a stomach ulcer so they would find it difficult to buy such treatment. This analysis also assumes that the only people receiving benefit or satisfaction from the CDs are the people buying them. In other words, the price of a CD accurately conveys the level of satisfaction received. This ignores the possibility of externalities or 'spillovers'. Think about someone hearing your CD and enjoying it - they are also receiving satisfaction from the disc, but the market is unable to provide any information about the benefits they are receiving unless they specifically share the cost of buying the CD. Whenever externalities occur, the market fails. Many economists believe that there are strong externality effects related to health care. For example caring for a sick person can impose financial costs on that person's family. Finally, the medical profession often does little to inform the consumer concerning the results of alternative courses of treatment.

### **2. Perfect competition**

An efficient free market requires producers to be operating under conditions of perfect competition. This requires a stringent set of conditions - perfect information, many buyers

and sellers, a uniform product and freedom of entry and exit - which ensure that firms are price takers, producing for the lowest possible cost in the long run and only earning normal profits. If producers do not operate in this way and, in particular, if they have a significant power to influence price or the total quantity being produced, then the market will fail. Doctors and other suppliers of health care often have this power.

### **1.2. Problems of Risk and uncertainty**

If we are going to buy health care in a free market, then we have to have enough money to pay for it. Nevertheless, health care is expensive and we cannot predict when we are going to be ill. What makes this worse is that postponing buying health care is often risky. So, we face the problems of risk and uncertainty. The market response to this problem is to develop an insurance market to remove the uncertainty and risk from health care spending. We pay an agreed amount of money per year whether we need health care or not. Then, when we need care, the insurer pays the bills, however large they are. So, a free market in health care requires an effective health care insurance market. Unfortunately, the health care insurance market itself is often not efficient. Moral hazard and adverse selection both cause significant market failure.

#### **1. Moral hazard**

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Having insurance can change the way in which we act. Imagine you are in a cinema and the film is just about to start. Then you remember that you have left your bicycle unlocked. What do you do? If you have comprehensive, insurance this will compensate you against any loss you are much more likely to carry on watching the film. Your attitudes have been changed by the fact that you have got insurance - this is what economists call moral hazard. Moral hazard can affect any insurance market, but is a particularly serious problem for health care insurance. Consumers who are insured have an incentive to over-consume health care - to demand operations and treatments, which they would not choose if they were directly paying for them. They may also not bother to follow a healthy lifestyle or to get preventative checkups. As a result, when they do fall ill, the cost of treatment is higher than it would otherwise have been. Doctors too are affected by moral hazard. They know that the costs of treatment are covered by insurance so the temptation is to over-treat and over-prescribe medicines for their patients. Moral hazard thus leads to an inefficiently large quantity of resources being allocated to health care.

### **2. Adverse selection**

A company selling health care insurance has to estimate the level of risk accurately. This is difficult because they will not have complete information on the risk status of the person

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they are insuring. One solution is to set the premium at an average risk level. But this makes the policy expensive for low risk customers who therefore may choose not to buy the insurance. The process whereby the best risks select themselves out of the insured group is called adverse selection. Insurance companies know that this is likely to happen so they offer different premiums according to the level of risk and the person's experience of ill health. This is why most companies will offer non-smokers a lower premium than smokers. Offering low insurance premiums to low risk groups, often called 'cream skimming' or 'cherry picking', means high premiums have to be charged to high risk groups such as the elderly or chronically sick. Therefore, in a free market, health care insurance is likely to be too expensive for many people, and especially for those most in need of health care.

### **.3 Unequal information**

Moral hazard and adverse selection help to explain why a free market in health insurance is unlikely to be efficient. However, health care markets face even more fundamental information problems. We are now going to examine the problems caused by unequal information and the consequent role of doctors as agents for patients.

### **1. Rational choices**

When you go into a shop to buy a CD, you have enough information to make a rational choice and you do not need the shop assistant to tell you what you should buy. Going to the doctor is very different. You know that you perhaps do not feel well and that you have particular symptoms, but most people are not able to diagnose their complaint and they want the doctor to do that. What is more, you then rely upon the doctor to specify the treatment – if the doctor says you need an expensive operation then you buy it. In the health care market, information is not equally shared between buyers and sellers, instead, the seller, the doctor, has far more information than the buyer does, the patient does. This asymmetry of information undermines the separation of buyers and sellers. This situation is not unique to health care, but there are a number of factors, which make this information asymmetry particularly acute there.

### **2. Information problems**

Most medical information is technically complex and so not easily understood by a layman and this is made worse by the fact that many illnesses do not repeat themselves, so that the cost of gaining the information is very high. You could argue that the only way a patient could become fully informed would be by training to be a doctor! The costs of a mistaken choice are much greater and less reversible than in other cases in the worst situation if you make the wrong decision you will be

dead. It is also often difficult to postpone treatment and so virtually impossible to shop around, and anyway how do you judge between different doctors' opinions?

### **3. Doctors as agents**

The asymmetry of information makes the relationship between patients and doctors rather different from the usual relationship between buyers and sellers. We rely upon our doctor to act in our best interests, to act as our agent. This means we are expecting our doctor to divide herself in half - on the one hand to act in our interests as the buyer of health care for us, but on the other to act in her own interests as the seller of health care. In a free market situation where the doctor is primarily motivated by the profit motive, the possibility exists for doctors to exploit patients by advising more treatment to be purchased than is necessary - supplier induced demand. Traditionally, doctors' behaviour has been controlled by a professional code and a system of licensure. In other words, people can only work as doctors provided they are licensed and this in turn depends upon their acceptance of a code, which makes the obligations of being an agent explicit, or as Kenneth Arrow put it, "The control that is exercised ordinarily by informed buyers is replaced by internalized values"

### **4. Supplier Induced Demand (SID)**

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The change in demand associated with the discretionary influence of providers, especially physicians, over their patients. Demand that is provided for the self interests of providers rather than solely for patients interests. **Example:** If doctors behaved like some financial advisers or computer salespersons in the past and maximized profits without any limit from a professional code.

### 1.4 Consumers as satisfaction maximisers

Are consumers rational satisfaction maximisers? Market theory assumes that consumers know what is best for themselves - that is they can make choices, which will maximize their total satisfaction. If this assumption is wrong, then markets will not automatically produce efficient results. Economists call the satisfaction that consumers get from consuming a good or service utility. So, the extra satisfaction from consuming a bit more is called marginal utility, while the total satisfaction gained from consuming the whole amount is referred to as total utility. The satisfaction gained simply depends on the quantity and mix of goods and services chosen. The theory assumes that consumers get more satisfaction from more goods and services, but that the increase in satisfaction from consuming another unit - the marginal utility - diminishes as consumption rises.

#### 1. Maximizing utility



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How do consumers go about choosing the mix of goods and services, which give them the maximum total utility? They start by thinking about what they like (their tastes/preferences) and then look at how much money they have to spend (their income) and the prices of the different goods and services. They then choose the combination, which gives them the highest utility for the money spent. We introduced this idea earlier when we talked about a consumer buying CDs. We argued, "You are able to relate your benefit to the price of the CD. If we look at the market for CDs, people will go on buying CDs until the extra satisfaction from the last CD is exactly equivalent to the price of the CD. We have reached the situation where we as a society are consuming the 'right' quantity of CDs in the sense that we are gaining the maximum possible satisfaction from CDs given their price." "By choosing a particular bundle of goods, people demonstrate that they prefer it to all others; consequently, it is best for them. In addition, if all people are in their best position, then society - which is simply the aggregation of all people - is in its best position. Therefore, allowing people to choose in the marketplace results in the best of all possible economic worlds" - Thomas Rice.

### **2. Another view of consumers**

However, Thomas Rice in the *Economics of Health Reconsidered* suggests a range of reasons why this view of

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consumer behaviour could be mistaken. Here are three of them:

1. The idea that consumer utility just depends on the bundle of goods and services consumed. If this were true then people in rich developed economies ought to be appreciably happier than people in poor developing economies. However, research by Easterlin in 1974 showed that “average levels of happiness are fairly constant across countries; people in poor countries and wealthy countries claim to be equally happy” – Rice. Easterlin’s research suggested that utility depended on your relative consumption - so rich people were happier than poor people in all societies. This means that if you consume more that could reduce my utility because I am now relatively worse off.

2. Traditional theory ignores the issue of how tastes are determined. Evidence from social psychology suggests that tastes are determined by people’s past and present environments. So for instance, if you are in a peer group which smokes then you are likely to develop a ‘taste’ for smoking, which will remain, even after you have left the peer group. If this is true, then it is not clear that satisfying tastes will actually make people better off. In fact, “If one believes that tastes are determined in such a way, then it becomes clear that a society might be better off pursuing some goods

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and services that are not demanded most strongly by the public. This is because people might not know what alternatives are available that will make them better off”.

**3.** Are consumers rational? What do economists mean by the concept of rationality? In a narrow sense, they mean that people will behave consistently - so if they prefer A to B and B to C then, they will prefer A to C. More widely, they mean that people will behave in a reasonable manner. If consumers are not rational in this sense, then they will not necessarily make decisions, which maximize their welfare. Social psychology suggests that people are often not rational in this sense - instead they exhibit what is called cognitive dissonance. In other words, they simultaneously hold two ideas that are psychologically inconsistent and use various forms of self-justification and rationalization to overcome the tension. Take the issue of saving for old age. It is rational to do this, but often people do not do it. Why not? Well the act of saving forces you to face up to the reality of ageing. If you are scared of getting old then, you are likely to refuse to contemplate this and so choose not to save. Cognitive dissonance suggests that people will often not make decisions, which maximize their utility.

Rice argues that the issues raised above are particularly important in health care markets. Consumers are unlikely to

be in a position to appreciate the full range of possibilities available to them and so need expert help to guide them. This is particularly true as many situations affecting health are likely to produce cognitive dissonance. If utility is relative, then, this suggests that society would be better off with some form of universal provision rather than one based on individual health care purchases.

### **1.5 Imperfect competition**

The free market models predict large numbers of buyers and sellers - all of whom have no power individually to influence the market price. However, a significant proportion of health care is delivered by hospitals and these hospitals can often exercise monopoly power within the health care market in the local area.

#### **1. Monopolies**

Why should hospitals be able to act like monopolies? The answer is that hospitals have an incentive to grow in size and in the range of services provided. This leads to the emergence of one large hospital in an area rather than a large number of small hospitals. The incentive to grow is falling unit costs - what economists call internal economies of scale and economies of scope.

#### **2. Economies of scale**

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Why should the average cost of providing treatment fall as a Hospital becomes larger? There are a number of reasons.

1. A large institution is able to make more use of specialization. This can involve both people and capital. A large hospital is able to develop specialist medical units employing both highly skilled surgeons and specialist capital equipment. Such a hospital is also able to employ specialized managers and ancillary staff, which will allow it to operate more efficiently.

2. A large institution is able to achieve purchasing economies of scale through bulk buying.

3. A large hospital prevents wasteful duplication of facilities. There will only be a limited number of patients with a particular condition needing particular skills and equipment in any one area. Concentrating the treatment in one place allows the most efficient use of resources.

### **3. Economies of scope**

In many cases, it costs less to provide a range of services in a single hospital rather than have several hospitals each just producing one or two services. For example, emergency surgery and treatment of heart attacks are more cost effectively provided in a single hospital rather than two separate ones.

### **4. Price maker**

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In this situation, the hospital as supplier of health care services has considerable power to bargain over price. Instead of being a price taker, it is a price maker. In this situation, a free market does not lead automatically to a Pareto efficient outcome. In particular, if the hospital is profit maximising then it will set price above marginal costs giving an allocative inefficient outcome. In addition, it is likely that the hospital will be productively inefficient, since it lacks the incentive to reduce costs, which would be provided by competition.

### **1.6 Externalities**

The economist defines external effects as involving positive and negative results for others that are the consequences of one's own actions. Externalities or spillover effects provide another source of market failure. Again the problem is related to information. This time the market price does not accurately contain all the information about the benefits and costs of the market transaction. Earlier we outlined how this might occur when a consumer bought a CD. Now we are interested in how this might operate in a health care market.

#### **Example:**

Suppose vaccination against infectious diseases were bought and sold through a free market. You are thinking about the benefits to you of not catching whooping cough – the price you

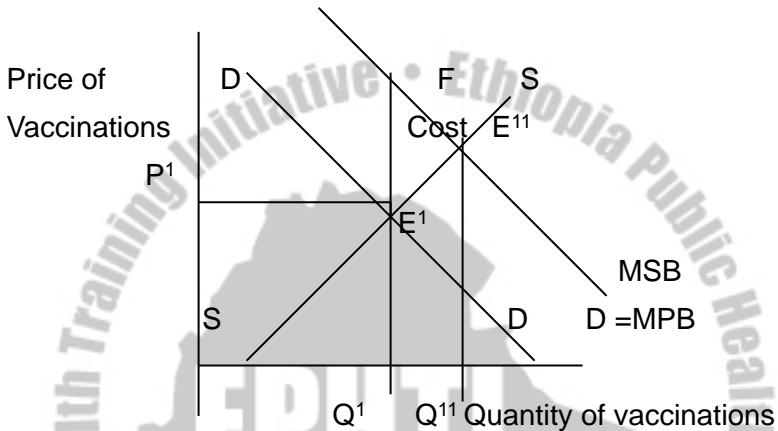
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are prepared to pay for vaccination will depend on your personal, private valuation of the benefits you receive. Going from a single consumer to the market, we can analyse the interaction of supply and demand for vaccinations using a diagram.

In the Figure below, DD shows the market demand for vaccinations. The amount of vaccination that private individuals will be prepared to buy at each price will depend upon their estimate of their personal benefit from being protected against whooping cough. In formal terms, this means that DD represents the marginal private benefit (MPB) that consumers receive. The market supply of vaccinations is shown by SS. The free market equilibrium is at price  $P'$  giving  $Q'$  vaccinations. However, when you are vaccinated against whooping cough you are not the only person to benefit. Other people also gain since they are now protected against catching whooping cough from you. This extra or externality benefit is missed by the free market. We can show the effect of this on the diagram. MSB represents the marginal social benefit from vaccination, which is that all the benefits received by society. MSB is made up of the entire private benefits consumers receive (MPB) plus the additional externality benefits. The Pareto efficient equilibrium is  $E''$  which corresponds to  $Q''$  vaccinations. A free market will thus underprovide vaccinations and this in turn will impose a cost upon

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society. This cost is shown in the diagram by the shaded area  $E'FE''$ , which equals the excess of MSB over the cost of producing the further  $Q'' - Q'$  vaccinations.



**Figure 2.1 “Selfish” versus “caring” externalities**

Some economists refer to this type of externality as a ‘selfish’ externality to distinguish it from a ‘caring’ externality. A ‘caring’ externality occurs when individuals receive benefit from knowing that other people are receiving medical treatment. Knowing that someone is in pain simply because they cannot afford medical treatment makes many people upset. In other words, the poor sick person’s pain and lack of treatment causes disutility for other people in society.



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This helps to explain also why some people are prepared to pay higher taxes to fund health care for all. Again, a market demand curve reflecting each individual's wish to buy care for them is unable to express this willingness to pay for external benefits. So, a free market will further under-provide health care.

### **1.7 Equity and health care**

#### **1. Equity is more than efficiency**

Efficiency is not everything. We are also concerned with what is fair. If we had a market distribution of health care, then only those who could afford to pay would be able to purchase it. Most people regard that as unacceptable. This is a major reason why most societies regard health care as different from other commodities. As Donaldson and Gerard put it: "Within most societies there exists, in some form or another, a concern that health care resources and benefits should be distributed in some fair or just way". A concern about equity was one of the main motivating forces behind the creation of the National Health Service (NHS) in the developed Nations. William Beveridge, the architect of the welfare state, argued for a health service which would provide treatment "to every citizen without exception, without remuneration limit and without an economic barrier at any point to delay recourse to it". Equity has remained a major goal within the developed nation's health system.

### **2.4 Demand for health services**

As indicated above, most observers agree that consumers demand are affected by various factors such as more ignorant, taste and uncertain in their role as consumers of health services than as purchasers of most other commodities. They can not assess the quality and character of the health services they consume and are generally unaware of the variety of health care alternatives available for treating a given illness. Ethical standards adopted by the health professions preclude advertising, so consumers are denied access to this form of information concerning the relative merits and costs of various forms of care and treatment. Moreover, the reluctance of some physicians to discuss illness in non-ethical terms also tends to keep consumers ignorant of feasible treatment alternatives and makes it nearly impossible for them to exercise rational choice. While individuals can choose their physicians, doctors usually determine the kind and quantity of health services individuals consume. While doctors may have some knowledge of the individual's financial resources, these considerations are unlikely to have much influence on the type of care prescribed.

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Consumers also generally lack knowledge concerning their actual need for care. Thus, the overall benefit of health services is generally uncertain from the consumer's point of view and the demand for a significant portion of health services is based on the doctor's judgment.

The demand and need for medical care is not always the same. For instance, an individual may demand more care than is required medically. Conversely, he may need medical care, but may not be aware of its value. Need is generated by the incidence of illness, while demand is generated by the interrelationship of illness with other factors. To plan for future use of facilities and personnel, demand rather than need for such resources must be projected.

Demand analysis can be applied with appropriate modifications to explain variations in expenditures on medical care services. From the patient's viewpoint, the need for medical care is not always clear-cut. For example, the distinction between a severe cold and pneumonia may not be noticeable to the consumer. Chest pains may indicate either bronchitis or a serious heart condition. In such instances, a high-income family would be expected to take greater precautions and thus incur higher medical care expenditures than a low-income family. Moreover, even after treatment is begun economic factors may influence its duration. A poor

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family may decide to forego the possible benefit from an extra day in hospital or an additional visit to the physician.

Medical care is characterized by a low degree of substitutability, most medical needs are highly specific and alternative goods are not able to supply the same level of satisfaction. Moreover, medical care is generally wanted for its own sake, most medical care and treatment are unpleasant and generally are not wanted until it becomes a preferable alternative to the pain and other consequences of illness. This implies that the price elasticity of demand for medical care would tend to be low.

Grover C. Wirick has identified five fundamental factors that can have an impact on the demand for health care services.

- ✚ The first is need, when a person suffers from a condition that requires attention, or he/she has some other reason for seeking medical care or examination.
- ✚ Secondly, there must be a realization of the need. Either the individual or someone acting in his/her behalf must know that the need exists. A number of psychological processes may be involved including awareness of the existence and availability of medical skills as well as the benefit likely to be gained through health services. In addition to these, the

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hopes, fears and beliefs of the individual, as well as the other personal factors such as his/her previous experiences, customs and religion play a significant role. For example, a person with a strong religious conviction against a particular kind of medical treatment may have a different realization of need for care from that of someone with other religious beliefs.

- ✚ Third financial resources must be available to implement the care. This capability may take many forms, including the income and assets possessed by the individual or his/her family, insurance coverage, eligibility for free care under a group or government program and availability of care through welfare programs.
- ✚ Fourth, there must be a specific motivation to obtain the needed care even with the availability of the other forces such as need, realization and resources, something must initiate the action.
- ✚ Fifth is availability of service.

The first three forces are characteristics of the patient, while the fifth is a phenomenon of his environment. The fourth force

is somewhat indistinct and could be characteristic of either or both.

### **2.4.1 Changes in demand for medical care**

By 'quantity demanded' we mean the quantity demanded at any specific price, all other causal factors held constant. By 'demand' we mean the set of quantities demanded at various price levels, all other causal factors held constant. Change in quantity demanded is shown by a movement across the demand curve, while change in demand is expressed in a shift in the demand curve itself. In the analysis of demand for medical care the focus is on health care, hence the commodity 'physician care' is used as the major example. Physician care is defined as examinations and treatments administered by physicians to their patients. Physician care is only one of the many commodities in the health care sector.

The effects of factors other than the out-of-pocket price on the economic behaviour of consumers are introduced by way of their influence on the basic price-quantity relation. These other factors can be placed into three broad categories.

#### **1. Income**

Income of consumers is generally assumed to be positively related to demand. That is, if income increases, the quantity demanded at each price will be greater. Change in the level of

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income results in a shift in the demand curve. Income is a variable used to measure the ability of the individual to afford medical care, but it is only an approximate measure. Another measure of the affordability of medical care is the individual's level of wealth, including bank deposits, real estate and other assets, less any debt, such as bank loans and mortgages. All these are supposed to measure the individual's ability to pay for medical care.

### **2. Price of related commodities**

The demand for a particular commodity is also influenced by the quantities of related commodities consumed. The quantities of these related commodities are, in turn, influenced by their prices. Two classes of commodity relations are of concern to us: complements and substitutes.

### **3. Tastes**

Tastes have sometimes been called wants, a term connecting the intensity of desire for particular commodities. The elements that influence the intensity of an individual's desire for medical care include health status, educational background, sex, age, race and upbringing. Any of these can explain differences in the intensity of desire for medical care among individuals. That is, other factors remaining constant, these differences offer explanations as to why one individual's demand shift. The explanation might simply be that the health

status of the first individual is lower than that of the second individual.

### **2.5 Health and Economic Development**

Development is the concern of all developing countries. The health planner, manager, etc., is equally charged with that concern and must be knowledgeable about what development implies and the role health should play in the development of a given country. The following questions are of paramount importance for the health worker in a developing country such as Ethiopia: what is development? How does it differ from economic growth? How can development be measured? What role does health play in development? What role should the health worker play in facilitating development? This subsection will be attempting to provide some answers and insights to these questions.

#### **2.5.1 The meaning of Economic Development**

Development has been variously defined. The modern view of development perceives it as both a physical reality and state of mind in which society has, through some combination of social, economic and institutional processes, secured the means for obtaining a better life.

The definition of “a better life” may vary from one society to another. Development in all societies, however, must consist of at least the following three objectives:



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- To increase the availability, distribution and accessibility of life-sustaining goods such as food, shelter, health, security and protection to all members of society;
- To raise standards of living, including higher incomes, the provision of more jobs, better education and better health, and more attention to cultural and humanistic values so as to enhance not only material well-being, but also to generate greater individual community and national esteem.
- To expand the range of economic and social opportunities and services to individuals and communities by freeing them from servitude and dependence on other people and communities and from ignorance and human misery.

### **2.5.2 Growth and Development**

For a long time, Development and Economic growth were used interchangeably. Although the two are closely related they are, however, different. Economic growth can be defined as an increase in a country's productive capacity, identifiable by a sustained rise in real national income over a period of years.

The main differences between growth and development can be outlined as follows:

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1. Development encompasses the total well-being of the individual, a community or a nation, while economic growth is concerned with the increase in per capita earnings of the people making up the nation.
2. Economic growth is one characteristic of development, yet development must not be measured by the rate of economic growth. It is possible for a country to experience economic growth without becoming developed. A country, for example, may acquire a great wealth from its mineral deposits, but have a low level of health services. This is due to the fact that the wealth goes into the hands of a very small minority who might squander it on luxury goods instead of establishing a viable infrastructure.
3. Development is concerned with the total person, his economic, social, political, physiological, psychic and environmental requirements. If one of these is not fully cater for, development has not been achieved.

### **2.5.3 Measurement of Economic Development**

The measurement of development has presented social scientists with a problem of finding the suitable tools and techniques to do so and of interpreting the results of such measurements. Several suggestions have been presented for measuring development. One line of research has suggested

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the use of so-called social indicators. The purpose of these is to measure the well-being of the population by examining factors such as health and nutritional status, level of education, housing conditions and so forth. However, it is easier to calculate GNP, per capita incomes and growth rates. As a result, in most reports these variables are used as indicators of Development.

Economic Development, in addition to a rise in per-capita income, implies fundamental changes in the structure of the economy characterized by:

1. Rising share of industry, along with the falling share of agriculture in GNP and increasing percentage of people who live in cities rather than the countryside
2. Passing through periods of accelerating, then decelerating population growth, during which the age structure of the country changes dramatically.
3. Changes in consumption patterns as people no longer spend all their income on necessities, but instead move on to consume durables and eventually to leisure-time products and services.

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4. Meeting the needs of the present without compromising the ability of future generations to meet their own needs (sustainability)

5. Participation (mainly) by the citizens of the country in the process as well as the benefit, While economic development and modern economic growth involve much more than rise in per capita income, there can be no development without economic growth

### **2.5.4 Health Implications of Economic Development**

The associations between health and national development are complex. The interaction is a two-way phenomenon with health being both influenced by and influencing economic development. Improved health has been considered solely a result of economic growth, a part of the product of growth rather than one of its causes.

Some development experts have maintained that health should have low priority in development funding and have tried to justify their opinions with comments such as “only a rich nation can afford the programs to assure its population’s health”, or “a poor nation can not afford improved health”. The concern of development planners is accentuated by the fact that during the demographic transition, lower death rates are

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often associated with sustained high birth rates which results in rapid population growth.

While the supply of labor may increase as a result of improved health and reduced death rates, there may be no corresponding gain in per capita output. Thus, if economic growth is too slow to absorb the additions to the labour force associated with expanded health programs, greater unemployment, both open and disguised, may result. Thus, improved health in poor societies can be postulated to produce larger populations, greater poverty and ultimately deterioration in health.

However, other development planners and economists are more optimistic regarding the impact of health and nutrition programs on economic growth. There are three different ways by which improved health programs can accelerate development.

- Improved health may increase productivity or efficiency of the labour force leading to greater output and reduced cost per unit of output
- Better health conditions may serve to open new regions of a country of settlement and subsequent development.
- Attitudinal changes towards achievement and entrepreneurship may be linked to health and nutrition

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programs. This linkage has a significant importance to stimulate entrepreneurship in poor countries.

It has been apparent that where conditions are worst, relatively simple and low cost health programs can produce dramatic reductions of debility and disability of the labour force. In these situations major increments in productivity are most readily apparent. For instance, in the Philippines at one time a survey of major enterprises indicated a daily absenteeism rate of 35 percent, attributed largely to malaria. After initiation of an ant-malaria program the rate of absenteeism was reduced to 2-4 percent and nearly one-fourth fewer laborers were required for any given task. Although one could argue that economic growth has to accelerate the eradication of poverty many economists felt that its impact occurred too slowly. In other words many end not to believe in an instantaneous trickle-down effect of economic growth. Subsequently, a more direct method of poverty reduction, namely the basic needs approach, was advocated; its aim was the direct fulfillment of basic needs such as health, clothing, sanitation, shelter, nutrition and education.

### **2.5.5 Major determinants of poor health**

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The following are some of the main determinants of poor health which have direct or indirect interdependence with Economic Development:

- Population growth: rapid population growth implies an increased need for medical and other social services
- Malnutrition
- Sanitary conditions and inadequate shelter
- Education

There remains a debate on the relation between health status improvements and economic growth. It is argued that health status improvements are attained at the expense of fixed capital entailing a smaller economic growth. That is, the investment funds that could have been used for the growth of the economy at large are to be used for investments in the health service sector which has in part a consumption character. Some argue, however, that investment in basic needs, such as in the health service sector, are investments in the health service sector which has in part a consumption character. Some argue, however, that investment in basic needs, such as in the health service sector, are investments in human capital which in turn is growth promoting. Although some tend to conclude that there is a positive relationship between health and economic development, this does not prove that improvement of the health service sector is a sufficient condition for economic development. On the other

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hand, a better health status does not guarantee a faster economic growth.

The following conclusions may be drawn from the discussions of the relations between health and development.

1. Development is not a simple process. It is a complex intermingling of economic, social, environmental, physiological, psychic, cultural and political factors.
2. The measurement of development is not an easy task. Economics provides certain tools which can be brought to bear on crucial areas of choice where decisions are required. Further research is required in this area so as to develop tools and techniques for evaluation in those areas that are not readily quantifiable.
3. Development is linked not just to the improvement of economic indicators or the attainment of basic needs, but with wider aspirations such as high health status, and with social well-being and change. The Development process embraces not only the so-called “productive” sectors of the economy, but also the social sectors.



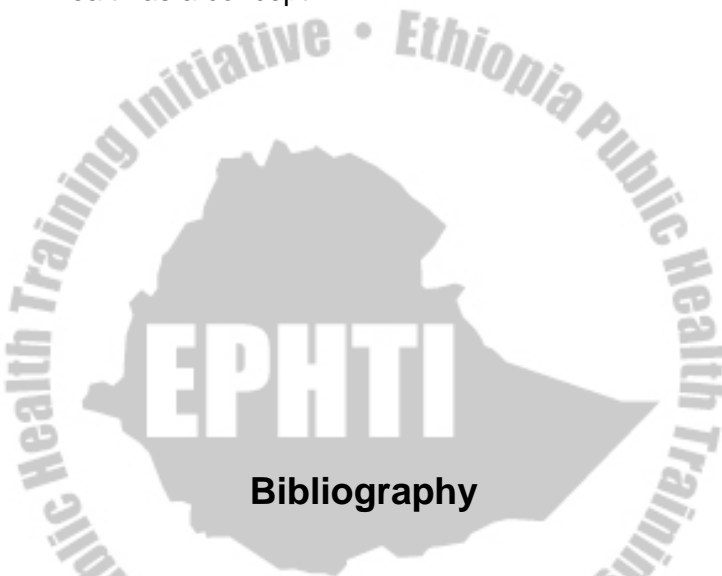


## **Review Questions**

1. In what sense are the consumers of health services ignorant?
2. Economic development is a process, what are the necessary situations for a given country to be considered that it is in this process?
3. Outline the major determinants of poor health in a developing country.

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4. Improved health can be considered as a precondition for economic development – how? Discuss.
5. Economic development as a complex process is affected and manifested by factors such as – what?
6. Show the policy implications of the WHO definition of health as a concept.

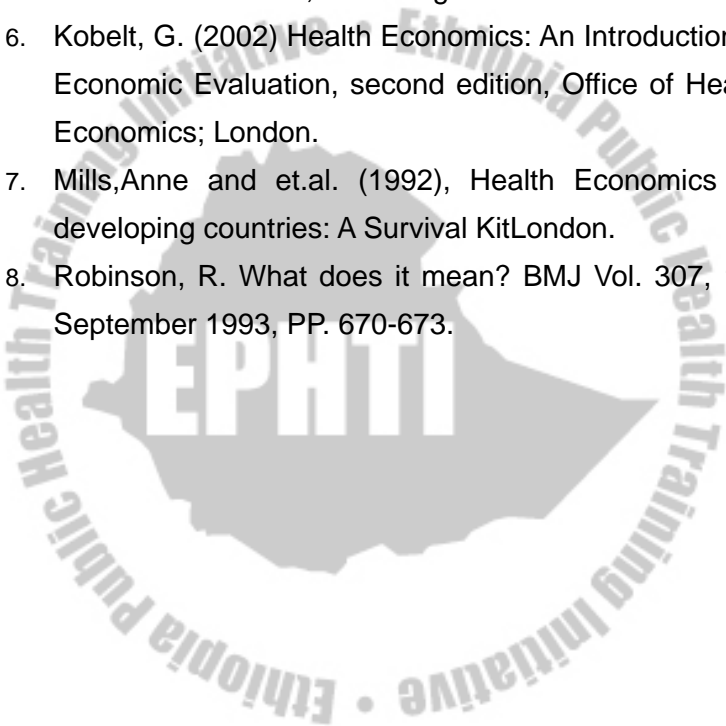


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## **CHAPTER THREE**

# **COST CONCEPTS AND ECONOMIC EVALUATION**

### **Learning Objectives**

At the end of the chapter, the student will be able to:

1. Understand the meaning and basis of cost as a concept.
2. Be aware of the possibility of using cost concepts to undertake economic evaluation.
3. Be introduced to the possibilities of using cost benefit analysis and cost effectiveness analysis in assessing the performance of health care activities.
4. Revisit the conceptual meaning of opportunity costs.
5. Have ideas about the calculation of future benefits and costs of any economic venture.

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6. To explain the effects of scope and viewpoint of an economic evaluation.
7. To describe direct, indirect and intangible costs.
8. To outline the methods needed for costing in an economic evaluation and to give examples of costing methods and cost data types.
9. To introduce health utilities and contingent valuation, how they are calculated, where they might be used and the potential problems with their use.
10. Be able to correctly understand the results of ratios used in economic evaluation.

### 3.1 Definition of Cost

- + Economists define a cost as the value of resources used to produce a good or services. However, the way these resources are measured can differ. There are two main alternatives with respect to measurement of these resources: financial and economic costing.
- + Financial cost represents actual expenditure on goods and services purchased. Costs are thus described in terms of how much money has been paid for the resources used in the project or services. In order to ascertain the financial costs of a project, we need to know the price and quantity of all the resources used or, alternatively, the level of expenditure on these goods and services.

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- ✚ Economists conceptualize costs in broader way. They define costs in terms of the alternative uses that have been forgone by using resources in a particular way. These economic or opportunity costs recognize the cost of using resources as these resources are then unavailable for productive use elsewhere.
- ✚ The basic ideas are that is that things have a value that might not be fully captured in their prices. It is not difficult in many health programmes to identify resources inputs for which little or no money is paid: volunteers working without payment; health messages broadcasts without charge; vaccines or other suppliers donated or provided at large discount by organizations or individuals. Thus, the values of these resources to society, regardless of who pays for them, are measured by opportunity cost.
- ✚ Economic cost then include the estimated value of goods or services for which there were no financial transaction or when the price of a specific good did not reflect the cost of using it productivity elsewhere. The main ways that financial and economic costs differ is in the way they treat:
  - ❖ Donated goods and services
  - ❖ Others inputs whose prices and incorrect or distorted.
  - ❖ Valuation of capital items.

The theory and the concept of cost arise from the fact that economic resources are scarce by nature. Had it not been for the scarcity of resources, the concept and theory of cost may not exist as such.

✓ Scarcity has two sides:

- The infinite nature of human wants
- The finite or limited nature of resources available to produce goods and services.

### **3.2 Types of costs**

“What is a cynic? A man who knows the price of everything and the value of nothing” (Oscar Wilde)

Costs can be defined in many ways (See figure below), but generally can be considered as direct, indirect and intangible. Direct costs are those immediately associated with an intervention such as staff time, consumables etc. Indirect costs might include a patient’s work loss due to treatment. Intangible costs may be things like pain, anxiety, quality etc. Benefits, however, can be analyzed in three different ways reflecting the different types of economic analysis used in evaluation. First, benefits can be examined in terms of the immediate (direct) effects on health. These are usually clinically defined units appropriate to the area of study, such as ‘lives saved’, ‘reduction in tumor size’, ‘change in blood pressure’ etc. Second, benefits from an intervention can be considered in more generic terms such as the impact on

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general well-being/ happiness/ satisfaction, these are more generally labeled as 'utilities'. The utility of an intervention to an individual is its benefit. Measures such as the quality adjusted Life year (QALY) are used to quantify this third, benefits might be considered in the same terms as costs, which means that benefits must be valued in monetary terms by some means.





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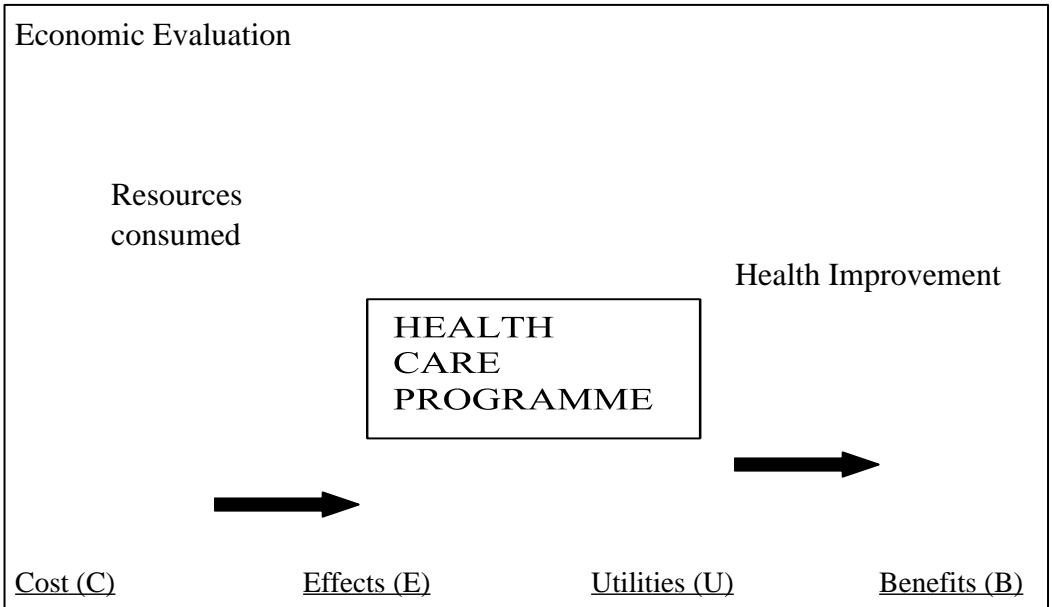


Figure 3.1.- Evaluating Costs and Consequences

Sources: (Reproduced from Drummond et al., 1997)

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Whatever kind of economic evaluation may be applied, the costs must be assessed.

- ✚ These are divided into costs borne by the ministry of health (like drug and equipment),
- ✚ By patients and their relatives (like transport and food) and
- ✚ By the rest of society (like health education).

Next the costs have to be valued in monetary terms;

- ❖ Direct costs, like wages, pose little problem,
- ❖ But indirect costs (like time spent in hospital) have to have values imputed to them.
- ❖ Costs must also be further subdivided in to average, marginal and joint costs, which help decisions on how much of a service, should be provided.
- ❖ Capital costs (investment in plant, buildings, and machinery) are also important to need due consideration, as discounting and inflation.

### 3.2.1 which costs should be included?

If the evaluation is being made from the widest perspective- the viewpoint of society as a whole-then three main categories of costs must be considered:

- Health service costs
- Costs borne by patients and their families

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- External costs borne by the rest of society

### **1. Health Service Costs**

These will include staff time, medical supplies (including drugs), bed and food services in the case of inpatients, use of capital equipment, and overheads such as water, heating and lighting. These items may be divided into variable costs, which vary according to the level of activity (for example, staff time) and fixed costs, which are, incurred whatever the level of activity (for example, heating and lighting). In the long run, practically all costs become variable since those that are fixed in the short run may be varied-for example, by opening and closing wards, and by building new hospitals. In economic evaluation all such health service costs-both fixed and variable-are referred to as direct costs.

### **2. Costs Borne By Patients and Their Families**

These will include out of pocket expenses such as travel, and any cost resulting from caring activities undertaken by the family. These are both direct cost items. In addition, there may also be indirect costs (productivity costs) such as income lost because of absence from work (which is a production loss to society) and any psychological stress experienced by patients, or their families or both.

### **3. External costs**

These occur when people not directly involved in a programme experience increased costs because of it. In most

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cases these effects are too small and diffuse to merit inclusion in the analysis, but there may be some occasions when they are large enough to require attention. For example, public health legislation enforcing antipollution standards or specifying water purification levels may lead to increase in manufacturing costs and consumer prices (as well as providing health benefits).

### 3.2.2 How should costs be valued?

- ❖ The costs identified in physical units (such as hours of staff time, hours of operating theatre use, quantities of drugs and so on) must be valued in monetary terms.
  - ❖ For most direct cost items market prices will be available.
  - ❖ Nursing time can therefore be valued at the appropriate hourly rate;
  - ❖ Medical and surgical supplies can be valued at the prices charged by suppliers;
  - ❖ Electric and water can be valued at the appropriate tariffs; and so on.
- ✚ Strictly speaking, economic evaluation should seek to value all inputs in terms of their opportunity costs-that is, their value in their next best use.

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- These measures what is being given up to use resources in health care?
- Some times opportunity costs may diverge from market prices. Example, a nurse would otherwise be unemployed, and then his or her opportunity cost would be zero and not the hourly wage.
- For most practical purposes, however, it is usual to use market prices unless there is strong evidence to suggest that they diverge appreciably from opportunity costs.

Indirect costs, for which there are no market prices, pose a more difficult problem of evaluation. Some method has to be used to impute values to them.

- ✚ This is known as “shadow pricing”, and time costs provide a good example.
- ✚ When time is spent in hospital by a patient, or on caring by a relative, and this displaces work time, it is usual practice to use the relevant wage to value the lost time.

- ✚ If it is not work time that is displaced, however, other measures must be used.

### **3.2.3 Average, Marginal, and Joint Costs**

Most decisions in health care are not concerned with whether or not a service should be provided, or whether or not a particular procedure should be undertaken, but with how much of the service should be provided. That is, should existing levels of provision be expanded or contracted? For example, what family planning services should be made available? This decision requires that attention should be focused on marginal costs—that is, the change in total costs resulting from a marginal change in activity.

In the short run, there is often an important difference between the marginal costs of an activity and its average cost, where the average cost is defined as the total cost divided by the total number of units of output.

One context in which the distinction between average and marginal costs is important is in relation to duration of hospital stay of inpatients. Many new procedures have reduced the amount of time necessary for a patient to remain in hospital and thereby yield cost savings. When valuing these savings, however, it is important to bear in mind that using average costs /day will generally overstate the savings as the later days of a stay usually cost less than the earlier ones. It is the marginal costs/day that is the relevant measure

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Yet another problem of cost measurement arises in connection with joint costs. Often a single production process can result in multiple outputs. For example, a single chemical analysis of a blood sample can diagnose the presence of many diseases. How should the cost be allocated to each diagnosis? Similarly, within a hospital setting, there are many common services (like medical records, radiology, operating theatres, laundry, catering, and cleaning) that contribute to a number of specialities. Economic evaluation requires some method for allocating the joint costs of these services to individual programmes or procedures. There are several methods, which may be used to do this. Most of them use some physical unit of utilisation, such as the number of laboratory tests, hours of operating theatre use, or square meters of ward space, to apportion total laboratory, operating theatre, and ward cleaning costs.

### **3.1.4 Capital Costs**

Investments in buildings, plant, and equipment that yield a flow of services over a number of years give rise to capital costs. Generally, investment expenditure will be undertaken at the beginning of a project, but the use of items of capital equipment will generate annual capital costs over the lifetime of the asset. These costs have two elements: - namely, interest and depreciation.

- ❖ Interest costs should be included even if the asset was not acquired with borrowed money because tying up

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money in an item of capital equipment involves an opportunity cost-that is, interest foregone.

- ❖ Depreciation costs arise because of the wear and tear that an asset gets through use and the consequent reduction in the length of its life. (Note, however, that land is a capital asset that is not assumed to incur depreciation costs.)

Some times an item of capital expenditure is unique to a particular use and has little or no alternative use value (opportunity cost). In such cases, it is referred to as sunk cost. A hospital building or an item of medical equipment may, for example, have considerable value in its existing use, but little resale value. This can provide a powerful case for continuing to use existing assets instead of undertaking new investments because, in an economic evaluation, sunk costs should not be included among annual capital costs. In practice, this consideration is likely to be more important in the case of major capital developments than of individual procedures.

### **3.3 Viewpoint of an Economic Evaluation**

It is important to determine at the outset from whose viewpoint an economic evaluation is to be carried out. It may be based on the viewpoint of an individual patient, the hospital, the government, or society at large. The broadest viewpoint is that of society in general, as this will include all the costs and



benefits, no matter to whom they accrue. For this reason, it is the preferred approach.

Adopting this approach has two main implications that distinguish it from approaches with more limited perspectives.

- ❖ Firstly, it usually involves measuring and valuing items that do not have market prices attached to them, such as the time costs that patients incur when undergoing treatment and recuperating.
- ❖ Secondly, it means that certain costs, or cost savings, or both, should not be included in the evaluation because they are transfers from one sector to another rather than a net cost to society. E.g. free health care.

### **3.4 Features that characterize an Economic Evaluation/ Analysis**

- ✚ First, it deals with both the inputs and outputs, sometimes called costs and consequences, of activities. It is the linkage of costs and consequences, which allows us to reach our decision.
- ✚ Second, Economic analysis concerns itself with choices. Resource scarcity, and our consequent inability to produce all desired outputs, necessitates that choices must, and will, be made in all areas of human activity. These choices are made on the basis of many criteria, sometimes explicit, but often implicit.

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Economic analysis seeks to identify and to make explicit set of criteria, which may be useful in deciding among different uses of scarce resources.

Economics evaluations:

- ◆ Always compares any health care programme with an alternative, for example, no treatment or routine care.
- ◆ Always measure the benefits produced by all alternatives compared.
- ◆ Always measures the cost of any programme.

The above characteristics of economic evaluation/analysis lead us to define economic evaluation as the comparative analysis of alternative courses of action in terms of both their costs and consequences.

Therefore, the basic tasks of any economic evaluation are;

- ◆ To identify,
- ◆ measure,
- ◆ Value,
- ◆ Compare the costs and consequences of the alternatives being considered.

“The pursuit of efficient practice is not merely about reducing costs. If it were the most efficient procedure would be to do nothing, as that pushes costs to zero.” (Professor Alan Maynard<sup>4</sup>).

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Economic evaluation of health care programmes aims to aid decision-making with their difficult choices in allocating health care resources, setting priorities and moulding health policy. But it might be argued that this is only an intermediate objective. The real purpose of doing economic evaluation is to improve efficiency: the way inputs (money, labour, capital etc) can be converted into outputs (saving life, health gain, improving quality of life, etc).

The choice of what health care to provide is about what economists call allocative efficiency. This means that we strive for the maximization of benefits (however we decide to measure this) subject to given available resources. So, from a fixed resource we aim to get as much out of a range of health care programmes as possible. This will mean that we will need to compare very different interventions, say health promotion advice to quit smoking versus prescribing Relenza versus a procedure on an ingrown toenail. Thus, allocative efficiency is about finding the optimal mix of services that deliver the maximum possible benefit in total. Resources will be directed to interventions that are relatively good (i.e. efficient) at converting inputs into health benefits and a way from those that require larger input for relatively low health gain. This approach may of course be constrained by certain equity considerations, to ensure that certain groups do receive health care.

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The choice of how to provide health care is about what economists call technical efficiency. This means that we might strive for minimum input for a given output. For example, if we have decided that performing tonsillectomies on children is worthwhile, part of an allocative efficient allocation of resources, then we may need to examine the efficiency of how we do this. So, if the output we wish to achieve is to successfully remove a child's tonsils then we might choose between, say, a day case procedure or an inpatient stay. This is an issue of technical efficiency since the output or 'outcome' is fixed, but the inputs will differ depending on which policy we adopt. The day case approach may perhaps require more intensive staff input and more follow-up outpatient visits. If this was the case, then inpatient tonsillectomy may be the more technically efficient strategy.

Thus, with any given health care programme an economic evaluation is aiming to make explicit the total resources consumed specifically by that programme (i.e. attributable to it) and the total benefit generated specifically by that programme. Drummond et al (1997) defines economic evaluation as "the comparative analysis of alternative courses of action in terms of both their costs and consequences." It differs from other forms of analysis since it considers both costs and consequences and is comparative.

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Evaluation needs to be comparative as an intervention can only be labeled as good or bad relative to some benchmark or alternative even if this alternative is a 'do nothing' strategy. If an evaluation is not comparative and does not consider both costs and consequences, then it is only a partial evaluation. It is a description of either just the costs or just the benefits of one intervention in isolation. This is most uninformative since it is one-dimensional and without a context by which to judge relative performance (efficiency). If both costs and consequences are considered, but no comparator is provided, then the study is again only a partial evaluation, described as a cost-outcome study. It lacks context and is of limited use. If alternatives are compared, but only in terms of costs or benefits and not both then again the study only provides a partial evaluation and can be labeled an effectiveness study or a cost analysis. It would be comparative, but only across one-dimension. Hence, an economic approach can be considered a full evaluation technique.

Whatever the approach, the same three-stage process for the assessment of all costs and benefits can be applied. All relevant cost and benefit variables must be i) identified, ii) quantified and iii) valued.

At the start of an evaluation, it must be determined which costs and benefits are sufficiently important to merit inclusion

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in the study. This should be separate from the measurement stage so as to avoid the study being entirely data driven (i.e. the more intangible consequences of an intervention might be considered equally important). The identification of relevant benefits and costs will define the variables in the study. These can be broadly classified into changes in resource use, changes in productive output and changes in health state.

The next stage is to measure changes in these variables brought about by the intervention in question. Often it is important that this is done before valuation, as it is necessary to know the magnitude of gains or losses before values can be attached. Presenting variables in terms of 'natural' quantities or frequencies (i.e. hour's worked or clinical units) can also be very useful in terms of generalisability. Others can use these data and apply values relevant to their own setting (i.e. different cost structures or health values).

The differential timing of costs and benefits must also be considered in an evaluation. The effects of health treatments do not always occur at the same point in time. Costs may be incurred today, but the benefit may not arrive until next year (i.e. preventative treatments, health promotion), part of this future benefit might be that future costs will be avoided. 100 Birr spent today may not have the same value as 100 Birr spent next year because of inflation; interest on savings and

not least a positive rate of time preference. People may just prefer to have 100 Birr in their pocket today rather than 100 Birr in a week or a month or a year, because it offers them more choices. This can be incorporated into economic evaluation by the notion of discounting future costs and benefits to their present day value. A simple formula can be applied to do this for any chosen discount rate, normally within the range of 0-10%. Material covered so far in this pack has been very much at a conceptual level. Before we move onto some more practical applications the following revision questions may be useful.

### **3.5. Types of Economic Evaluation**

The different ways of looking at benefits combined with cost analysis represent the different techniques of economic evaluation: cost effectiveness analysis (CEA), cost utility (CUA) and cost benefit analysis (CBA). When to see each of the above techniques will depend on the nature of the question to be addressed, which may be a choice between alternative clinical strategies for a condition: timing of an intervention; settings for care; types and skill-mix of personnel providing care; programmes for different conditions; scale or size of a programme; or other ways to improve health.

#### **3.5.1. Cost-Effectiveness Analysis**

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When different health care interventions are not expected to produce the same outcomes both the costs and consequences of the options need to be assessed. This can be done by cost-effectiveness analysis, whereby the costs are compared with outcomes measured in natural units-for example, per life saved, per life year gained, and pain or symptom free day. Many cost-effective analyses rely on existing published studies for effectiveness data, as it is often too costly or time consuming to collect data on costs and effectiveness during a clinical trial. Where there is uncertainty about the costs and effectiveness of procedures sensitivity analysis can be used, which examines the sensitivity of the results to alternative assumptions about key variables. In what follows these methods of analysis are described and the possibilities how the benefits of alternative interventions should be valued are discussed.

CEA is concerned with technical efficiency issues, such as: what is the best way of achieving a given goal or what is the best way of spending a given budget. Comparisons can be made between different health programmes in terms of their cost effectiveness ratios: cost per unit of effect. Under CEA effects are measured in terms of the most appropriate uni-dimensional natural unit. So, if the question to be addressed was: what is the best way of treating renal failure? Then the most appropriate ratio with which to compare programmes might be 'cost per life saved'. Similarly, if we wanted to



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compare the cost-effectiveness of programmes of screening for Down's syndrome the most appropriate ratio might be 'cost per Down's syndrome fetus detected'. In deciding whether long-term care for the elderly should be provided in nursing homes or the community the 'cost per disability day avoided' might be the most appropriate measure.

- ❖ The advantage of the CEA approach is that it is relatively straightforward to carry out
- ❖ It is often sufficient for addressing many questions in health care. However, it is not comprehensive. The outcome is uni-dimensional under this analysis, but often health programmes generate multiple outcomes.
- ❖ For example, in Downs' syndrome screening, foetus detected is one outcome, but miscarriages avoided might be another very relevant outcome measure, especially if, say, blood testing is being compared to amniocentesis. But this cannot be incorporated into this form of analysis. So, CEA not only assumes that the outcome of the health programme is worthwhile per se, but also that it is the most appropriate measure. A further problem with CEA is comparability between very different health programmes. Cost per foetus detected may be a useful way to compare the efficiency of blood testing versus amniocentesis, but how would these be compared to, say, drugs aimed at reducing cholesterol. Health programmes with different

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aims cannot be compared with one another using CEA: cost per unit reduction in cholesterol cannot meaningfully be compared with foetus detected. Hence, CEA is useful when comparing programmes within like areas, where common 'currencies' can be used.

If the outcomes of alternative procedures or programmes under review are the same, or very similar, then attention can focus upon the costs in order to identify the least cost option—the method of evaluation will be cost-minimisation analysis. If, however, the outcomes are not expected to be the same, then both the costs and consequences of alternative options need to be considered. Cost-effectiveness analysis is one method of economic evaluation that allows this to be done.

### **1. Measures of Effectiveness**

In order to carry out a cost effectiveness analysis it is necessary to have suitable measures of effectiveness. These will depend on the objectives of the particular interventions under review. In all cost effectiveness analysis, however, measures of effectiveness should be defined in appropriate natural units and, ideally, expressed in a single dimension.

Common measures used in several studies have been “lives saved” and “life years gained”. Thus, Boyle and colleagues, in their study of neonatal intensive care of very low birth weight

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babies, measured effectiveness in terms of mortality rates at the time of discharge of newborn infants from hospital. Their study compared two periods-one before the introduction of neonatal intensive care, and another after its introduction-and measured cost effectiveness in terms of additional costs per life saved.

Several other measures of effectiveness have been used by different researchers (see the box below), these have included the number of pain or symptom free days resulting from alternative drug regimens in the treatment of duodenal ulcers; and the number of episodes of fever cured and deaths prevented in the treatment of chloroquine resistant malaria in African children.

Most of the above mentioned studies express effectiveness in terms of a single dimension and thereby permit direct comparison between alternative procedures in terms of their marginal cost per unit of outcome. Sometimes, however, the alternatives under examination have multiple outcomes. Nonetheless, many of these choices can be dealt within the cost-effectiveness analysis framework. Thus, if one procedure emerges as less costly and of equal or greater effectiveness than all the other options on each dimension of effectiveness, it is clearly the most cost effective option.

For example, The comparison of day surgery with overnight inpatient care for cataract surgery, measured outcomes in terms of the number of both operative and postoperative

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complications, and in terms of visual acuity of patients three to six days and 10 weeks to six months after surgery. Patient satisfaction was also elicited through a questionnaire. As day surgery emerged as the more effective option on practically all of these effectiveness measures, and was subsequently less costly, the evidence suggests that it is the preferred option.

One argument for carrying out analysis in this way—that is, not always seeking to combine outcome measures into a single unit, is that the variations across a number of dimensions are made clear to decision makers rather than being concealed within an aggregate measure. This can sometimes permit more informed decision-making, although it can also result in tortuous attempts to compare apples and oranges.

<b>Examples of measures of effectiveness</b>
<ul style="list-style-type: none"><li>• Cases treated appropriately</li><li>• Lives saved</li><li>• Life years gained</li><li>• Pain or symptom free days</li><li>• Cases successfully diagnosed</li><li>• Complications avoided</li></ul>



## 2. Costs-Minimisation Analysis

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Cost-minimisation analysis is an appropriate evaluation method to use when the case for an intervention has been established and the programmes and procedures under consideration are expected to have the same or similar outcomes. In these circumstances, attention may focus on the cost side of the equation to identify the least costly option.

### **Cost –Minimisation**

- ✚ Is concerned only with technical efficiency
- ✚ Can be regarded as a narrow form of cost effectiveness analysis
- ✚ Evidence is given on the equivalence of the outcomes of different interventions
- ✚ As outcomes are considered to be equivalent no different decisions can be made on the basis of costs

### **Advantages**

- Simple to carry out, requires costs to be measured, but only that outcomes can be shown to be equivalent
- Avoids needlessly quantifying data

### **Disadvantages**

- ❖ Can only be used in narrow range of situations.
- ❖ Requires that outcomes be equivalent

### **Example 1. Cost-Minimization Analysis**

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Suppose we are comparing two programmes involving minor surgery for adults. Both accomplish the outcome of interest, and from an examination of effectiveness data differ in no other significant respects except that one requires hospital admission for at least one night, while the other (a day surgery programme) does not. If we identified the common outcome of interest – operations successfully completed – we would find that it could be achieved to the same degree (i.e. identical number of surgeries) in either programme, though presumably at different costs. The economic evaluation is then essentially a search for the least cost alternative. Analysis such as this is often called cost-minimization analysis. We might also be interested in the distribution of costs (e.g. in this case to what extent does the day-surgery programme shift costs to the patient), but our principal efficiency comparison will be made on the basis of cost per surgical procedure.

CMA is really a special form of cost-effectiveness analysis, where the consequences of the alternative treatments being compared turn out to be equivalent. It can be seen from the box below that there are nine possible outcomes when one therapy is being compared with another. In three of the nine cases the analysis reduces to a CMA.

### **In general Cost-effectiveness analysis (CEA) is:**

- Concerned with technical efficiency.

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- What is the best way of achieving a given goal with least resources?
- What is the best way of spending a given budget?
- Used when the interventions being compared can be analyzed with common measures.

### **Advantages**

- Relatively simple to carry out.
- Often able to use outcome measures which are meaningful in a particular field.

### **Disadvantages**

- Since outcome is uni-dimensional, cannot incorporate other aspects of outcome into the cost-effectiveness ratio.
- Interventions with different aims/goals cannot be compared with one another in a meaningful way.
- Meanings of outcome measure not always clear, i.e. what is value of a case detected in a screening programme.
- May have situations when the option with the highest cost effectiveness ratio should be chosen.

### **Example 2. Cost-Effectiveness Analysis**

Suppose that our interest is now the prolongation of life after renal failure and that we are comparing the costs and consequences of hospital dialysis versus kidney

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transplantation. In this case, the outcome of interest – life-years gained – is common to both programmes; however, the programmes may have differential success in achieving this outcome, as well as differential costs. Consequently, we would not automatically lean toward the least cost programme unless, of course, it also resulted in a greater prolongation of life. In comparing these alternatives we would normally calculate this prolongation and compare cost per unit of effect (i.e. cost per life-year gained). Such analyses, in which costs are related to a single, common effect, which may differ in magnitude between the alternative programmes, are usually referred to as cost-effectiveness analysis. Note that the results of such comparisons may be stated either in terms of cost per unit of effect, as in this example, or in terms of effects per unit of cost (life-years gained per dollar spent). The latter is a particularly useful approach when working within a given budget constraint, as long as the alternatives under consideration are not of radically different scale.

Furthermore, although the alternatives used in this example are similar in that both could be considered variants of an overall renal programme, it should be noted that cost-effectiveness analysis could be performed on any alternatives, which have a common effect. Thus, kidney transplantation could be compared to heart surgery if the common effect of interest was life-years saved. Similarly, an influenza immunization programme could be compared to a home care



programme if a common effect of interest, perhaps disability days avoided, could be identified.

### **3. Discounting Benefits (in cost-effectiveness analysis)**

Costs incurred at different points in time need to be “weighted” or discounted to reflect the fact that those that occur in the immediate future are of more importance than those that accrue in the distant future. This raises the question: should the benefits or effects of alternative procedures also be discounted? (For details about discounting refer to section three of this material)

In answering this issue there is a difference among economists. If a zero discounting (no discounting applied) were adopted, the main consequence would be to change the relative cost effectiveness of different procedures. Using a positive discount rate means that projects with long lasting effects receive lower priority. If a positive rate is replaced by a zero rate, procedures such as neonatal care-which lead to benefits over the recipient’s entire future lifetime-will, become relatively more cost effective. In practical terms, it is probably true to say that while the case for using a zero discount rate for benefits has powerful intellectual and may gain empirical support in the future, it will be too hasty to recommend that positive rates be discarded in economic evaluations.

In general:

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- ❖ Cost-effectiveness analysis is a form of economic evaluation in which the costs of alternative procedures or programmes are compared with outcomes measured in natural units-for example, cost per life year saved, cost per case cured, cost per symptom free day.
- ❖ Effectiveness data are ideally collected from economic evaluations built in alongside clinical trials. In the absence of dedicated trials researchers need to draw on the existing published work.
- ❖ Sensitivity analysis should be applied when there is uncertainty about the costs and effectiveness of different procedures. This investigates the extent to which results are sensitive to alternative assumptions about key variables.
- ❖ There is debate among economists about whether benefit measures should be “time discounted” in the same way as costs. If they are not, projects with long lasting effects will become relatively more cost effective-for example, maternity services and health promotion. But it will be probably wrong to recommend this as a standard practice.

**The following case study shows how cost-effectiveness analysis may be used in practice.**

**Case Study 1**



A Cost-effectiveness study – Exercise therapy for Knee-Pain

**Background.** Knee pain is common in the general population and a major cause of morbidity. Much of this is attributable to osteoarthritis. The cost of musculoskeletal disease is high (estimated at 2.5% of GNP in developed nations, 1992) and osteoarthritis is the commonest joint disease. In addition to costs arising directly from symptoms and treatment of osteoarthritis, patients with osteoarthritis have significantly higher medical costs for a range of other conditions (respiratory, cardiovascular, gastrointestinal, neurological, psychiatric conditions and general medical care). Thus, the economic burden of this disease is high.

**Treatments.** The two main palliative treatments for knee pain are exercise or non-steroidal anti-inflammatory drugs (NSAIDs). NSAIDs are commonly used in the treatment of osteoarthritis, but are costly and can cause gastrointestinal problems. Exercise may be a more favorable alternative since quadriceps muscle strength is known to be reduced in osteoarthritis. Since this weakness is associated with disability it is pertinent to examine the costs and consequences of muscle strengthening regimes.

**Study Objective:** To evaluate the cost-effectiveness of regular home exercises in reducing the burden of knee pain in the community compared with placebo drug.

### **3.5.2. Cost-Utility Analysis (CUA)**

CUA is concerned with technical efficiency and allocative efficiency (within the health care sector). It can be thought of as a sophisticated form of CEA, since it also makes comparisons between health programmes in terms of cost-effect ratios. However, CUA differs in the way it considers effects. These are multidimensional under this form of analysis. CUA tends to be used when quality of life is an important factor involved in the health programmes being evaluated. This is because CUA combines life years (quantity of life) gained as a result of a health programme with some judgment on the quality of those life years. It is this judgment element that is labeled utility. Utility is simply a measure of preference, where values can be assigned to different states of health (relevant to the programme) that represent individual preferences. This is normally done by assigning values between 1.0 and 0.0, where 1.0 is the best imaginable state of health (completely healthy) and 0.0 is the worst imaginable (perhaps death). States of health may be described using many different instruments which provide a profile of scores in different health domains. EuroQol EQ-5D for example, simplifies health into just five domains (such as mobility, self-care, usual activities, pain/discomfort and anxiety/depression).

- ❖ Each domain is given a score from 1 to 3,

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- ❖ So the health profile would read 11111 for the best scores in all domains
- ❖ 33333 for the worst. EuroQol EQ-5D has 243 possible health profiles, all of which have been assigned a utility value by general population surveys.

This approach of using utility is not restricted to similar clinical areas, but can be used to compare very different health programmes in the same terms. As a result, 'cost per QALY gained' league tables are often produced to compare the relative efficiency with which different interventions can turn resources invested into QALYs gained. It is possible to compare surgical, medical, pharmaceutical and health promotion interventions with each other. Comparability then is the key advantage of this type of economic evaluation. For a decision-maker faced with allocating scarce resources between competing claims, CUA can potentially be very informative. However, the key problem with CUA is the difficulty of deriving health benefits. Can a state of health in fact be collapsed into a single value? If it can then, whose values should be considered in these analyses? For these reasons, CUA remains a relatively little used form of economic evaluation.

### **Table 3.1. - Advantages and disadvantages of Cost per QALY gained 'league tables'**

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### Pros

- reveals opportunity cost
- common currency
- comparison across diseases
- considers length and quality of life
- investment type problem- “best returns”
- underlying principle – buy “cheap” QALYs not “expensive” QALYs

### Cons

- What of equity?
- A QALY is a QALY is a QALY, or is it?
- What of equality of access?
- only health service costs
- What of other health benefits?
- patient information/ reassurance
- Comparability of C-U-A studies
- Lack of them!
- Apply locally?

### 1. When should CUA be used?

The following are a number of situations where you might wish to use CUA:

1. When health-related quality of life is the important outcome. For example, in comparing alternative programmes for the treatment of arthritis, no programme is expected to have any impact on mortality, and the interest is focused on how well the

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different programmes will be improving the patient's physical function, social function, and psychological well being;

2. When the programme affects both morbidity and mortality and we wish to have a common unit of outcome that combines both effects. For example, treatments for many cancers improve longevity and improve long-term quality of life, but decrease quality of life during the treatment process itself.
3. When the programmes are being compared have a wide range of different kinds of outcomes and we wish to have a common unit of output for comparison. For example, if you are a health planner who must compare several disparate programmes applying for funding, such as expansion of neonatal intensive care, a programme to locate and treat hypertension, and a programme to expand the rehabilitative services provided to post-myocardial infarction patients;
4. When we wish to compare a programme to others that have already been evaluated using cost-utility analysis.

### **2. When CUA should not be used?**

1. When only intermediate outcome data can be obtained. For example, in a study to screen employees for hypertension and treat them for one year, intermediate outcomes of this type cannot be readily converted into QALYs for use in CUA.



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2. When the effectiveness data show that the alternatives are equally effective in all respects of importance to consumers (e.g. including side-effects). In this case, cost-minimization analysis is sufficient; CUA is not needed;
3. When the effectiveness data show that the new programme is dominant; that is, the new programme is both more effective and less costly (win-win). In this case, no further analysis is needed;
4. When the extra cost of obtaining and using utility values is judged to be in itself not cost effective. This is the case above in points 2 and 3. It would also be the case even when the new programme is more costly than the old, if effectiveness data show such an enormous superiority for the new programme that the incorporation of utility values could almost certainly not change the result. It might even be the case with a programme that is more costly and only somewhat more effective, if it can be credibly argued that the incorporation of any reasonable utility values will show the programme to be overwhelmingly cost-effective.

### **3. Measuring Quality**

Measuring a person's quality of life is difficult. Nonetheless, it is important to have some means to have for doing so since many health care programmes are concerned primarily with

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improving the quality of a patient's life rather than extending its length. For this reason, various quality of life scales have been developed in recent years.

The Nottingham health profile is one quality of life scale that has been used quite widely in Britain. This comprises of two parts.

- The first measures health status by asking for yes or no responses from patients to a set of 36 statements related to six dimensions of social functioning:
  - ❖ Energy,
  - ❖ Pain,
  - ❖ Emotional reactions,
  - ❖ Sleep,
  - ❖ Social isolation,
  - ❖ Physical mobility. These responses are then “weighted” and a score of between 0 and 100 is assigned to each dimension.
- The second part asks about seven areas of performance that can be expected to be affected by health:
  - ✓ Employment,
  - ✓ Looking after the home,
  - ✓ Social life,

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- ✓ Home life,
- ✓ Sex life,
- ✓ Hobbies,
- ✓ Holidays. The Nottingham health profile has been applied, for example, in studies of heart transplantation, rheumatoid arthritis and migraine, and renal lithotripsy.

Other quite widely used measures include the sickness impact profile and the quality of wellbeing scale. Recently, a new outcome measure, the Sf-36 health survey questionnaire, has been gaining popularity. After testing it on 1980 patients in two general practices it was considered to be a promising measure which is “easy to use, acceptable to patients, and fulfils stringent criteria of reliability and validity”.

Although all of these scales embody some form of scoring scheme, they do not usually generate a single quality of life score. This means that, although they are of considerable value in assessing the outcomes of interventions in the case of particular diseases or disabilities, they cannot be used to compare outcomes between different programmes. To do this, generalisable measure of quality is necessary. One of the earliest measures to be developed-and one which has subsequently been used widely to calculate QALYs –is the Rosser index.

### **4. Rosser Index**

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Rosser and her colleagues described health status in terms of two dimensions: disability and distress. The states of illness are classified into eight categories of disability and four categories of distress. By combining these categories of disability and distress 32 (8 times 4), different states of health were obtained. Rosser then interviewed 70 respondents (a mixture of doctors, nurses, patients and healthy volunteers) and, by using psychometric techniques sought to establish their views about the severity of each state relative to other states. The final results of this exercise were expressed in terms of a numeric scale extending from 0 = dead to 1 = perfect health.

With this classification system it becomes possible to assign a quality of life score to any state of health as long as it is placed in an appropriate disability or distress category. Although actual scores generated through the Rosser study have been the source of some criticisms, Gudex and Kind reported that a single training session on the approach was sufficient to obtain a high level of agreement between doctors on rating patients and that these descriptions could be used to categories patients reliably, accurately, and quickly.

### **5. Quality – Adjusted Life – Years (QALY)**

One of the features of conventional CUA is its use of the QALY concept; results are reported in terms of cost per QALY gained

**QALYs:** - combine life years gained with a measure of the quality of those years.

- + Quality is measured on a scale of 0 to 1. With 0 equated to being dead and 1 equated to the best imaginable state of health.
- + Combine all dimensions of health & survival into a single index.
- +  
- Cu ratio = 
$$\frac{\text{cost A} - \text{cost B}}{\text{QALY A} - \text{QALY B}}$$

### 6. What is the QALY concept?

The advantage of the QALY as a measure of health outcome is that it can simultaneously capture gains from reduced morbidity (quality gains) and reduced mortality (quantity gains), and combine these into a single measure. Moreover, the combination is based on the relative desirability of the different outcomes.

The QALY approach, which forms a key part of most cost-utility analyses, has been the subject of some criticism. It has been accused of discriminating against elderly people, making illegitimate interpersonal comparisons, disregarding equity considerations, and introducing bias into quality of life scores. Rival measures that are claimed to be sound theoretically, such as “healthy years equivalents” (HYEs), have also been put forward. It has, however, recently been claimed that under

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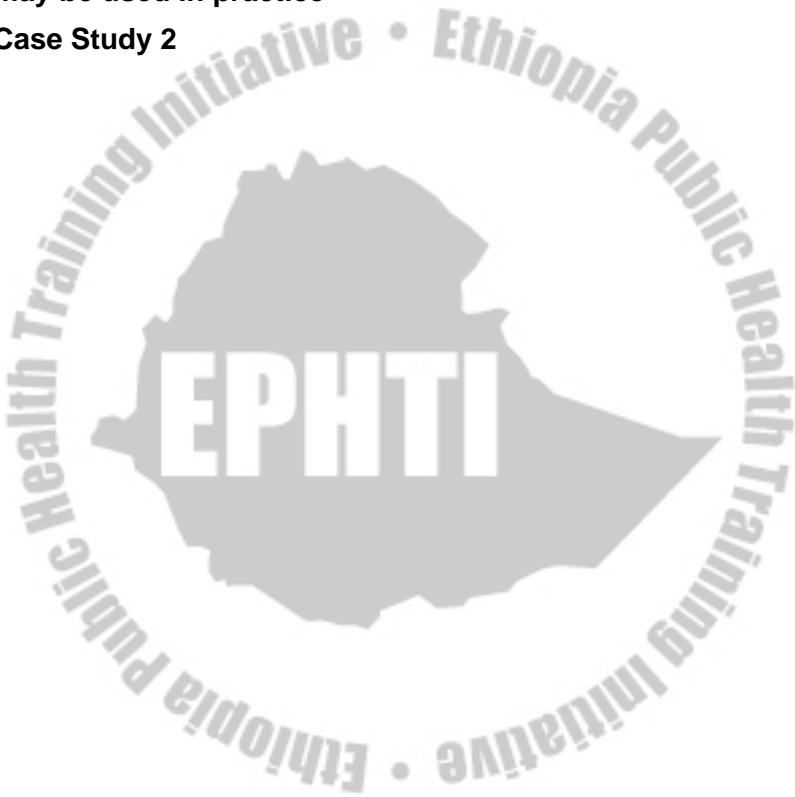
most assumptions QALYs and HYEes will lead to identical project rankings.

Amid all this debate it is as well to bear in mind that decisions have to be made about the allocation of resources and cost-utility analysis is probably the most sophisticated form of economic evaluation available at present. However, sensible use of the technique and interpretation of research findings based on the approach should recognise that cost utility-analysis is still at a fairly early development stage and treat it accordingly. That is, decision makers should exercise appropriate care, caution, and intelligence.

**DALY:** The Disability-Adjusted Life Year, a measure akin to the QALY in aggregating survival and quality of life effects, but normally advanced as a method of estimating the burden of illness associated with a disease, rather than the cost-effectiveness of health care interventions.

**The following case study shows how cost-utility analysis may be used in practice**

**Case Study 2**



### **A Cost-Utility study – Interferon Beta for Multiple Sclerosis**

**Background:** Clinical trials have established that interferon beta preparations do have some effect in reducing MS disease activity. This has been reported in terms of reduction in number of relapses or lesion size identified by MRI. However, little is known about the impact on quality of life or how cost-effectively this can be generated using this intervention.

**Study Objective:** To identify to what extent interferon beta generates quality of life (QOL) gains. To measure and value QOL gains. To assess the net costs to the health service and society associated with interferon beta. To compare net costs and QOL gains in a cost-utility model.

**Study Methods:** Data were collected from existing trials of interferon beta and from information on the natural history of MS. New data were collected on QOL and costs from a group of MS patients. A sub-group was used for utility measurement (the valuation of different health states).

**Outcome:** The key outcome measure was cost per quality-adjusted life year (QALY).

**Result:** Using current clinical data on the effectiveness of interferon beta the best estimate in terms of a cost-utility ratio was 809,000 Birr per QALY gained. Allowing for a possible impact on disease progression over different time periods produced cost-utility ratios in the range 228,300 Birr - 328,300 Birr. Thus, interferon beta does produce gains in



### **3.5.3. Cost-Benefit Analysis**

Cost benefit analysis is the most comprehensive and theoretically sound form of economic evaluation and it has been used as an aid to decision making in many different areas of economic and social policy in the public sector for more than fifty years.

Cost-Benefit analysis (CBA) estimates and totals up the equivalent money value of the benefits and costs to the community of projects to establish whether they are worthwhile. These projects may be dams and highways or can be training programmes and health care systems.

The main difference between cost-benefit analysis and other methods of economic evaluation that were discussed earlier in this series is that it seeks to place monetary values on both the inputs (costs) and outcomes (benefits) of health care. Among other things, this enables the monetary returns on investments in health to be compared with the returns obtainable from investments in other areas of the economy. Within the health sector itself; the attachment of monetary values to outcomes makes it possible to say whether a particular procedure or program offers an overall net gain to society in the sense that its total benefits exceed its total costs. Cost-effectiveness and cost-utility analysis do not do this because they measure costs and benefits in different units. CBA requires programme consequences to be valued in

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monetary units, thus, enabling the analyst to make a direct comparison of the programmes incremental cost with its incremental consequences in commensurate units of measurement, be they Birr, dollars, or pounds.

CBA compares the discounted future streams of incremental programme benefits with incremental programmes costs; the difference between these two streams being the net social benefit of the programme. In simple terms, the goal of analysis is to identify whether a programme's benefits exceed its costs, a positive net social benefit indicating that a programme is worthwhile. CBA is a full economic evaluation because programme outputs must be measured and valued. In many respects CBA is broader in scope than CEA/CUA. Because CBA converts all costs and benefits to money, it is not restricted to comparing programmes within health care, but can be used (although not without problems) to inform resource allocation decisions both within and between sectors of the economy. CBA is broader in scope and able to inform questions of allocative efficiency, because it assigns relative values to health and non-health related goals to determine which goals are worth achieving, given the alternative uses of resources, and thereby determining which programmes are worthwhile.

- ❖ Both costs and benefits are assigned a monetary value. The benefits of any intervention can then be compared directly with any costs incurred.

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- ❖ If the value of benefits exceeds the costs of any intervention, then it is potentially worthwhile to carry that intervention out.
- ❖ If society funds projects for a given budget, then it can maximise the benefits generated by social spending.
- ❖ It is concerned with allocative efficiency.
- ❖ It is concerned with the question, is a particular goal worthwhile. Potentially it can answer questions such as should extra money be used for heart transplants or improving housing.
- ❖ Method requires that all resources and benefit generated by an intervention need to be assigned a monetary value. Therefore, needs to cost things which have no market value, i.e, changes in health, quality of life, length of life, pain, etc.
- ❖ Methods of valuing
  - Willingness to pay (WTP)
  - Human Capital Approach

The net welfare gain or net value of a project X (NVX) is equal to

$$NVX = WTPX - WTY$$

Where y refers to the next best alternative project.

If the latter is not or can not be defined

$$NVX = WTPX - WTPXi$$

Where WTPXi refers to society while WTP is for the inputs used alternatively in the economy at large.

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If NVX is positive then, project X may be undertaken. When several projects compete with each other, it is evident that the one with the highest NV needs to be selected in order to maximize welfare.

This shows the CBA for projects that have benefits or costs in the current period. It is evident that projects may also entail future benefits and future costs. Some modifications in the calculation of net value will be required in this case. Note that individuals prefer a net value of 1\$ received now to 1\$ in the future.

It follows that one cannot simply add up benefits or costs that are related to different points in time. A social discount rate, denoted as  $r$ , will enable use to add up a stream of net benefits. Namely, 1\$ in year one will be worth  $(1/(1+r))$  \$ in year two,  $(1/(1+r)^2)$  in year three etc.; conversely, 1\$ in year two is worth  $(1/(1+r))$  \$ in year one, 1\$ in year three is worth  $(1/(1+r)^2)$  \$ in year one etc. The value in year one of a \$received or paid in the future is called the present value of that dollar.

Making use of the social discount rate  $r$ , we can calculate the net present value (NPV) of a project.

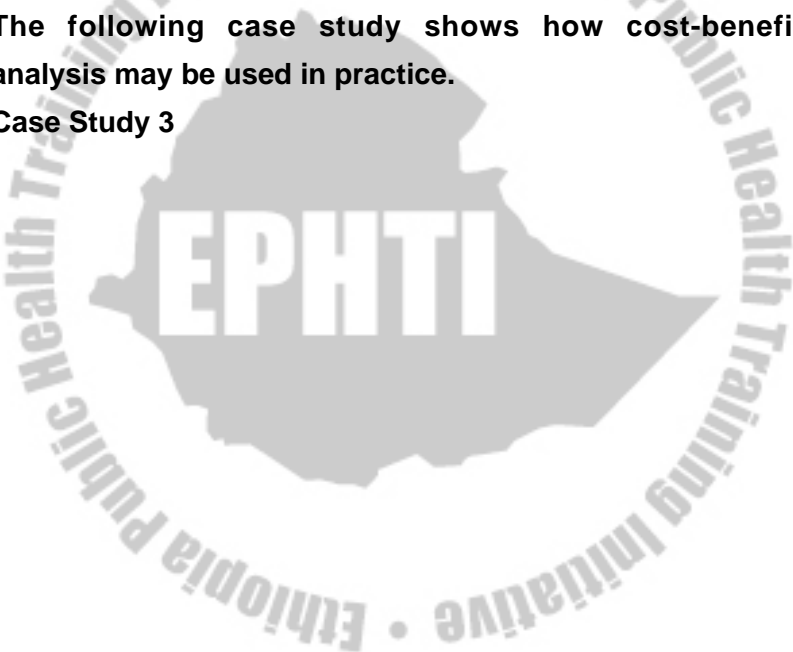
$$NPV = [(B_t - C_t) / (1+r)^t - 1]$$

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Where 'B' and 'C' refer to benefits and costs respectively, with 't' is the time index. In fact, 'Bt' is equal to the WTP for the n<sup>th</sup> project at time 't', while 'Ct' has to be understood as the benefits forgone in period 't'. Note that if  $NPV > 0$  society's welfare will increase; hence the project can be adopted. If several projects are competing with each other the one with the highest NPV should be chosen.

**The following case study shows how cost-benefit analysis may be used in practice.**

### **Case Study 3**



**A cost-benefit study – Occupational Health Services**

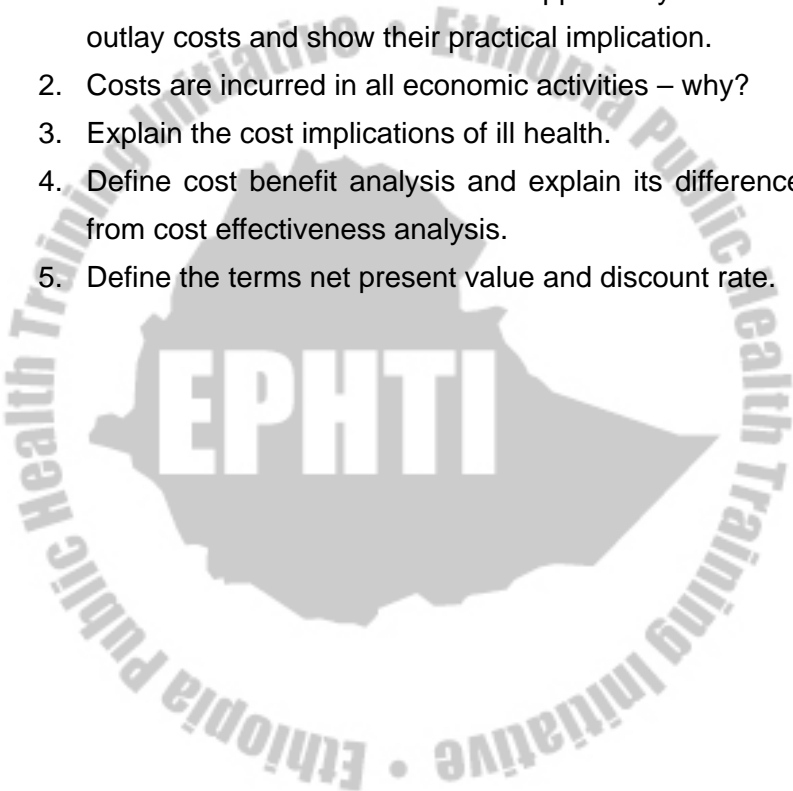
**Background.:** Most large organizations choose to provide an occupational health service (OHS) beyond that which is required by law. Whilst the input costs (labour, capital, etc) of OHS are very clearly identifiable the outputs are not always directly observable since benefits may be multidimensional and sometimes inherently intangible. Consequently, it is unclear whether the benefits of these activities outweigh their costs. In an environment of competition for resources lack of evidence on cost-effectiveness is likely to be regarded the same as activities demonstrated not to be cost-effective, whereas those activities that can demonstrate cost-effectiveness will be supported.

**Study objective:** To quantify the value added by OHS for a specific organization.

**Study Methods:** OHS was conceptualized as a form of insurance policy, which individual managers chose to purchase at different levels of cover. Under this model, OHS is purchased in order to reduce the risk and impact of negative events whose cost, timing and frequency is uncertain. The contingent valuation methodology was used to elicit monetary valuations of benefits from these managers. It is based on “stated” rather than “revealed” preferences. In a market, preferences are revealed by individual’s actions the survey-based contingent valuation methodology (CVM) requires

## Review Questions

1. Discuss the difference between opportunity cost and outlay costs and show their practical implication.
2. Costs are incurred in all economic activities – why?
3. Explain the cost implications of ill health.
4. Define cost benefit analysis and explain its difference from cost effectiveness analysis.
5. Define the terms net present value and discount rate.



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## CHAPTER FOUR

# HEALTH CARE FINANCING

### Learning Objectives

At the end of this chapter, the student will be able to:

1. Identify the factors that influence the choice of a financing system.
2. Explore the different sources of financing the health service sector.
3. Understand the strong and weak points of different financing mechanisms.

#### 4.1 Definition of the health sector

The precise definition of what services and activities comprise of the health sector is necessary to guide data collection and, especially, to make comparisons of health systems across countries or at different times. The following pairs of items show the difficulty of drawing a line between aspects of the health sector/non-health sector. Which should be included within the definition of the health sector?

- Health services Environmental services (e.g. water, sanitation, Environmental pollution control, occupation safety etc.)
- Hospitals, social welfare institutions
- Education and training, pure medical research

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-Medical social work; social work

-Formally trained medical practitioners; traditional medical practitioners

In practice, the boundaries of the health sector vary considerably between countries and different definitions have been developed for different purposes. In developing countries, the definition tends to be broader than in developed countries due to greater deficiencies in certain areas (e.g. environmental health) and extensive use of the traditional health sector. A useful rule of thumb is to include all finance/expenditure whose primary intention (regardless of effect) is to improve health.

**4.2 Definitions of financing:** raising revenue to pay for a good or services. Function of a health system concerned with the mobilization, accumulation and allocation of money to cover the health needs of the people, individually and collectively, in the health systems.

- ✚ The whole processes of health care finance involves:
  - where the money came from
- ✚ How it was collected
- ✚ Pooled
- ✚ Redistributed to the third party payers
- ✚ Finally used to pay the providers for their services

## 4.3 Factors influencing health care Financing

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The form and level of health care financing are now major policy issues for most developing countries and it is essential that decision makers have a clear understanding of the implication of alternative approaches to financing health care.

There is an increasing interest in how health services are funded, both in industrialized and developing countries. The following factors, among others, influence the health services sector and should be given due attention in health care financing.

### **1. Demographic changes**

These have major effects on health care provision; firstly demographic change may lead to variations in the health coverage of the population. Rapid population growth rates can cause tremendous strains on the provision of social services including health care. Secondly, the age structure of the population has an important significance to the provision of health care. There are higher health service unit costs associated with the young and the old. The antenatal, obstetric and under five age groups are all relatively heavy users of health care, as are the elderly with their higher incidence rate of chronic illness. Third, demographic factor relates to the relationship between economic producers and dependants of a country. High dependent ratio means an increased burden on the productive population for providing health care.

### **2. Economic recession**

This can be expressed by low or even negative growth rates, increasing debt burdens and high inflation rates. This has severe implications for the ability of governments to maintain, let alone expand, expenditure on health care. Such effects on the supply of health care are exacerbated by the increased need for health care brought about by the recession itself through the links between poverty and ill health.

### **3. Rising expectation**

Expectation of health care consumers specially, the middle classes, to receive high-technology medical care similar to that available in the industrialized world.

### **4. Concerns about equity**

Governments committed to the principles of primary health care have a major responsibility to improve levels and depths of coverage. The concerns for equity may influence the choice and system of financing health care. To extend and improve basic health care at a time when there is such strong middle class pressure may only be available by providing substantial additional resources to the health sector.

### **5. Disease-pattern changes**

Disease-pattern change may result due to changes in average income levels or due to changes in social development. Thus,

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as standards of living rise and morbidity patterns change, these changes are likely to have an effect on health care financing.

In addition to shifts in disease patterns, the advances of medical technology have led to the possibility of treatment for health problems previously accepted as untreatable. This again places further pressures on health-care providers.

### **6. Efficiency**

Given the limited resources available for health in developing countries, it is essential to taste and use resources as efficiently as possible.

### **7. Displacement effects**

Rather than generating additional resources for the health sector, new or expanded financing mechanisms may merely displace funding from other sources. Displacement is not necessarily an undesirable consequence if the new or expanded source of finance is more efficient or more equitable than the one it partially displaces.

Examples of displacement effects include foreign assistance which may displace government support for health care; counter-funding often a precondition for foreign assistance, which may divert funds away from existing priority projects;

health insurance schemes, which may in some instances displace more than additional to the total of resources being allocated to health care (e.g. displacing direct payments); charitable contributions which may be withdrawn when other sources are developed; and government allocations which may be reduced when other sources of finance (such as user fees) are developed.

### **8. Wider effects of the health sector**

Health sectors may account for a sizeable share of national resources and are often major employers. Consequently, the activities of the health sector may have spill-over effects on the economy as a whole. These include external effects on costs (e.g. inflation through the repercussions of high increases in wage pay); foreign exchange problems through heavy foreign borrowing for development projects or for development project or for payments for imports such as pharmaceutical or equipment opportunity costs such as the attraction of scarce manpower into the health sector at the expense of other professions, and disincentives to investment and employment (e.g. as a result of financing health services through high taxes on certain economic activities, enterprises or sectors). These external effects may also be positive as in the case of improved productivity resulting from reduced death and disability in the work force.

#### **4.4. Criteria for choosing a Financing system**

In selecting a system of financing health care some criteria should be used. The first three criteria outlined below are general, while the last two have particular importance within the context of primary health care:

##### **a. Viability and ease of using the system**

This implies bureaucratic and cost simplicity, social acceptability and technical feasibility

##### **b. Revenue generating ability**

Net revenue minus earning ability = Revenue minus operating costs. The administration of user-charges for example, may include the costs of billing, accounting and the safe storage and collection of funds. Even where additional staff is not employed and existing staff are used, it implies an opportunity cost to the health service in terms of alternative activities which the staff could have been engaged in had they not been involved in the revenue generating scheme.

##### **c. Effects on service – provision**

Systems of financing, for example which involve three parties – the patient the provider and an insurance company – may lead to over-provision of certain services

##### **d. Effects on equity**

That is equal access to care for those in equal need.

**e. Participation in decision-making**

This is a concept that stresses community participation which creates an opportunity for a direct relationship between the consumer and the provider; an example of a financing system suitable of such participation is user charges.

**4.5 Sources of National Health care Financing systems**

Health care and Financing is thus, a broad term used to define alternative arrangements for paying, allocating, organizing and managing health resources.

It includes:

- ◆ Defining a level/ quality of care preferably a minimum basic health services packages to be provided, in an accessible and equitable manner.
- ◆ Identifying different modalities of financing to establish a financially sustainable system.
- ◆ Institute different mechanisms for mobilizing funds and rationalizing the use of available resources including cost and risk –sharing mechanisms/ insurances plans.

**Strategies**

The financing mechanisms envisaged are grouped into broad and complementary strategies. It includes improving government health sectors efficiency, generating additional



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and new sources of revenue, encouraging privates and non governmental organizations participations, development of social and private health insurance, promotion of community participation, encouraging bilateral and multilateral agencies participation, alternate financing options for the urban areas like Addis Ababa and organizational mechanisms for implementation of the health care and financing strategies.

National Health care financing systems has Plurastic nature in funding: therefore, it has different sources of health care funding

### **1. public sources:**

- ❖ **Direct government budgeting**
- ❖ **National health services and public services health systems**
- ❖ **Social health insurances sponsored or mandated by the government**
- ❖ **Community financing**

### **2. Private sources**

- ✚ **Direct payment by households**
- ✚ **Private voluntary health insurance**
- ✚ **Employers based health insurances**
- ✚ **Payments by community and other local organizations**

### **2. External financing**

➤ **Foreign aid or development loans**

**4.5.1 Government financing**

**4.5.1.1 Public and quasi public sources of finance**

**A. General tax revenues**

General tax revenue is used in almost every country of the world to finance certain components of health care and, in developing countries; it is often the most important source of financing. However, low tax ratios (the proportion of national income collected as tax) in these countries mean that it is often insufficient by itself to support health care. Although tax ratios tend to increase in line with development, this depends in larger part on a country's political will to increase the tax burden.

In developing countries general tax revenue is composed largely of duties on imports and exports and sales taxes. Taxes on business transactions, profits and incomes are all of lesser importance.

General tax revenue is currently not the most reliable source of finance for the health sector in developing countries. This results from factors such as the low political priority frequently given to the health sector in national budget decisions; the instability of government finance in countries heavily dependent upon taxes on imports and exports; the frequent

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use of public expenditure as a tool of macro-economic policy; and frequent disparities between budgeted funds and their actual availability or disbursement. The net yield is usually high unless bureaucratic overheads are high.

The equity impact of tax systems is dependent on both the proportional burden of taxation and on the use which is made of the revenue raised. Tax systems can be progressive, falling more heavily on the rich than the poor and, therefore, equitable; but they may also be regressive falling more heavily on the poor than the rich, and inequitable. Developing countries are assumed to have regressive financing systems because they tend to rely on indirect taxation. But in practice their tax systems may be progressive because the poorest sections of society fall outside the formal economy and indirect taxes may be levied primarily on luxury items consumed predominantly by the wealthier population groups. Available evidence on the burden of taxation is inadequate to permit often used inequitably in health systems. Health systems are comminuted by high-technology urban-based care and so the rural populations (and the urban poor) have inadequate access to any form of care.

There is a limit to what can be collected in tax revenue and how much can be allocated to the health sector without conflict with wider primary health care objectives. Taxes that

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make the poor poorer could seriously damage their health status and undermine their productivity; there are also many other fields of socioeconomic development that compete with the health sector for funds and yet give substantial support to primary health care (e.g. agriculture).

### **B. Deficit Financing**

General tax revenue may be supplemented by deficit financing that is the decision to borrow and spend funds in the present and repay them over some period of time. Deficit finance may be raised nationally or internationally, through mechanisms such as the issuing of certificates or long-term low-interest loans.

The cost of enjoying the use of those funds in the present rather than the future is the interest that needs to be paid on the loan. In developing countries high inflation rates (affecting the real rate of interest on loans) and lack of confidence in the government's abilities to honor eventual redemption of the bonds may make it difficult to use deficit financing as a source of support for health systems.

When it is used, deficit financing is typically for specific construction projects (e.g. hospitals water and sewerage systems). Unless such projects deliver well their services or contribute directly to increased output that can be taxed to

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service the debt, the deficit must be repaid from general tax revenue. Thus, the agency doing the deficit financing must be endowed with the authority to impose additional taxes or fees, or be given a claim on general tax revenue in order to service the debt.

Deficit finance may also be raised from abroad in the form of bilateral or multilateral AID loans, typically given for a project life of between three and five years, and there by constituting only a short-term source of support. Although useful for many developing countries in helping to develop and expand health care infrastructure, foreign aid is often limited to support import components. Patient's reliance in deficit financing in the economy as a hole is now burdening many countries with excessive debt repayment problems.

### **C. Earmarked Taxes**

Most tax revenues are paid into a national pool and then shared out between different areas of government expenditure. Some governments, however, may " earmark " a particular tax for a particular purpose. For example, taxes on the sale of particular products may be earmarked for health services at either national or local level. The problem with such taxes is that they are often difficult to administer, may be politically unpopular and are also often unpopular with tax administrators because they limit their freedom of action. They

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can be regressive if, as often the cases, taxes are levied on items such as beer, cigarettes, recreational events, or foodstuffs; but they can be progressive if they are imposed on luxury, products purchased primarily by the more affluent sections of society.

A clear advantage of this source of finance is that a tax is visibly assigned to priority funding of certain activities or programs. Although not a major source of health sector finance in most countries, they may constitute an important source of finance for specific projects or programs.

### **D. Social Insurance**

Social insurance can finance health care, as well as other needs such as invalidity and old age support, for either the whole population or a part of it. It is conventionally financed by imposing mandatory insurance payments on employed workers as a percentage of their wages, and by imposing a similar or some what higher payroll tax on their employers. In order to include those workers outside the modern employment sector insurance payments may also be calculated on measured income or wealth other than wages, such as the value of crops produced. Allowance will then have to be made for the fact that cash income is only available seasonally, when crops are sold. In their capacity as employers, governments may either run their own social

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insurance scheme or contract such schemes from private insurance companies.

The total financial contribution to social insurance schemes is (it, theory) determined actuarially on the basis of the incidence of illness, the conditions of eligibility for benefit, and the value of those benefits. Individual contributions are not determined, however, on the basis of expected risks or claims, but in some proportion to income. As risks are pooled, there is an unequal benefit distribution in favor of high-risk (high-need) workers.

The main problems of social insurance are related to issues of equity and efficiency. It is easiest to cover those in regular employment, who may be as little as little as 5 to 15% of the population in developing countries; and there are often marked inequalities in the quantity and quality of services available to those covered by insurance relative to those quantity and quality of services available to those covered by insurance relative to those who are not overall, it is argued that social insurance reinforces the maldistribution of resources between rural and urban areas in developing countries. It provides extra funds for largely urban, employed workers and leaves the large rural population and the informally employed urban population even further handicapped than before its introduction. Critics of social insurance also argue that it undermines both public and

private health care by competing with these sectors for limited supplies of real medical resources (E.g. personnel). Finally it tends to promote or reinforce high-cost, hospital-based, doctor-centered, curative care:

### **E. Lotteries and Betting**

These may be used as sources of earmarked income for health and social services in developing countries. Often administrated by quasi-public bodies under national or local government regulation, these typically non-profit schemes rarely constitute an important component of overall health sector finance. Largely supported by the incomes of the poor and thereby constituting a form of regressive taxation, they typically have low net yields because of the payment of prizes and high administrative costs. The typical net yield from lotteries is between 10-30% of gross receipts.

#### **4.5.1.2 Private Financing**

Private financing for health care can be direct or indirect:

- A. **Direct payment:** This is personal payments made directly to a wide range of providers, including private practitioners, traditional healers and private pharmacists. User fees, whether for government-provided or for privately provided health services, are an out-of-pocket payment and are therefore considered here as health finance from a private source. Similarly, charges to



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contributions or prepayments by members of community financing schemes are also considered as coming from private (non-government) sources.

- B. **Indirect payment:** This is payments for health care services by employers (e.g. payment by large and privately owned industrial complexes in developing countries or sharing of health care costs by employers in industrialized countries) and health financing by other non-government bodies such as local charity fund-raising for health causes.

### 4.5.2 . Health Insurance

#### 4.5.2.1 Private Health Insurance

Private health insurance differs from social insurance in two main ways. First, private health insurance typically does not include pensions for invalidity or old age. Second, the price (or 'premium') charged for private health insurance is not based on the pooled risks of a large population, but on personal risk characteristics and the likelihood of illness in the individual or group covered. As a result, premiums are likely to vary for different individuals or groups.

Schemes may be profit or non-profit making and may be organized for individuals or groups, the latter often benefiting from lower premiums (resulting from lower per capita administration costs as well as a degree of risk-sharing). In

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many countries the larger employers act as an organizing body for health insurance, and may pay part of the premium as a fringe benefit. However, in order to control the level of utilization of services, individuals are often required to pay for part of the cost of medical care on a direct fee-for-service basis. In countries where demand is sufficiently high, commercial insurance companies may be active.

Private insurance is not subject to the political allocation process and may channel extra funds into the health sector. However, it suffers from problems of two coverages because of its cost and the exclusion of bad risks, or enhancing inequity and promoting the growth of high-technology health care, inappropriate to developing countries.

### **4.5.2.2. Employer-Financed schemes**

In some instances employers may directly finance health care for their employees. They may, for instance, pay for private sector health services, employ medical personnel directly, or provide necessary facilities and equipment. Oil companies, mining and mineral industries, and large-scale export-centered agricultural enterprises usually provide for the health needs of their workforce. Benefits are seldom extended to families as employers are primarily concerned with maintaining the productivity of the work force. In developed countries the primary focus is on accident prevention and occupational

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health, and in developing countries also, employers may have a legal obligation to provide first aid or occupational health services (e.g. sugar and coffee plantations in Latin America, tea and rubber estates in Asia and Cocoa farms and mines in Africa).

Problems with employer-financed schemes relate to the quality of care provided, the possible fragmentation of services, difficulties enforcing employer liabilities, and the fact that viability depends upon the performance of the employing agency. Nowhere is employer finance a predominant source of support for health, although employer schemes are often a precursor to national social insurance schemes.

### **4.5.2.3 Charity and voluntary contributions**

It can take the form of financial support or in-kind donations (e.g. personal services, physical facilities, equipment and supplies), and may originate from business enterprises, wealthy families, religious organizations or private individuals. Often these resources are channeled through foundations or religious bodies.

The problem with this source of finance are often indirect for example, donors may have different priorities from the recipient nation and may not recognize their most urgent health needs. May prefer to fiancé visible evidence of their

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support such as physical facilities and equipment and there by commit the recipient country or contributions may also take the place of, or reduce, other sources of finance. For example, contributions may be eligible for tax relief, reducing general tax revenues for use elsewhere (although the effects in this instance are likely to be minor).

Charitable contributions have played an important role in health services provision in the past, and in some African countries and are still major sources of health care finance, channeled through religious agencies. The general trend, however, is for governments to support or take over mission health services. Thus, the role of charitable and voluntary contributions is decreasing, although it may still be important in times of emergency or disaster and can be a useful supplement to other forms of health finance.

### **4.5.2.4 Community financing and self-help**

Current primary health care initiatives in developing countries stress the importance of national self-reliance and community participation in health care delivery. By mobilizing under-utilized national and local resources (e.g. organizational skills, manpower and cash) and by developing affordable and culturally appropriate delivery systems, it is hoped that basic health care will become universally accessible. Consequently, some governments and many non-governmental agencies are

turning to communities for organization, participation and financial support and communal self-help is increasing though of as an important source of financial support for health services in developing countries. The challenge is to develop new types of local institutions that can coordinate and for health services in developing countries systematically utilize the community resources. Self-help can take many forms such as labor, local insurance support for volunteer health workers, and drug cooperatives.

### **4.5.2.5 Direct household expenditure**

Household income is ultimately the source of most health care finance, but direct expenditure constitutes a specific category of financing that should be considered separately. Included in this category are any payments a consumer may make directly to health care providers such as fees for services, or prices paid for goods and supplies.

Direct household expenditure is not independent of other sources of finance. Government services may charge user fees (often nominal) for certain services. Even with insurance coverage, there is often a requirement for some degree of co-payment, which tends to increase the amount that would otherwise have been spent on health. Health insurance benefits, moreover, may have an upper ceiling, with household requirements in excess of this level.

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The extent to which these payments represent a real ability and willingness to pay for health care is, however, unclear. Willingness to pay does not necessarily reflect ability to pay. Current levels of household expenditure partly result from the existing pattern of government health care provision, and the limited access to free/cheap government health care (particularly in rural areas). People may use and buy non-government (e.g. mission, private, traditional) health care partly because they have no cheap or good quality government alternative. Low-income groups tend to delay use of health services until illness is severe, presumably in part to avoid payment, but such delay generally only increases the necessary expenditure. High health care bills may sufficiently undermine their economic position to push them further into poverty. Health care payments also sometimes displace expenditure for other basic necessities of life (e.g. food), because there is only limited ability to pay for the range of household needs.

Utilization of, and payment for health services is, moreover, likely to depend heavily on the perception of their relevance to a specific health need and the extent to which they provide a service that people value. Use of traditional healers for example, may reflect a belief in the relevance of their treatments for certain diseases rather than a general

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willingness to pay for any type of health care. Perceptions of poor quality in government services certainly undermine their use and therefore, willingness to pay for them. Private services may be more oriented to the preferences and circumstances of households, for instance providing for pay.

Raising the level of direct household expenditure for health care, for example, by user fees, will clearly have a negative impact on equity (by influencing both the distribution of the payment burden and the benefited failed). It may be mitigated by the introduction of an exemption mechanism for the poor, although such a mechanism may itself reduce the demand for health care made by low-income groups because they may not wish to be identified as “poor”

Moreover, such willingness to pay as exists is attached primarily to curative services, and so can only extend the provision of preventive care if it is possible to re-allocate resources within the health sector. Finally, the potential yield from user fees is unclear. It is dependent on the level and type of fees, the bureaucratic structure required to implement them, the existence of exemption mechanisms, and the impact of fee systems on the demand for care and the rates of collection. The administrative difficulties of implementing a fee system (e.g. how is ability to pay assessed? Who assesses it? Who collects the fees? How is abuse of the system restricted?)

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Many cause less revenue to be collected than theoretically is possible.

Resource shortages in developing country health systems clearly must be addressed, but the introduction of new financing systems is not an appropriate initial response to the problem. Shortages result both from inefficiencies in resource use and from absolute deficiencies, and until the first are adequately addressed, any additional resources will also be used inefficiently

It is also important to recognize that health financing problems are not simply health sector problems, but often reflect economy-wide difficulties. They certainly require national strategies to address them, even where additional resources are to be recruited by actions within the health sector. For example, there must be national agreement that extra finance will be retained for use within the sector (rather than being matched by budget cuts or transferred to other sectors) and the resources can be re-allocated within the sector to meet priority health needs, in order to justify alternative financing strategies. Within the health sector, the first priority must be to stand of the sector nationwide. Management can be strengthened through staff training and the development of appropriate tools (including incentives), efforts can be made to understand the community's needs in order that health care



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better meets them, and resources can be allocated more appropriately (e.g. to preventive rather than curative care). At the same time, the options for increasing funds can be considered-using appropriate evaluation criteria.

If efficiency improvements together with the possibility of additional resources still do not bridge the gap between resource requirements and resource availability, then health sector goals must be reconsidered. No everything that may have a positive impact on health can be afforded and health plans must be based on a realistic view of resource availability

### **4.6 Health Insurance**

Insurance provides the means by which risks or uncertain events are shared between many people. Premiums are paid to an insurance institution which compensates any insured victim of the event for any financial loss resulting from the event. Insurance therefore, helps to lessen and spread risks, and it relies on the fact that what is unpredictable for an individual is highly predictable for a large number of individuals. It follows that for insurance to be feasible, there must be enough individuals insured to spread the risks widely, and the uncertain events must be relatively independent of each other. That is, the principle is one of insurance based on probabilities, not one of prepayment for known future events; though in practice, a prepayment element for health care

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exists since certain types of utilization are highly predictable. For a health insurance scheme to be cost covering, the level of its premiums needs to be related to the statistical frequency with which the population covered requires care, and to the average cost of claims, plus an allowance for administrative costs and a profit margin (for commercial institutions).

Insurance inevitably has redistributive consequences, their nature and magnitude depending on the financing of the schemes and the way in which premiums are assessed. Because the occurrence of the event being insured against is uncertain, some participants will draw out more than they pay in thus resulting in redistribution from the healthy to the sick. Other distributive effects will depend, as discussed below, on whether the insurance is organized privately or through collective mechanisms, and on the method of distributing the costs over the population.

Health insurance can be financed and organized in a variety of different ways. It can be purchased by an individual or group through the private market, from either profit or non-profit firms, and under these circumstances is conventionally termed private or voluntary health insurance. Health care itself would usually be delivered by independent providers, but sometimes by facilities owned by the insurer.

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In the case of private or voluntary health insurance, the level of an individual's premium would be based on the actuarially-determined likelihood of illness of that individual. In contrast, group insurance is often based on a firm or co-operative and the premiums related to the risk of the group of employees in to, not of individuals. All subscribers will pay similar premiums (Except for adjustments for the size of family covered), and such insurance may well be made compulsory by the firm to prevent low risk or high income employees opting out. In some countries (for instance the united states and Australia) there are examples of the imposition of community rating' on private insurers; that is, within a given geographical area, premiums are not permitted to vary according to health risk or occupation (Fedstein 1979;scotton 1974). Premiums are often paid at least in part by employers, health insurance being considered a fringe benefit, though labour legislation making it compulsory for employers to provide their workers with some form of medical care is increasingly being introduced in developing countries (WHO 1978).

An individual's demand for private health insurance will be determined by factors such as the price of insurance, that is the premiums to be paid the individual's assessment of the probability of loss(especially financial) resulting from illness; the likely magnitude of that loss; his income; and most especially. The degree to which one is risk averse (Feldstein

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1979). Considerable attention has been given to whether or not a private market in health insurance would necessarily lead to the optimal amount of insurance, or whether there would be people who are either over-insured (for instance because the opportunity cost of the insurance has been reduced by employer contribution or tax-offset arrangements) or under-insured (for instance, because policies are not offered to low income group or high risks) (Maynard 1979b). In any case, a section of the population will lack either the purchasing power or the will to obtain the amount of cover society considers they ought to have, and thus would not be adequately protected under a private market system of insurance unless they are given special assistance.

Health insurance organized by the state or by a public body is usually termed as social insurance, social security, or sometimes compulsory health insurance. Social insurance schemes usually incorporate income maintenance measures as well, are compulsory for all individuals falling within the schemes and are seen as a source of not only individual, but also community welfare. The conventional funding source for social insurance consist of payroll taxes levied on workers and employers, often supplemented by user fees and by government contributions from tax revenues. If the scheme is self-financing, the total contributions collected should be actuarially determined on the basis of the probability of the

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events insured against occurring, but contributions from workers and employers can be either, flat rate, or earnings related (usually within certain prescribed limits). Some countries have a single social insurance fund; others have multiple sickness funds, often organized on a firm or industry basis.

It is important to note that state involvement in health care financing, through the regulation private insurance or the organization of social insurance, does not of itself demand state involvement in the provision of care. Thus, it is important to distinguish between systems providing health services and systems paying for health services which are provided by commercial, voluntary, or non-profit agencies, institutions, but not the insurance arrangements, or insurance, but not the institutions; or it may do neither, but merely provide a framework of rules and regulations within which health insurance and provider agencies operate.

In the organization of insurance-based health services, a distinction is commonly drawn between the 'direct' and 'indirect' pattern (Roemer 1969). In the direct pattern, an insurance agency provides health services in its own institutions, usually employing salaried medical personnel. This is the pattern that has developed in many Latin American countries. In the indirect pattern (prevalent in the United States and Europe, but also in some developing countries),

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the insuring agency meets the costs of care given by private health care providers practicing from facilities not owned by the insurer. Such an insurance system is referred to as a 'third party' payment system, since the insurance agency, as the third party' has no direct authority over the other two parties, the provider and the consumer. A variant of this pattern is possible, where the insurer contracts with publicly provided facilities to care for the insured.

Social insurance has been expanded and adapted, especially in Western Europe to the extent that the distinction between a 'national health insurance system' and a 'national health service system' is a narrow one. The payments by employees and employers can be considered not as insurance premiums, but as an earmarked tax, and government contribution to the insurance fund are often sizeable. Indeed, if both systems provide care at not direct charge, their economic effect on consumer demand can be argued to be similar. However, national health insurance usually attempts to maintain a financially viable and actuarially sound system so that contributions are directly related to the cost of medical care. In addition, access to health care depends on the payment of contributions, registration with a general practitioner), and the only limit to access is the capacity of health facilities (Krizay and Wilson 1974). Finally, health insurance may finance certain benefits only (for instance hospital inpatient services)

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whereas, a national health service commonly gives access to all publicly –provided services.

A major difference between the British National Health Service and the Western European health insurance-based systems stems from the integration of the financing and provider functions in Britain. However, if social insurance systems of the direct form, common in many developing countries, were eventually to be expanded to cover the great majority of the population, then they would become equivalent to national health service systems, though financed by an earmarked tax rather than general government revenues. It follows that the use of the term ‘insurance’ is to some extent misleading, since both systems of financing do provide insurance against the cost of health care. Ultimately, therefore, the only distinction to be drawn between national health insurance, as conventionally financed through payroll taxes, and a national health service, is that they raise money by different methods.

Health insurance schemes are already widespread in the developing world. A review some years ago showed that more than half of all low middle income developing countries have some form of medical insurance as part of their social security system (Zschock 1982). They include all Latin American countries and a number of African and Asian countries.

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However, only in a few Latin American countries do contributions constitute a significant proportion of total medical care expenditures. Moreover, health insurance typically covers a small proportion of the population, usually the higher wage earners in the modern sector of the economy. Insurance systems in developing countries have therefore, catered mainly for the urban elite.

Such characteristics have contributed to considerable controversy on the desirability of social insurance systems of medical care in developing countries, on their impact on the health services received by other sectors of society, and on their impact on the health of the whole population.

The protagonists of social insurance argue that it taps money which otherwise would not be spent on health care; provides a stable source of revenue for the health sector; does not reduce the funds available for Ministry of Health services; improves the health of those workers most vital for a country's growth; and when it provides its own facilities, uses funds more efficiently than the private sector which might grow rapidly in the absence of insurance (Roemer 1971). Opponents argue that insurance systems are inequitable in practice: they benefit a small elite, but impose costs on the rest of society because they absorb scarce staff, promote curative, high-cost care and inappropriate medical education,



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and are often subsidized by taxes which may weigh most heavily on the poorer sections of the population (Abel-smith 1978). Health insurance has thus, been criticized as representing a western model whose transfer to the developing world is inappropriate.

It is certainly true that health insurance has been and still is an important source of finance in developed countries, and for that reason is worthy of scrutiny to see whether useful lessons can be learnt from their experience. The developed nations are exceptional in having a very extensive, privately organized (though often non-profit making) health system based on private insurance. Most European countries. Such as France, Germany, and the Netherlands have almost total social insurance coverage, though with considerable government regulation and financial support for the premiums of the elderly, unemployed, and indigent (Blanpain 1978). Only in a few countries, such as the United Kingdom and Sweden and more recently Italy and Denmark, has the insurance principle been largely abandoned in favor of a national health service funded from general tax revenues. Yet seven in the United Kingdom, traditionally seen as the birth place of a 'socialized' health system there has been renewed interest of late in private insurance as a means of increasing the resources available for health care, thus reviving the controversy on the

merits of insurance systems (Maynard 1979b; Abel-Smith 1981; Torrens 1982).

### **4.6.1 The Economic Implications of Health Insurance**

The introduction of health insurance in either its private or social form into a developing country is likely to carry with it certain implications for the efficiency and equity of the health care system. This section attempts to analyze some of these implications, in order to reach an understanding on the likely behavior of different institutional forms of health insurance.

This analysis necessarily demands exploration of whether health care possesses characteristics that distinguish it from goods and services normally produced and purchased in private markets, and whether health insurance has certain characteristics that distinguish it from other forms of insurance. The arguments relate essentially to uncertainty on the part of the individual on the type and quantity of health care needed; to the respective roles of consumer and provider in determining access to and consumption of health care; and to the role of equity considerations in influencing who should receive care and who should pay for it.

#### **Uncertainty**

The attraction of health insurance to an individual is that premiums are paid regularly in order that payments and

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potentially large financial losses should be avoided at the time of illness. But will the removal of direct payments lead individuals to demand more care than they would otherwise, for instance by indulging in more health damaging activities, by visiting health facilities more frequently, or by consuming more care once they have decided to attend the clinic, pharmacy, or hospital?

These possibilities might appear implausible to those who consider that an individual's need for health care is clear and unambiguous. Yet, this notion makes economists uneasy unless it is stated clearly who determines need. Economists prefer in the first instance to talk not about need, but about demand, defined as the quantity of a commodity consumers wish and are able to buy at a given price (Lee 1979). This definition goes beyond the common notion of 'desire' or 'need', for unless desire is made effective by both ability and willingness to pay, it is not demand in the economic sense.

The above paragraphs have described what the insurance industry calls moral hazard that is the tendency of individuals, once insured, to behave in such a way as to increase the likelihood or size of the risk against which they have insured. From an individual's point of view such behaviour may be highly rational; indeed he may value insurance precisely because he does not wish to be faced with problems over ability or

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willingness to pay when he is ill (Brown 1981). However, from the insurer's point of view, such behaviour may lead to a larger quantity of care being consumed, and thus to higher costs which require higher premiums. In a developing country where only a small proportion of the population receive the benefits of health insurance, such a process can accentuate the already glaring differences that exist in the amount of health care received by different sections of the population

There are well-developed methods used by the insurance industry to combat moral hazard. These include 'co-insurance', making the insured pay a proportion of his medical costs deductibles' making the insured liable for the initial expenses up to the stated sum; and fixed indemnity', where an individual is insured for a given expenditure., usually for an illness or a year, but occasionally over his lifetime (Brandt, Horisberger, and von wartburg 1980). Co-insurance is widely used in both developed and developing countries. In developing countries its purpose may be not only to limit demand, but also to make an insurance scheme financially viable when incomes are low. Considerable debate has taken place, especially in the United States, on the impact of cost-sharing upon health care utilization and on its efficiency and equity implications. There is evidence that the lower the cost-sharing rate, the larger will be demand; at the same time, there are fears that cost-sharing may deter those in 'need',

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and discourage early attendance, leading to more severe cases and greater expenditure on treatment later on (Mansingka 1978; Maynard, 1979b; Newhouse 1981). Deductibles, as an alternative to co-insurance, can be particularly useful to the insurer if applied to those services (Such as drugs) which generate large volumes of small claims for reimbursement, and thus impose considerable administrative costs.

This analysis of the responsiveness of demand to price changes also suggests that the scope of insurance benefits covered can affect the composition as well as the level of demand. For example, if health insurance provides benefits for in-patients care only demand will be biased away from out-patient care. Thus, insurance, by changing the relative prices that biased away from out-patient care. Thus, insurance, by changing the relative prices that consumer's face of different health services, can either unintentionally distort the pattern of demand, or it can provide a positive opportunity to shape the demand of cost-effective treatment patterns.

Finally, the impact of moral hazard in an insurance financed system (or indeed a national health service) will depend not only on demand factors, but also on the availability of supply and the response of providers. In a third-party payment system, an increase in demand is likely in the short run only to

lead to a rise in prices, but in the long run to an increase in supply. If, however, providers can restrain the expansion of supply, and insuring agencies have limited influence on price, the result may be cost inflation. Where insuring agencies can control the supply of services (As in the 'direct' pattern, or in 'a prepayment' systems where a physician or hospital also acts as an insuring agency) moral hazard will be limited by supply restrictions and rationing, though at the risk of consumer dissatisfaction.

### **4.7 Health insurance in developing countries**

This Chapter concentrates on three factors that are of particular importance when analyzing insurance systems: Coverage of the population; health care coverage; and institutional structures. Particular attention is also given to innovative forms of health insurance that might tackle the equity and efficiency shortcomings of many existing systems.

#### **1. Coverage of the population**

Social insurance schemes are concentrated in the industrial sector of developing countries not least because wages and profits are high enough for compulsory levies to be paid, and the structure of wage employment makes collection of the levies feasible. That sector, however, typically employs only a small proportion of the country's labour force; through in addition government workers may also be covered by

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insurance arrangements paid for by the government form its tax revenues, sometimes assisted by employee contributions. In Columbia, for example, the two insurance systems for private and public sector employees account for 50 percent of health sector expenditure, yet cover at most 25 percent of the population (Zschock 1979). A similar pattern is evident in other Latin American countries. While figures on health sector finance are generally very scanty, it is clear that social insurance systems control a large part of health service resources, some of which are paid in the form of government subsidies, while providing care to a small proportion of the total population.

The extension of social insurance to rural or peri-urban areas faces many problems. The majority of the working population in developing countries are either self-employed or work for small enterprises in the agricultural, petty trade and service sectors. In the urban informal sector, wages are typically low and employment unstructured. In the agricultural sector, also incomes are often low, may be received in kind rather than cash and may be spread over a large number of economically inactive household members than in urban areas. When, as is often the case, small-scale agricultural or industrial producers face prices set by the market which they cannot influence, they may be unable to pass on the cost of insurance to

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consumers, and any payroll tax threaten their financial viability.

Moreover, the per capita cost of the health care in rural areas are likely to be higher than in urban areas, requiring larger payments for the same level of services, and an administrative structure that can be used for the collection of contributions may not exist.

There are, however, a number of ways in which either compulsory or voluntary insurance schemes could be set up to include rural populations (though not usually the informal urban sector) these schemes are usually dependent on breaking the link between insurance and payroll taxes. For instance, the contributions of self-employed farmers can be linked to the size of farm and type of crop (thus, avoiding the problem of determining income directly) low interest loans can be given to assist the payment of contributions in those months when incomes are low or if crops are marketed by a co-operative, or a co-operative bank provides credit repaid (Mallett 1980) in Mexico, agricultural credit societies pay annual contributions for all their members (Savy 1978) and in Japan a rural health insurance scheme is financed through local household taxation and state subsidies (Higuchi 1974) of particular value since they simplify collection mechanisms are



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taxes that are levied on communal or co-operative sources of income.

Only in very prosperous areas are farmers likely to be able to afford payments that can finance both primary and secondary care. Two solutions are commonly proposed, the first is to rely on state subsidies to supplement household contributions and to make up for the absence of employers contributions; the second is to require cost sharing especially for secondary care. Cost-sharing is frequently expected in conventional social insurance schemes for instance, in the Philippines and Korea, but could be employed also in rural schemes as was the case in China.

Indeed, the example of China before recent reforms and the collapse of the commune system is worth exploring at some length, since it displayed a number of features relevant to expand coverage and has been described in detail by Hu (1981). The insurance covering rural communes entitled co-operative medical services covered around 70 percent of communes once a commune had decided to join the scheme members amounted to on average 1.5 percent of family disposable income and contributions were also paid from collective funds. A small fee was charged for each visit to the brigade health station and if a patient was referred to a country or city hospital by a barefoot doctor part of the hospital

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fee ( for instance 50 percent or a fixed sum) was reimbursed by the brigade health fund and a low interest loan sometimes provided to assist with payment of the balance (Wen and Hays 1976) financial assistance was also provided by production team funds for the salaries of barefoot doctors and public health workers) and by state funds ( mainly for capital expenditure on local hospitals and clinics ).

While conclusions on the success of such a system must be tentative in view of the lack of information on its actual operation and its dependence on co-operative production system the Chinese experience of rural insurance does suggest that such arrangements can be government sources for hospitals if substantial cost-sharing is expected for secondary care and if low-cost forms of care are provided.

### **2. Health care coverage**

An alternative approach to tailoring insurance schemes to suit resource availability is to limit the scope of benefits. The possibility of using the insurance principle to finance primary health care has appeared attractive to both national governments and international agencies who are becoming increasingly aware that achieving 100 percent coverage for primary health care demands substantial resources (Cumper 1980). The traditional medical care, the only form of care at present available to many rural communities is usually paid for

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on a fee-for-service basis suggesting that commuting such payments at least partially in to health insurance may be feasible where efficient organizations can be set up to handle the finance. The proceedings of a WHO/UNICEF Conference on the cost of primary health care ( WHO/UNICEF 1980) indicate that a number of countries are experimenting with community-based insurance systems. Their success is likely to depend to a considerable extent on the existence of strong local organizations as in China in the form of workers council's co-operatives or farmers unions to control organize and manage the insurance system.

It is apparent that if premiums are low enough for the majority of the population to afford them and if the services provided are geared to the income form premium not-for-profit insurance can be used to develop local services controlled by local organizations However, while adopting a scheme voluntarily it is likely that as in China membership of a local scheme may need to be compulsory in order that the border of risk to be spread and that low-risk or high-income individuals should not opt out. The problems will arise in the financing of more sophisticated services where government support is likely to be needed.

In contrast to rural areas where low incomes are likely to limit the range of care that can be financed by insurance, urban-

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based social insurance schemes have been widely criticized for concentrating largely on curative in-patient care and neglecting less costly forms of curative care and preventive care. Clearly this is always likely to be the outcome where those insured insist upon sophisticated services when insurance agencies have little control over the quantity of services provided and when facilities are provided indirectly and can thus respond to this demand. A curative high-cost pattern of service can also result from insurance cover which is limited to the more expensive (usually hospital) services.

### **3. Institutional structures**

Some of the relative merits of indirect and direct systems of insurance have already been identified. From the economists perspective what is important is to determine which system is most likely to produce health care efficiently. Roemer has argued strongly that not only does the direct pattern produce better quality care, but also that it does so more efficiently particularly in its use of paramedical and auxiliary staff (Roemer 1969). Moreover, the direct pattern avoids the problem faced by third-party insurers of attempting to find a method of payment for doctor and hospitals that promotes efficient behavior. Whilst the salaries and hospital budgets usually favored by the direct pattern are not ideal particularly since salaries may not provide a sufficient incentive for high productivity they do at least facilitate cost control. In contrast,

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reimbursement methods such as fee-for-service and fees per patient day do not encourage physicians or hospital managers to ration the quantity of services given to patients, in Brazil for example, a study showed that much of the variation in caesarian section rates in the maternity units of a number of hospitals were associated with the financial status of the patient rates where 75 percent of deliveries for private patients, 40 percent of deliveries for insured patients and less than 25 percent for indigent patients (Janowitz, Nakamura, Lins, Brown and Clapton 1982).

While the merits of the direct pattern have frequently been emphasized, it is not without defects. It is often organized as a separate enclave, quite distinct institutionally from the health care services of other agencies especially of the ministry of health for instance in Latin America in 15 out of 20 schemes responsibility for administrative supervision lay with the ministry of labor or of social welfare and in another three while the ministry of health exercised general supervision services where dactyl administered by social security institutions (Roemer 1973). Furthermore, many countries have multiple insurance systems, each system with its own services and catering for different groups of workers or even different government departments such structures tend to create access problems for those eligible for services and encourage the duplication of facilities. They may also have high

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administrative costs since each scheme is relatively small and is therefore, unable to take advantage of economies of scale that can be enjoyed by large insurance agencies.

The co-ordination or unification of separate funds and the linkage of insurance schemes etc is what is usually recommended by the Ministry of Health. Integration of health services for the insured with public health services should provide medical and allied services partly or wholly through existing facilities and personnel of the Ministry of Health strengthening these with subsidies for capital and recurrent expenditure. In Jordan civil servants receive care in public hospitals with out charge in return for a monthly salary deduction paid to the ministry of Health. This type of system is clearly quite difficult to set up when ministry of Health systems are inadequate though capital funds could be devoted to expanding existing services rather than setting up separate facilities for the insured. Yet, the problem may remain that insured people expect by virtue of their payment contribution to receive a better standard of care than that available in Ministry of Health facilities. An important issue is whether their demands can be partially met by providing improved ward accommodation and fringe benefits, but without the provision of separate treatment and diagnostic facilities.

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While it is possible to generalize about the advantage of these three patterns of organization, the direct and the joint ministry of Health/health insurance system a country's choice of health insurance scheme will clearly depend on the existing pattern of services, their ownership and payment systems. Two major considerations are likely to be the presence or absence of a substantial private medical system and the adequacy of public health services. The possibilities open to countries with a different inheritance can be explored by taking the examples of Korea and Tunisia.

In Korea, most physicians work on a private fee-for-service basis and the majority of hospital beds are privately owned and concentrated in urban areas (Park and Yeon 1981), over 85 percent of health expenditure is financed by consumers and until 1977, when a medical insurance programme set up Korea had no financial mechanisms for pooling risks (apart from a few pilot programmes). By 1981, the medical insurance programme required firms with at least a hundred workers, government officials, teachers and ancillary staff of private schools to be compulsorily insured and provided for a voluntary community-based programme for all others. Subsequent expansion of insurance cover has been rapid. The private pattern of health services has been retained, providers being remunerated according to a specified fee schedule. Recently, however, cost inflation has provided a

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considerable problem deriving from the reliance on fee-for-service payment mechanisms to private providers.

In Tunisia, it appears that reasonable public facilities were available when medical care coverage under social security was introduced. It was therefore, possible to arrange that in return for an annual subsidy paid to the ministry of Health by the social security agency care would be provided through the regular public hospitals and health services. Insured workers were not to receive preferential treatment, but were exempted from fees normally charged (WHO 1971)

Generally, the experiences of insurance in the developed and developing world have been rather different. Western European health insurance organized by public organizations or not-for profit funds, has gradually expanded to near 100 percent coverage of the population, and finance the purchase of health care from largely private agencies. Only a few European countries have abandoned insurance in favor of funding from general tax revenues public ownership of facilities and salaried employees. In the United States, social insurance is confined to the poor and elderly private insurance agencies that cater for a large proportion of the population and health facilities are largely provided via the private market. Developing countries display many different patterns of



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organization and health care provision in their social security schemes covering medical care.

Many governments have taken a direct role in the financing and provision of a limited network of public health facilities and insurance has been used as the means to expand health care for regular wage earners in the public and private sectors, either by enabling them to obtain care from independent or public providers or by the direct provision of health care services. Most recently interest has grown in insurance as a way of financing primary health care largely though not necessarily exclusively in rural areas.

The value of insurance as a principle of providing protection for the individual against the cost of illness is clear. Beyond that principle the value of an insurance system depends on its effect both as a source of funds and as a way of organizing the provision of health care. Its effect can be evaluated in terms of:

- 1) The distribution of the financing burden (costs) over the population and the extent to which insurance facilitates access to and utilization of health services (benefits) by different groups in the population:
- 2) The quantity and quality of the services it finances and the feasibility of extending coverage of such services to the whole population within a reasonable time period.

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- 3) The efficiency of these services, that is the provision of care at least cost
- 4) The efficiency of health insurance administration and
- 5) The extent to which health insurance assists the achievement of national policy objectives

Insurance clearly can be used and indeed is used as a way of providing services to those in the modern sector of the economy. So long as the distributive effect of such care does not violate notions of equity and the health services for the insured do not detract from the care available for other section of the population, then social insurance can be instrumental in raising resource for the health sector and enabling certain groups to finance their health care needs themselves. Social insurance can also be used to ensure either that these resources are not channeled into a private health sector whose growth could cause even greater inequity and inefficiency of consumers are uniformed and providers unconstrained or that the use made of an existing private sector and its behavior is directed towards meeting national objectives. Finally, the limited ability of many governments to increase taxation and the often low priority given to health expenditure in rural areas and for the urban poor, provide strong reasons for looking closely at the possibility of using voluntary insurance to develop local level, and in particular primary health services.

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This is a system in which prospective consumers of care make payment to a third party in the form of an insurance scheme, which in the event of future illness will pay the provider of care for some or all of the expenses incurred. Health insurance is a mixed source of finance as it often draws contributions from both employers and employees and sometimes from government. Contributions to such schemes are often mandatory. Three principal types of insurance are distinguished here.

- a. Government or social insurance: These systems provide compulsory or, to a lesser extent, voluntary coverage for people employed in the formal sector. Premiums or contributions are generally based on the individual's income regardless of actuarial risk.
- b. Private insurance: This provides coverage for groups or individuals through third-party payer institutions operating in the private sector. Premiums tend to be based on an actuarial calculation of incidence of disease and the use of services i.e. they are generally not income-related and vary with age and sex.
- c. Employer-based insurance: This refers to coverage falling between the other two categories in which the employers or private bodies serve as the third-party payer or collection agent with eligibility based on

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employment status. Such schemes are often required by national labour codes.

In each of these categories health insurance has seen as a way of allowing governments to diversify the sources of revenue of the health sector, to improve efficiency by giving individuals some role in paying for their own health care and to spread the burden of health costs over time and across a wider population, all of which will reduce risk. The existence of risk is the fundamental rationale for insurance. Health care costs may be infrequent, but they are potentially very high; this means that, without insurance, individuals may be unable to pay for care even if they are willing to do so.

Insurance markets suffer from market failures particularly those associated with imperfect information. These problems are often described as those of moral hazard (those who are insured will tend to overuse insured services) and adverse selection (those who anticipate needing health care will choose to buy insurance more often than others, which leads to higher costs, lower profits, higher premiums and ever fewer users in consequence). Frequently, these problems mean that there are no private insurance markets at all. When they do exist, they may be guilty of “cream skimming”, for example, when the insurance excludes the riskier customers (on the basis of their income or previous health status) which undermines the value of insurance altogether. Such market

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failures explain why governments tend to play a regulatory role in health insurance markets.



### Review Questions

1. Write down the factors that influence the choice of a financing system.
2. Describe the different systems of financing the health service sector.

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3. Show how demographic conditions can affect the choice of health care financing systems.
4. Explain the difference between public and private goods.
5. Outline the problems of health insurance as a system of health care financing.
6. What are the drawbacks of private financing?
7. Discuss the weaknesses of government financing.
8. Are communities financing schemes applicable to Ethiopia?

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## **CHAPTER FIVE**

# **THE ROLE OF GOVERNMENT IN HEALTH**

### **Learning Objectives**

At the end of this chapter, the students will be able to:

1. Understand the role of government as affecting the resource allocation pattern in health & the extent to which it can influence the overall performance of the sector.
2. Analyze the possible measures that can be taken to alleviate the health problems of developing countries.
3. Appreciate the problems of health policy in developing countries.

### 5.1 Introduction

In recent years health reform has shot up to the top of political agenda throughout the world. For developed industrial countries and many middle-income developing countries reasons include rapidly rising costs, the large number of people still not covered by health insurance and the fear of AIDS. For developing countries the main reason is a better understanding of the importance of health for improving the productivity of workers and of the potential for enormous gains in health at very low cost.

There is no question that governments all over the world have played a vital role in bringing about the great advances in health over the past many years. Public health measures are responsible for eradicating smallpox and have been central to the reduction in deaths caused by other vaccine-preventable childhood diseases. Expanded and improved clinical care by government doctors and nurses has saved millions of lives from infectious diseases and injuries. Better prenatal and delivery services organized by governments have lowered the rate of serious complications of pregnancy and childbirth for millions of mothers.

Despite these remarkable improvements, however, enormous health problems remain. Absolute levels of mortality in

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developing countries are still unacceptably high; child mortality rates are about ten times higher than those in the established market economies. According to the World Bank Development Report in 1993 if death rates among children in poor countries were reduced to those prevailing in the rich countries, 11 million fewer children would die each year. Almost half of those preventable deaths are a result of diarrheal and respiratory illness exacerbated by malnutrition.

In addition, every year seven million adults die of conditions that could be inexpensively prevented or cured; tuberculosis alone causes two million of these deaths. Over 400,000 women die from the direct complications of pregnancy and childbirth. Maternal mortality ratios are on average 30 times as high in developing countries as in high income countries.

There are several major problems with the way health systems are now run and financed and if solutions are not found, the pace of progress in reducing the burden of premature mortality and disability will be slowed.

### **5.2 Problems of health policy**

The appropriate nature and extent of government involvement will vary from country to country, in large part depending on income levels. Some of the common problems of most

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countries in their policy are misallocation, inefficiency and cost allocation.

A) **Misallocation**; one of the most important aspects of economics in making health policy is the appropriate allocation of material financial and human resources. This implies optimal disruption of economic resources among competing needs. This in turn calls for the proper identification of the need. Sometimes public money is spent on health interventions with low cost effectiveness such as foremost cancers, at the same time that critical and highly cost effective interventions such as treatment of tuberculosis and sexually transmitted diseases remain under funded.

b) **Inequity**; the poor lack access to basic health service and receive low quality care. Government spending for health goes disproportionately to the affluent in the form of subsidies to sophisticated public tertiary care hospitals and to private hospitals.

c) **inefficiency**; much of the money spent on health is wasted because brand name pharmaceuticals are purchased instead of generic drugs ,health workers are badly deployed and supervised and Hospital beds are under utilized .

**d) cost explosion;** in some middle income developing countries health care expenditures are growing much faster than income as increasing number of specialists, the availability of new medical technologies and expanding health insurance linked with fee-for-service payments together generate a rapidly growing demand for costly tests, procedures and treatments.

As developing and industrial countries alike rethink the best way to provide health care in the century ahead some argue that governments should step up their financing while allowing more participation by non-government organizations and the private sector in supplying services.

### **5.3 What can governments do?**

Based on the problems mentioned, it makes sense for governments to be involved. The poor cannot always afford the health care that would improve their productivity and well being. Some actions to promote health are pure public goods or care large positive spillover effects. Market failures in health insurance also mean government intervention can raise welfare by improving the way those markets function.

Clearly, governments have a responsibility to spend wisely and to evaluate carefully exactly what form their involvement should take. The World Bank recommends four main policies

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to overcome the existing weakness of health systems in developing countries.

- ❖ Governments should finance a nationally defined package of essential public health and clinical care, especially for the poor, and should ensure the widespread and efficient delivery of such a package.
- ❖ The public sector should devote far fewer resources or none at all, to financing health services outside of the essential package which are of lower cost-effectiveness.
- ❖ Governments should promote such types of health insurance that not only achieve broad coverage of the population, but also build in payment mechanisms that control the cost of health services.
- ❖ Governments should encourage diversity and competition in the supply of health inputs, particularly drugs, supplies and equipment, as a means of improving quality and driving down costs. They should also foster a competitive private sector to provide the full range of health services including financial publicity.

### **5.3.1 A basic health package**

Government action in many areas of public health has already had an important payoff. The challenge now is to expand coverage of interventions with high cost-effectiveness:



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- ✚ school based health services
- ✚ information on family planning and nutrition
- ✚ programs to reduce tobacco and alcohol consumption
- ✚ Regulation, information, public investments to improve the household environment and AIDS prevention.

At same time, governments should also put together a package of essential clinical services although this may vary from country to country, depending on local needs and the level of income.

The World Bank Development Report (1993) has come out with a suggested minimum package of health services which is affordable by the majority of developing countries at current levels of health spending and would reduce the burden of disease by just over 30 percent in low income countries. Eleven clusters of interventions or individual interventions are included in the package, apart from being cost-effective these services address diseases responsible for a large share of the disease burden in developing countries.

However, the exact content of each countries essential package will be largely determined by the epidemiology profile of the country (the distribution of disease burden across

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diseases) and the cost effectiveness of the corresponding interventions. The size of the package (number of interventions cluster) will depend on the financial resources available for health care.

Clustering interventions improve cost-effectiveness through at least three mechanisms:

- ◆ Synergism between treatments or prevention activities is common, particularly in pediatric care.
- ◆ Joint production costs can substantially reduce the amount of resources needed were interventions to be provided separately.
- ◆ The optimal use of specialized resources, such as hospital beds, requires a screening process to refer the most severe cases from the first level of care to other facilities.

An efficient health cluster should include interventions that can be given to the same individual, at the same time, and through the same mode of delivery (outreach community health worker, health center or hospital). The expanded program on immunizations, for example, is a very efficient one because it includes six vaccines provided through the same delivery system to the same individuals, often at the same time hence, an essential health package approach is an important measure which governments can be encouraged to do.

### **5.3.2 Value for money**

When it comes to health policy, one of the most difficult decisions for developing nations to make how best to put together a mix of health services that will be financed by public spending. Ideally, they would like to offer as much health care as possible to as many people as possible. In practice, however, they end up concentrating resources in urban hospitals which provide a wide range of services for a few, leaving other population groups, particularly in rural areas, with a relatively little access. This allocation of public spending is inequitable and inefficient. Costly treatments are prescribed that prolong life only slightly, while large populations are denied inexpensive services that extends life greatly, such as immunization. As a way-out of resolving this problem, the World Bank Development Report recommends that governments design and finance national health package embracing essential public health and clinical services that will substantially reduce the burden of disease (the present value of future streams of disability-free life lost as result of death, disease or injury) at affordable costs. This means that government will need to review the value of interventions they offer so that they can reallocate resources in the most cost-effective manner.

No matter how health services are organized and paid for, what they actually provide are health interventions. Debates

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about whether health services should concentrate on “vulnerable groups” such as children, pregnant women and the elderly, or about the relative role of hospitals versus health centers, or about preventive versus curative activities are at bottom debates concerning the proper mixture of interventions. In health, as in every other sector, customers want value for the money spent.

That is why the first step in designing a country's essential health package is to determine the cost effectiveness of a health intervention- the net gain in health compared with doing nothing divided by the cost. Indeed, the developing countries that have been the most successful in improving health for a given level of spending have concentrated their public monies on highly cost effective interventions.

### **5.3.3. Redirecting public spending**

The World Bank Development Report pointed out the need for widespread and fundamental reform of health policies and health systems. It called for changes in the level and composition of government spending for health in public and private institutions responsible for delivering health services and in insurance, cost recovery and mechanisms for financing health care.

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Public financing of an essential clinical package can be justified because the package creates positive spillover effects and reduces poverty. However, the case for government financing of discretionary clinical health services outside of the essential national package is far less compelling. In fact, if governments reduced or eliminated public funding of these services they would actually increase in both efficiency and equity.

One important way to direct government spending away from discretionary care is to recover costs in government hospitals especially from the wealthy and the insured. Even in low-income countries such as Ethiopia, Kenya, Pakistan and the Philippines where insurance may account for less than 5 percent of total health spending, a combination of limited private insurance and the ability of upper income groups to pay makes feasible for governments to charge for discretionary care delivered in public hospitals. In middle – income countries, where insurance becomes more important, there is ever-greater potential for cost recovery.

Governments should also phase out public subsidies to insurance which generally benefit the better-off. There are strong efficiency arguments for directing government funding to public health interventions because of the public good nature of these services and a number of the essential clinical

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services including treatment to tuberculosis effects. In addition, there are equity grounds for financing the basic health package. The poor are disproportionately affected by the disease burden the package addresses. This means that making public financing of this package with universal government finance leads to public subsidies to the wealthy, who can afford to pay for their own services, with the result that fewer government resources go to serve the poor.

One way to solve this problem is by targeting public spending to the poor. In low-income countries, where current public spending for health is less than the cost of the minimum package, some targeting is almost inevitable. In countries where the wealthy do not use government financed services because of the greater quality and convenience of privately financed services, targeting may be fairly easy. The most sophisticated facility required to deliver the minimum elements of the package is a “district” hospital which serve as the first level of referral from health centers. These hospitals offer basic surgery, emergency services and some outpatient care. Generally, they can have 100-400 beds and serve 50,000-200,000 inhabitants, the minimum package requires access to health centers and district hospitals throughout the country. On average it requires about 1 district hospital bed, 0.1 to 0.2 physicians per 1,000 population and 2 to 4 nurses per physician.

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Governments can direct public spending to support the nationally defined essential package in several ways:

- a) Where services are publicly financed and provided, government can reallocate public spending towards inputs—drugs, supplies, equipment, staff and facilities that support the package. In many countries extending lower-level facilities are necessary steps to delivering the package. At the same time, governments can eliminate or greatly reduce financing of inputs for less cost-effective services. This might include losing wards or converting specialized hospital physicians. In Canada, for example, provincial governments, not individual hospitals, control the decision to acquire technically advanced diagnostic tools.

At the same time, providers' treatment decisions would not be micromanaged; they would be influenced, instead, by the nature of input availability. The specialized staff and equipment for example, would be available for treating malaria in young children. Budgetary and salary incentives could also be used to reward individual providers, facilities or districts that achieved good coverage of the population with the services in the package.

- b) Where services are publicly financed, but privately provided, governments should reimburse only for those services in the essential package. This model of health care delivery is growing. It is still uncommon, however, in developing countries. At present the regulatory capacity to oversee such arrangements is poorly developed.

### **5.3.4 Controlling costs**

Even where subsidies in discretionary clinical services for the better-off are cut or public insurance is universal and pays for a more comprehensive set of services in the national package, governments still must cope with the problem of escalating health care costs. These costs can crowd-out spending on other sectors of the economy or raise the price of labour threatening a country's international competitiveness.

The sources of excess health costs are complex and much debated. Health services are labour intensive, and their productivity grows slowly compared to the other areas of the economy. In the United States higher levels of underlying morbidity and greater hospital amenities relative to the other industrial countries are part of the answer. But two types of inefficiencies are also important, high administrative costs and unnecessary use of an ever-expanding array of costly technologies of diagnostic tests and surgical procedures.



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These inefficiencies appear to be closely linked to two basic features of the US health system. Open-ended free-for all service compensation for health providers encourages the development of new equipment, drugs and procedures since neither providers nor patients have strong incentives to hold down utilization or spending. A complex system of multiple insurance institutions and other payers, each with its own procedures, raises administrative costs substantially.

These findings concerning health costs escalation in industrialized countries are especially relevant for middle-income developing countries which are under pressure from medical professionals, manufactures and consumers to use new medical techniques. They face difficult policy choices related to provider compensation. One approach to controlling health costs is to pay a fixed amount for each person (capitation) as is now done by health maintenance organizations in the United States and by the British national health services. Another approach used in several industrial countries is to provide each hospital or network of physicians with a fixed total budget. In countries where there is an expanded insurance system insurers can also jointly negotiate uniform fees for physicians or they can set fixed payments for specified medical procedures.

### **5.3.5 Promoting competition**

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Although governments have a fundamental responsibility for financing basic health services, they need not be responsible for delivering those services. Experience suggests that diversity and competition lead to better results. In a competitive system people seeking health services can choose from a variety of providers-public, private non-profit and private for-profit. As developing countries move towards such a system, they face a wide range of policy options as regards the impact of different providers (Public and private) in terms of allocative efficiency, technical efficiency and the potential to reach the poor.

Non-governmental organizations (NGOs) provide a major share of health services in developing countries especially for low-income households in the poorest countries. Recent data from Africa suggested that the NGOs are often more efficient. Governments that have excluded NGOs or heavily restricted their operations have seen essential services deteriorating. Where such bans or barriers to NGO activity exist, they should be removed. Beyond this, there are opportunities for governments to form constructive partnerships with NGOs to deliver essential clinical services. Some governments in Africa, such as Tanzania and Lesotho, allow appropriately located religious mission hospitals to serve as district hospitals. They then make them responsible for a full range of public health and clinical services and for performing district-

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wide functions such as the health planning, supervision of lower-level clinics and community activities as well as the maintenance of emergency transport. In return, the government pays some of the NGO costs.

In Africa and Asia where traditional medicine remains an important part of the health care system, governments could make greater use of traditional practitioners. Successful examples include the use of healers in Thailand to screen for malaria and distribute anti-malarial drugs, the promotion of modern contraceptives in Kenya and the distribution of condoms in Zimbabwe and Uganda. Traditional birth attendants have also been enlisted to improve pregnancy outcomes in Bangladesh.

At the same time governments can improve the equity and efficiency of their own health programs and facilities thereby increasing their responsiveness to local needs through decentralization and the use of managerial incentives. Governments can also reap efficiency gains by converting public hospitals into semi-autonomous foundations or public enterprises. These foundations are less restricted by public sector procedures in managing their costs and collecting charitable donations for investments and operational costs. Government finance of public health and of a nationally defined package of essential clinical services would leave the

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remaining clinical services to be financed privately or by social insurance within the context of a policy framework established by the government. Governments can promote diversity and competition in the provision of health and insurance by adopting policies that:

- Encourage social or private insurance (with regulatory incentives for equitable access and cost containment) for clinical services outside the essential package.
- Encourage suppliers (both public and private) to compete to deliver clinical services and provide input, such as drugs, to public and privately financed health services. Domestic suppliers should not be protected from international competition
- Generate and disseminate information on provider performance, on essential equipment and drugs, on the costs and effectiveness of interventions and on the accreditation and status of institutions and providers.

Increased scientific knowledge has accounted for much of the dramatic improvement in health that has occurred during the 20<sup>th</sup> century by providing information that forms the basis of household and government action and by under printing the development of preventive, curative and diagnostic technologies. Investment in continued scientific advances will amplify the effectiveness of each element of the suggested three-pronged approach.

### **5.3.6. Strengthening household capacity**

Within the household, health improves rapidly as people escape poverty and get better education. Beyond the household, every society's health services are affected by its national income and its ability to acquire and apply new scientific knowledge which depends on the level of schooling.

#### **The role of income**

Life expectancy is believed to be strongly associated with income per capital (see the World Bank Development Report 1993). The higher a country's income per capital, the more likely its people are to live long, healthy lives. Income growth has more impact in poor populations because additional resources buy basic necessities, particular food and shelter that yield especially large health benefits. The relationship between income and life expectancy has improved over the course of the century as advances in science and medicine have made it increasingly possible to realize greater health for a given income.

Because poverty has a powerful influence on health, it is not just income per capital that is relevant. The distribution of income and the number of people in poverty matter as well. In industrial countries life expectancy depends much more on

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income distribution than on income per capital and it has been rising faster in countries with improving income distribution.

In developing countries, the variation in the prevalence of poverty and per capital public spending on health goes a long way toward explaining differences in life expectancy. Moreover, the adverse effect of poverty on health can be seen in health differences across rich and poor neighborhoods and families, even within the same city. The strong link between income level and health highlights the costs to health of slow economic growth.

### **The role of education**

Households with more education enjoy better health for both adults and children. A mother's schooling is a powerful determinant of child health. The advantages that a mother's schooling confers on her children's health are felt even before birth and they continue to operate throughout the childhood years. Better-educated mothers marry and start their families later diminishing the health risks of early childbearing. They also tend to practice better domestic hygiene and make more effective use of health services. In general, they are better at getting information on health and acting on it.

Among adults, health depends strongly on personal habits and lifestyles. Since educated people tend to make choices that

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are better for their health, there is a strong relation between schooling and health. In Brazil, adults with primary schooling or less are about five times as prone to high blood pressure as those with post-secondary schooling. Educated people are quick to modify their behavior as new health threats arise (such as AIDS) or in response to new information about health. In the United Kingdom, for example, the proportion of smokers among adults declined by 50 percent between 1958 and 1975 among the most educated, but hardly changed among the least educated.

Given these strong links between better health and income and education, the policy implications are clear; governments should work to boost economic growth, reduce poverty and expand schooling (especially for girls – one of the most effective ways of strengthening women's ability to care for their families). It is difficult to reduce poverty and thereby improve health status without economic growth, so establishing sound economic policies is one of the most valuable things a government can do.

### **a. Health Policy of Ethiopia – an overview**

#### **5.4.1 The rational**

The Health Policy of Ethiopia is based on the primary health care approach which has health education, education in personal and environmental hygiene, nutrition, immunization

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and family planning as standard components. The central thrust of the Health Policy includes plans to establish more than 500 new health centers to provide primary health care for the under-served rural population. It was estimated that, around 1990, only 46 percent or less of the population of Ethiopia lived within a reasonable distance from health facilities; reasonable distance being defined as a radius of 10 kilometers from where people live.

The population/physician and population/nurses ratios were estimated at approximately 30,700 and 15,000 respectively. Daily calorie supply per capital was estimated at 76.0% of the recommended daily intake, only 18% of the rural and 78% of the urban population has access to safe water supply and only 5.3% use any form of latrines. Clearly, even in terms of the basic necessities of life, the Ethiopian population is severely under served and there is a long way to go in meeting these needs even in the most rudimentary manner.

Community based health care programs and outreach services are still in their early stages. The expanded program of immunization (EPI), the establishment of which generated so much optimism, is said to suffer from serious setbacks in the late 1980s and early 1990s. Data for the period covering July to September 1992 indicates the following:

a. BCG	19.0%
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b. Measles	9.0%
c. DPT – 3	12.0%
d. Polio – 3	13.0%
e. TT -2+	7.0%

Continuing shortages of basic drugs has stunted the development of a coherent community based approach to health care.

### 5.4.2 General policy

This includes:

- a. Democratization and decentralization of the health services system
- b. Development of the preventive and promotive components of health care.
- c. Development of an equitable and acceptable standard of health service system that will reach all segments of the population within the limits of resources.
- d. Promoting and strengthening of inter - Sectoral activities.
- e. Promotion of attitudes and practices conducive to the strengthening of national self-reliance in health development by mobilizing and utilizing internal and external resources to their maximum.
- f. Assurance of accessibility of health care for all segments of the population.

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- g. Working closely with neighboring countries, regional and international organizations to share information and strengthen collaboration in all activities contributory to health development including the control of factors detrimental to health.
- h. Development of appropriate capacity building based on assessed needs.
- i. Provision of health care for the population on a scheme of payment according to ability with special assistance mechanisms for those who cannot afford to pay.
- j. Promotion of the participation of the private sector and non-governmental organizations in health care.

### **5.4.3 Priorities of the policy**

A. Information, Education and Communication (I.E.C) of health shall be given appropriate prominence to enhance health awareness and to propagate the important concepts and practices of self-responsibility in health.

B. Emphasis shall be given to:

- The control of communicable diseases, epidemics and poor living conditions,
- The promotion of occupational health and safety,
- The development of environmental health

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- The rehabilitation of the health infrastructure
- The development of an appropriate health service management system.

C. Appropriate support shall be given to the curative and rehabilitative components of health including mental health.

D. Due attention shall be given to the development of the beneficial aspects of traditional medicine including related research and its gradual integration into modern medicine.

E. Applied health research addressing the major health problems shall be emphasized.

F. Provision of essential medicine, medical supplies and equipment shall be strengthened.

G. Special attention shall be given to the health needs of:

- The family particular women and children,
- Those in the forefront of productivity,
- Those hitherto most neglected regions and segments of the population including the majority of the rural population, pastoralists, the urban poor and national minorities,
- Victims of man-made and natural disasters.

### **5.4.4 General strategies**

A. Democratization within the system shall be implemented by establishing health councils with strong community representation at all levels and health committees at grass-root levels to participate in identifying major health problems,

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budgeting, planning, implementation, monitoring and evaluating health activities.

B. Decentralization shall be realized through transfer of the major parts of decision-making, health care organization, capacity building, planning, implementation and monitoring to the regions with clear definition of roles.

C. Intersectional collaboration shall be emphasized particularly in:

- Enriching the concept and intensifying the practice of family planning for optimal family health and planned population dynamics.
- Formulating and implementing an appropriate food and nutrition policy.
- Accelerating and provision of safe and adequate water for urban and rural populations.
- Developing safe disposal of human, agricultural, and industrial wastes and encouragement of recycling.
- Developing measures to improve the quality of housing and work premise for health.
- Participating in the development of community based facilities for the care of the physically and mentally disables, the abandoned, street children and the aged.
- Participating in the development of day-care centers in factories and enterprises, school health and nutrition programmes.

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- Undertakings in disaster management, agriculture, education, communication, transportation, expansion of employment opportunities and development of other social services.
- Developing facilities for workers' health and safety in production sectors.

D. Health Education shall be strengthened generally and for specific target populations through the mass media, community leaders, religious and cultural leaders, professional association's schools and other social organizations for:

- Inculcating attitudes of responsibility for self care in health and assurance of safe environment.
- Encouraging the awareness and development of health promotive life-styles and attention to personal hygiene and health environment.
- Enhancing awareness of common communicable and nutritional diseases and the means for their prevention.
- Inculcating attitudes of participation in community health development.
- Identifying and discouraging harmful traditional practices while encouraging their beneficial aspects.
- Discouraging the acquisition of harmful habits such as cigarette smoking, alcohol consumption, drug abuse and irresponsible sexual behavior.
- Creating awareness in the population about the rational use of drugs.

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E. Promotive and preventive activities shall address:

- Control of common endemic and epidemic communicable and nutritional diseases using appropriate general and specific measures.
- Prevention of diseases related to affluence and ageing from emerging as major health problems.
- Prevention of environmental pollution with hazardous chemical wastes.

F. Human resource development shall focus on:

- Developing of the team approach to health care.
- Training of community based task-oriented frontline and middle level health workers of appropriate professional standards; and recruitment and training of these categories at regional and local levels.
- Training of trainers, managerial and supportive categories with appropriate orientation to the health service objectives.
- Developing of appropriate continuing education for all categories of workers in the health sector.
- Developing an attractive career structure, remuneration and incentives for all categories of workers within their respective systems of employment.

G. Availability of drugs, supplies and equipment shall be assured by:

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- Preparing lists of essential and standard drugs and equipment for all levels of the health service system and continuously updating such lists.
- Encouraging national production capability of drugs, vaccines, supplies and equipment by giving appropriate incentives to firms, which are engaged in manufacture, research and development.
- Developing a standardized and efficient system for procurement, distribution, storage and utilization of the products.
- Developing quality control capability to assure efficacy and safety of products.
- Developing maintenance and repair facilities for equipment.

H. Traditional medicine shall be accorded appropriate attention by:

- Identifying and encouraging utilization of its beneficial aspects.
- Co-coordinating and encouraging research including its linkage with modern medicine.
- Developing appropriate regulation and registration for its practice.

I. Health system research shall be given due emphasis by:

- Identifying priority areas for research in health
- Expanding applied research on major health problems and health service systems.

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- Strengthening the research capabilities of national institutions and scientists in collaboration with the responsible agencies.
- Developing appropriate measures to assure a strict observance of ethical principles in research.

### J. Family health services shall be promoted by:

- Assuring adequate maternal health care and referral facilities for high-risk pregnancies.
- Intensifying family planning for the optimal health of the mother, child and family.
- Inculcating principles of appropriate maternal nutrition.
- Maintaining breast-feeding, and advocating home made preparation, production and availability of weaning food at affordable prices.
- Expanding and strengthening immunization services, optimization of access and utilization.
- Encouraging early utilization of available health care facilities for the management of common childhood diseases particularly diarrhoeal diseases and acute respiratory infections.
- Addressing the special health problem and related needs of adolescents.
- Encouraging paternal involvement in family health
- Identifying and discouraging harmful traditional practices, while encouraging their beneficial aspects.

### K. Referral system shall be developed by:



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- Optimizing utilization of health care facilities at all levels.
- Improving accessibility of care according to need
- Assuring continuity and improved quality of care at levels
- Rationalizing costs for health care seekers and providers for optimal utilization of health care facilities at all levels.
- Strengthening the communication within the health care system.
- Diagnostic and supportive services for health care shall be developed by:
  - Strengthening the scientific bases of health care.
  - Facilitating prompt diagnosis and treatment.
  - Providing guidance in continuing care.

L. Health management information system shall be organized by:

- Making the system appropriate and relevant for decision-making, planning, implementing, monitoring and evaluation.
- Maximizing the utilization of information at all levels.
- Developing central and regional information documentation centers.

M. Health legislation shall be revised by:

- Up-dating existing public health laws and regulations.
- Developing new rules and regulations to help in the implementation of the current policy and addressing new health issues.

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- Strengthening mechanisms for implementation of the health laws and regulations.

N. Health service organization shall be systematized and rationalized by:

- Standardizing the human resource, physical facilities and operational system of the health units of all levels.
- Defining and instituting the catchment areas of health units and referral system based on assessment of pertinent factors.
- Regulating private health care and professional deployment by appropriate licensing.

O. Administration and management of the health system shall be strengthened and made more effective and efficient by:

- Restructuring and organizing at all levels in line with the present policy of decentralization and democratization of decision-making and management.
- Combining departments and services, which are closely related and rationalizing the utilization of human and material resources.
- Studying the possibility of designating under secretaries to ensure continuity of service.
- Creating management boards for national hospitals, institutions and organizations.
- Allowing health institutions to utilize their income to improve their services.

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- Ensuring placement of appropriately qualified and motivated personnel at all levels.

P. Financing the health services shall be through public, private and international sources and the following options shall be considered and evaluated:

- Raising taxes and revenues
- Formal contributions or insurance by public employees.
- Legislative requirements of a contributory health fund for employees of the private sector.
- Individual or group health insurance.
- Voluntary contributions.

### **In summary:**

The present Health Sector Development Program (HSDP) addresses all health service activities of the central and regional governments from basic services to specialized and referral services. It is expected to bring significant improvement to the entire health system and, in particular, to long-neglected rural areas and to especially vulnerable groups (such as mothers and children) that would benefit from the expansion of health services.

The focus will be on the health conditions that contribute to the burden of diseases in Ethiopia. This health development program will primarily be implemented and managed by

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regional, zonal, and “Woreda” – level structures, coordinated by steering committees established at all levels.

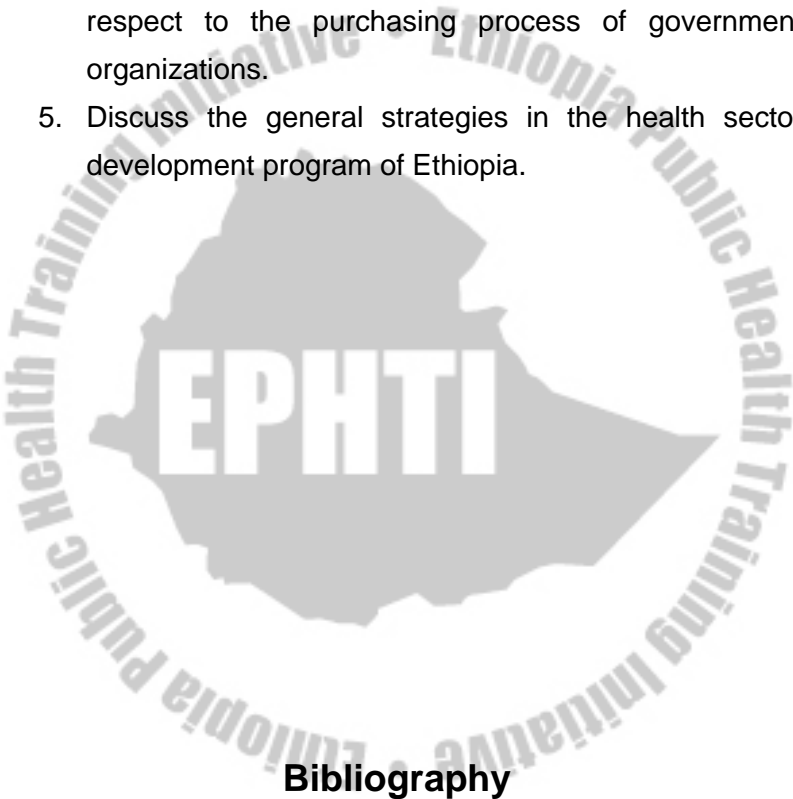


### **Review Questions**

1. Describe the major problems of health systems in developing countries.

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2. What are the possible solutions by governments for those problems?
3. What is the relevance of encouraging diversity and competition in improving the health system?
4. Describe the implication of “Value for money” with respect to the purchasing process of government organizations.
5. Discuss the general strategies in the health sector development program of Ethiopia.



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## GLOSSARY

- Cost**                      What has to be given to achieve something?  
Either:
- a. The value of opportunities which are forgone in order to achieve

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something (the economic definition); or

- b. The total money expenditure required to achieve something (the accounting definition).

**Average cost** Total cost of therapy divided by the total quality of treatment unites provided.

**Capital cost** The cost of employing capital goods. In an economic sense, it is the rate of return forgone by not using the funds spent on particular capital goods in other ways. In accounting terms, it is the money expenditure required to purchase capital goods.

**Cost-benefit analysis** Type of economic evaluation that measures costs and benefits in monetary units and computes a net pecuniary gain/loss.

**Cost-effectiveness** Efficient use of (scarce) resources.



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**Cost-effectiveness analysis** Type of economic evaluation that measures therapeutic effects in physical or natural units and computes a cost/effectiveness ratio for comparison purposes.

**Cost-minimization analysis** Type of economic evaluation that finds the lowest cost programme among those shown to be equal benefit.

**Cost-utility analysis** Type of analysis that measures therapeutic consequences in utility units (e.g. QALYs) rather than in physical units.

**DALY** The Disability-Adjusted Life Year, a measure akin to the QALY in aggregating survival and quality of life effects, but normally advanced as a method of estimating the burden of illness associated with a disease, rather than the cost-effectiveness of health care interventions.

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**Decision analysis** An explicit quantitative approach to decision-making under uncertainty, with a structure designed to represent the treatment options under investigation and normally based on a synthesis of data from the literature.

**Depreciation** The value of machinery and equipment that is lost during a given period of time in a given process as a result of wear and tear.

**Direct medical costs** Fixed and variable costs associated with a health care intervention.

**Direct non-medical costs** Non-medical costs associated with provision of medical services.

**Discounting** The adjustment of future costs and benefits to render those occurring in different years comparable with each other and with current costs and benefits. The adjustment operates in the opposite way to compound interest, i.e. a positive discount rate

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weights the future less than the present.

### **Economics**

It is concerned with those aspects of human behaviour, and those institutions, which affect the use of scarce resources to produce and distribute goods and services to satisfy human wants.

### **Economic Evaluation**

A comparative analysis of two or more alternatives in terms of their costs and consequences.

### **Effectiveness**

The therapeutic consequences of a treatment in a real world conditions.

### **Efficacy**

The consequence (benefit) of a treatment under ideal and controlled clinical conditions, for example, in a clinical trial.

### **Efficiency**

Relates to output per unit cost of the resources employed. Resources are being used efficiently if a given output is produced at minimum cost, or

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maximum output is produced at a given cost.

**Equity** Fairness or justice.

**Externalities** Whenever an economic activity by one-agent influences the output or utility of another agent and this effect is not priced by the market and externality is said to exist.

**Fixed costs** Costs which do not vary with the level of output in the time period considered (usually one year).

**Health economics** Application of the theories, concepts and tools of economics to the topic of health and health care.

**Health-related quality of life** the impact on an individual's well being of their health, often encompassing physical, mental and psychosocial elements.

**Health state** A summary of an individual's health-related quality of life.

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- HYE** The Healthy Years Equivalent, a summary measure of health outcome analogous to the QALY in combining survival with quality of life, derived using a two-stage standard gamble technique.
- Incremental cost** The additional cost that one service or programme imposes over another, mutually exclusive, alternative.
- Incremental cost-effectiveness ratio (ICER)** The additional cost of producing an extra unit of outcome by one therapy compared with another.
- Indirect costs/productivity costs** Cost of productivity resulting from illness or treatment.
- Inflation** The tendency of the general price level to rise
- Inputs** Goods and services used in production, such as capital goods

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(buildings, equipment), labour, raw materials, etc.

**Intangible costs** The cost of pain and suffering as a result of illness or treatment.

**Marginal cost** The extra cost of one extra unit of product or service delivered.

**Net benefit (NB)** A summary of the difference between an intervention's mean incremental health effects ( $\text{E}$ , normally measured in QALYs) and its mean incremental costs ( $\text{C}$ ) relative to an alternative. The incremental NB can be expressed in monetary terms (the money value of  $\text{E}$  minus  $\text{C}$ ) or, less frequently, health terms. A positive NB implies that the ICER is within the threshold ICER.

**Opportunity cost** The benefit forgone from using a resource for one purpose as opposed to its best alternative use.

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<b>Outcomes</b>	The health effect of a certain process or output.
<b>Outputs</b>	The end result of production that is what is produced.
<b>QALY</b>	The Quality-Adjusted Life Year is the outcome of a treatment measured as the number of years of life saved, adjusted for the utility (quality of life).
<b>Scarcity</b>	The limited nature of economic resources in relation to the unlimited wants to employ and use them.
<b>Sensitivity analysis</b>	The assessment of the robustness of study results through systematic variation of key variables.
<b>Time trade-off</b>	A means of valuing health states on a 0-1 scale by asking individuals how many years in perfect health are equivalent to a given number of years in a less than perfect health state. Years in perfect health divided by years in the defined health state gives the value for that health state.

## Introduction to Health Economics

### Utility

A measure of the relative preference for, or desirability of, a specific level of health status or a specific health outcome. In terms, it is the satisfaction/pleasure derived from consuming some quantity of a good or service.

