

King Saud University
College of Business Administration
Department of Health Administration
Executive Master in Health Administration

EHHA 506 – Health Insurance Administration
Second Semester 1441/ 1442

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Demand for Health and Health Insurance

Learning Objectives

- Discuss the importance of **demand in management decision making,**
- Articulate why **consumer demand** is an important topic in healthcare,
- Apply **demand theory** to anticipate the effects of a policy change,
- **Use standard terminology** to describe the demand for healthcare products, and
- **Discuss the factors that influence demand.**

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Health Financing: The Macroeconomic Level

- **Financing health care** has evolved from personal payment at the time-of-service delivery to financing through health insurance (prepayment) by the employer and employee at the workplace.
- This has progressed in most industrialized countries towards governmental financing through social security or general taxation, supplemented by private and non-governmental organizations, and personal out-of-pocket expenditures.

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Health Financing: The Macroeconomic Level

- **Ultimately, every country faces the need for governmental funding** of health care either for the total population or at least for vulnerable groups such as the elderly and the poor, as in the USA, where governmental funding comes to nearly 50 percent of total health expenditures.
- **Government funding is necessary** also for services that insurance plans avoid or are inefficient in reaching, including as community-oriented services and groups at special risk, such as infants and women.

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Health Financing: The Macroeconomic Level

- **Health systems require financial resources to accomplish their goals. The major expenses of most health care systems are human resources, care at hospitals, and medications.**
- **In most tropical nations, health care financing is supplied by a mix of governmental spending, private (mostly out-of-pocket) spending, and external aid.**
- **For the low- and lower-middle-income nations, health care financing remains a significant challenge.**

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Health Financing: The Macroeconomic Level

- **Many upper-middle-income nations across Latin America, Africa, and Asia have been able to provide financing mechanisms for health that cover significant portions of their populations.**
- **These mechanisms both ensure access to health care and protect individuals against catastrophic debt for accessing health services.**
- **However, in low-income nations (the majority of which are in sub-Saharan Africa), financing is a major barrier to health care delivery.**

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Health Financing: The Macroeconomic Level

- **Health care financing in upper-middle- and high-income countries** is generally provided through health insurance schemes (often employment or union based) or governmental financing that is funded by general taxation.
- **Governmental financing is severely limited in low-income nations** due to lack of a significant tax base.
- **Health insurance is difficult to implement in these nations** due to the high burden of disease, lack of sufficient disposable income among the population, and difficulty creating large, diverse risk pools. Almost all currently implemented health insurance schemes in these countries require government subsidization to sustain them.

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Health Financing: The Macroeconomic Level

- **Out-of-pocket expenses** (i.e., private spending that is not pre-paid as part of an insurance program) for health comprise a large portion of health financing in most low-income countries.
- **These expenses often drive families into poverty** or are an insurmountable barrier to accessing needed health care services.
- **Higher-income countries tend to have fewer out-of-pocket expenses**, as more of the population is covered by pre-paid health insurance plans.

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Health Financing Systems

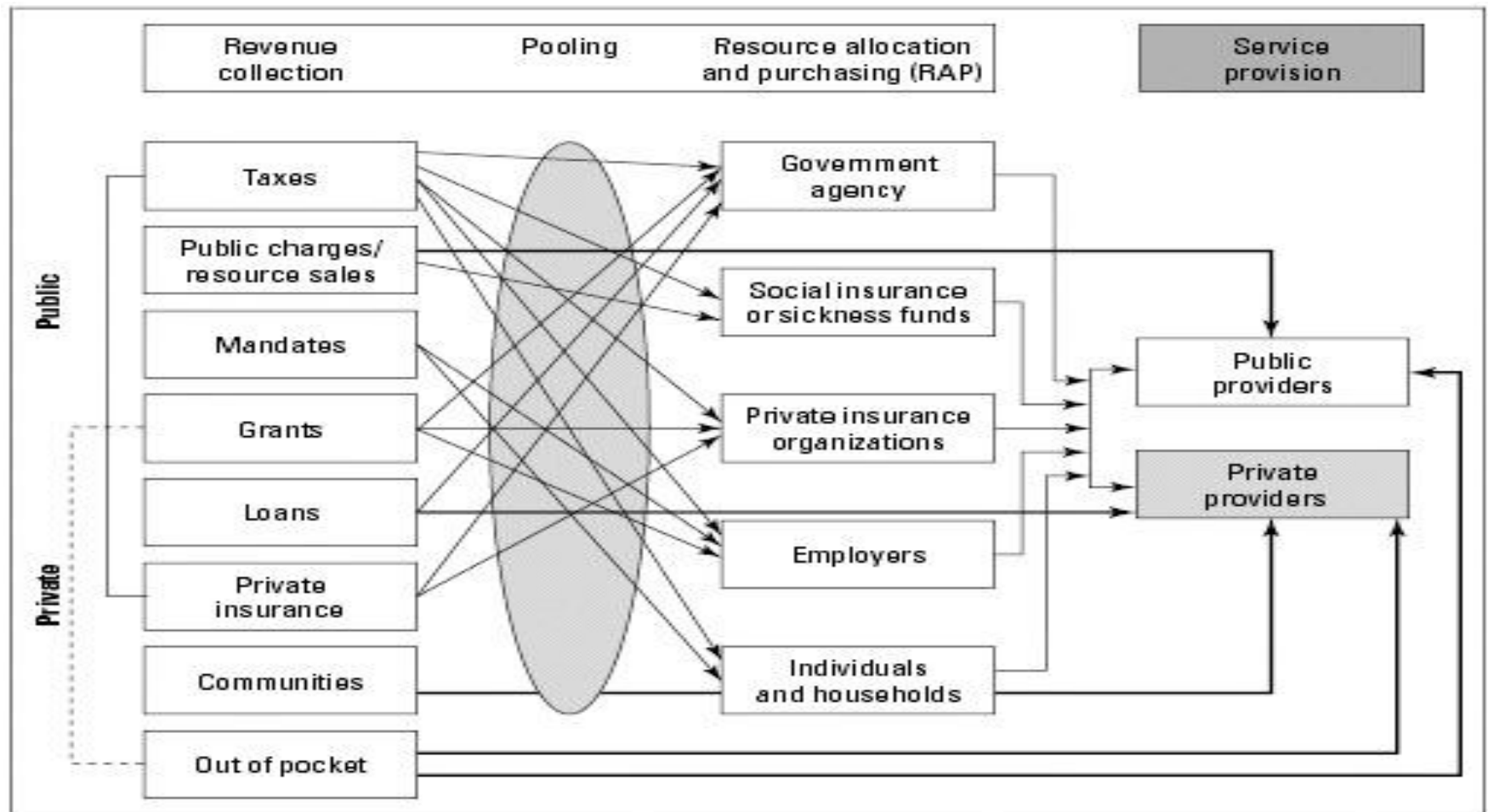
- **Health financing provides** the resources and economic incentives for the operation of health systems and is a key determinant of health system performance in terms of equity, efficiency, and health outcomes.
- **Health financing involves the basic functions** of revenue collection, pooling of resources, and purchase of interventions. *Figure 3-1.* illustrates these functions and their interactions.
- ***Revenue collection*** is how health systems raise money from households, businesses, and external sources.

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Health Financing Systems

- ***Pooling*** deals with the accumulation and management of revenues so that members of the pool share collective health risks, thereby protecting individual pool members from large, unpredictable health expenditures. Prepayment allows pool members to pay for average expected costs in advance, relieves them of uncertainty, and ensures compensation should a loss occur. Pooling coupled with prepayment enables the establishment of insurance and the redistribution of health spending between high- and low-risk individuals and high- and low-income individuals.
- ***Purchasing*** refers to the mechanisms used to purchase services from public and private providers.

Figure 3-1. Interactions among Revenue Raising, Risk Pooling, Resource Allocation, and Service Provision



Source: Authors.

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Health Financing Systems

- **In terms of health policy at the country level, these three financing functions translate into the following:**
 - **raising sufficient and sustainable revenues in an efficient and equitable manner to provide individuals with both a basic package of essential services and financial protection against unpredictable catastrophic financial losses caused by illness or injury.**
 - **managing these revenues to equitably and efficiently pool health risks; and,**
 - **ensuring the purchase of health services in an allocatively and technically efficient manner.**

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Health Financing Systems

- These financing functions are generally embodied in the following three stylized health financing models:
 - *national health service (NHS)*: compulsory universal coverage, national general revenue financing, and national ownership of health sector inputs
 - *social insurance*: compulsory universal coverage under a social security (publicly mandated) system financed by employee and employer contributions to nonprofit insurance funds with public and private ownership of sector inputs
 - *private insurance*: employer-based or individual purchase of private health insurance and private ownership of health sector inputs.

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Health Financing Systems

- **Although these models provide a general framework for classifying health systems and financing functions, they are not useful from a micro policy perspective because all health systems embody features of the different models.**
- **The key health policy issues are not** whether a government uses general revenues or payroll taxes, but the amounts of revenues raised and the extent to which they are raised in an efficient, equitable, and sustainable manner.
- **Similarly, nothing is intrinsically good or bad about public versus private ownership and provision.** The important issue is whether the systems in place **ensure access, equity, and efficiency.**

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Demand, Need, and Want

- *Demands are the quantities of various goods that people are willing and able to buy during some period, given the choices available to them.*
- **The concepts of need, want, and demand are overlapping but sufficiently different for each to require consideration. This is important specially in health care.**

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Demand, Need, and Want

- The term **need** is most often used in reference to professionally determined indications of biologic deviation from the normal state of health.
- Thus, the presence of worms may be considered a “**need**,” even though the individual or family involved may consider this to be a usual condition.
- The public, on the other hand, may express certain **wants** that have no recognized medical basis.

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Demand, Need, and Want

- **Some products are sought for** their cosmetic value: certain tonics are used for the sense of well-being they create, regardless of whether they produce any discernible physiologic benefit.
- **Demand represents** the subsets of wants that individuals are willing to act upon.
- **Demand therefore,** requires a willingness to sacrifice time, money, or goods in exchange for the product or service.

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Demand, Need, and Want

- **Economists concentrate on consumer demands** because “needs” is very normative and ambiguous concept.
- **Consumer decisions** are based on two sets of relative prices--market prices and demand prices.
- **Market prices are the prices sellers charge** for goods whether we buy or not; **demand prices** are the **relative values** that individuals subjectively place on having a bit more or less of a good.
- **Thus, demand price is the highest price that buyers are willing and able to pay** for a specific amount of a good or resource.

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Demand, Need, and Want

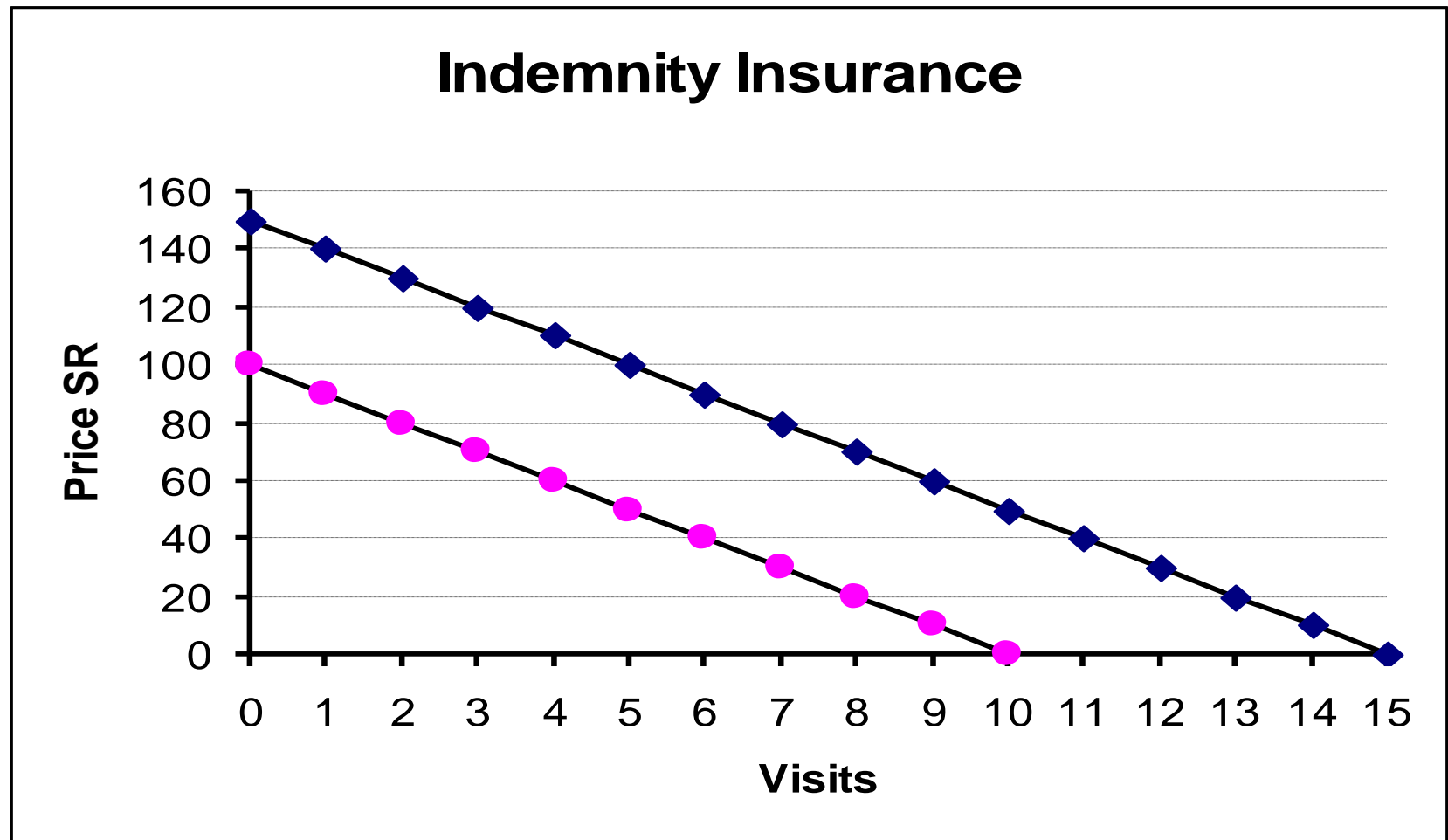
- **Opportunity cost** (*relative price*) is an economics term that refers to the value of what you have to give up in order to choose something else. When you hear the term "**opportunity cost**," you are hearing a fancy word for "**trade-off**."
- **Every time you make a choice**, there is a trade-off to consider. You must analyze what you are gaining as well as what you may be giving up. The most basic definition of opportunity cost is **the price of the *next best thing* you could have done had you not made your first choice.**

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The Law of Demand and Substitution

- **The law of demand:** *All else assumed equal, consumers purchase more of a good during a given time interval the lower its opportunity cost (relative price) and vice versa. **Figure 3-1.***
- **Simply put** people buy less of a good per period at higher prices than at lower prices.
- **We can also say** that the quantity demanded of an economic good varies inversely with its price.

Figure 3-1. The law of demand: *All else assumed equal, consumers purchase more of a good during a given time interval the lower its opportunity cost (relative price) and vice versa*



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The Law of Demand and Substitution

- **From this we can gather** that there is a negative relationship between the price of a good and the quantity that consumers demand or purchase.
- **This relationship occurs primarily because** as the relative price of a good falls, you will find it advantageous to substitute it for others where possible. Conversely, when a good becomes more expensive, you find substitutes for it.
- **This is known as the substitution effect** of a change in relative prices.

Demand for Health and Health Insurance

The Law of Demand and Substitution

- **Substitution occurs for several reasons, including the facet of the law of diminishing returns known as **the principle of diminishing marginal utility (satisfaction)**:**
- *The more you have of any good relative to others, the less you desire and are willing to pay for additional units of that good.*

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The Law of Demand and Substitution

- **A second reason** that purchases of a good rise when its price falls is that the purchasing power of your limited income increases, and you can buy more of the good while maintaining or even increasing your other purchases.
- **This is known as income effect of a price change**, but it is far less important than the substitution effect.

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The Law of Demand and Substitution

- **Other influences on Demand, Demand curves** reflect relationships between the prices and quantities of goods bought during a given period, but prices alone do not determine our purchases. Other influences generally fall into one of six categories:
 - **Tastes** and preferences;
 - **Income** and its distribution;
 - **Prices** of related goods (substitute goods, complementary goods);
 - **Number** and ages of buyers;
 - **Expectations** about prices, income, or availability;
 - **Taxes** and subsidies.

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The Theory of Insurance

- **Friedman and Savage (1948) and Ehrlich and Becker (1972)** viewed the **demand for insurance** as reflecting the maximum we would pay, over and above the **expected loss**, to avoid the consequences of the loss.
- The **expected loss** is the amount we would expect to pay, on average, if the event occurred many times.
- Thus, if we would have to pay \$20,000 every time, we flip a coin and “heads” occurs and pay \$0 whenever “tails” appears, then the expected loss for **100 flips** of our coin is **\$10,000 on each flip**.

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The Theory of Insurance

- The theory of the demand for insurance has been based on **expected utility** theory and an assumed preference for certain losses over uncertain ones of the same expected magnitude.
- The following is representative of this interpretation of **expected utility theory**:

*The purpose of any insurance policy is to convert an uncertain, but potentially large, loss into a certain, small loss. Such a conversion benefits the consumer if greater losses cause progressively larger **declines in utility** (that is, if there is **diminishing marginal utility of wealth**).*

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The Theory of Insurance

- **People buy insurance because they are risk-averse. Buying insurance allows a person to pay a certain known amount in order to transfer the risk of a much larger expenditure (in the case of an adverse event) to an insurer, known as a third-party payer.**
- **Firms sell insurance because they are paid to assume a risk that can be managed by spreading it over a large pool of the insured. Insurance markets exist where consumers are willing to pay enough to transfer risk to induce insurance companies to assume the risk.**

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The Theory of Insurance

What Is Utility?

- **Utility** is a term in economics that refers to the total **satisfaction** received from consuming a good or service.
- **Economic theories** based on rational choice usually assume that consumers will strive to **maximize** their **utility**.
- **The economic utility of a good** or service is important to understand, because it directly influences the demand, and therefore price, of that good or service.
- **In practice, a consumer's utility** is impossible to measure and quantify.

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The Theory of Insurance

- **The conventional treatment of the demand for health insurance has its genesis in the theories of *diminishing marginal utility and expected utility*, both of which were developed in relation to gambles.**
- **The *law of diminishing marginal utility* states that the first unit of consumption of a good or service (or income or wealth) yields more *utility* than the second and subsequent units, with a continuing reduction of utility for greater amounts.**
- **The *expected utility hypothesis* states that the utility from the expected value of a gamble will depend on the gamblers' risk appetite and exposure.**

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The Theory of Insurance

What Is Diminishing Marginal Utility?

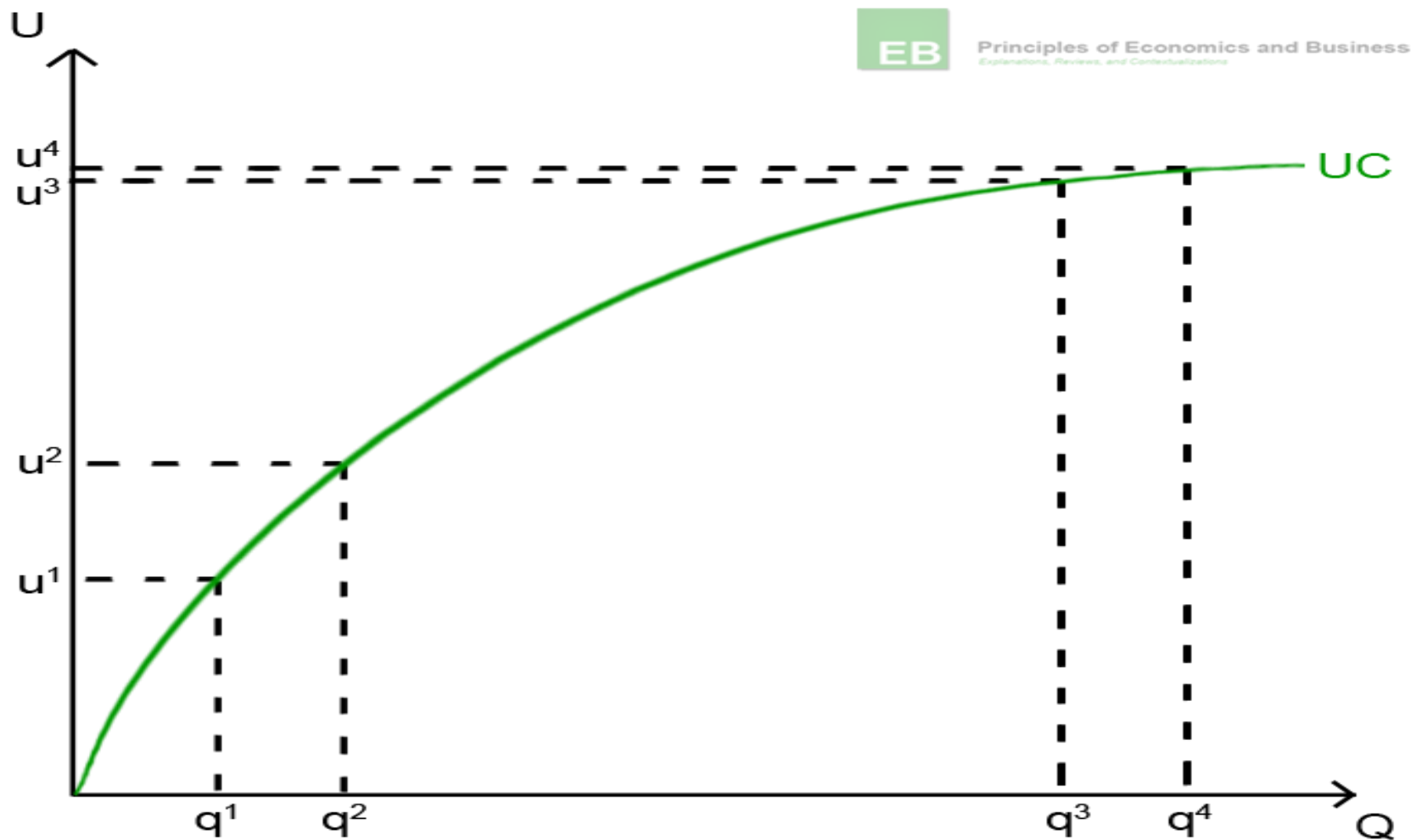
- **The Law of Diminishing Marginal Utility** states that all else equal as consumption increases the marginal utility derived from each additional unit declines.
- **Marginal utility** is derived as the change in utility as an additional unit is consumed. **Utility** is an economic term used to represent **satisfaction** or **happiness**.
- **Marginal utility is the incremental increase in utility** that results from consumption of one additional unit.

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The Theory of Insurance

- **Diminishing marginal utility** refers to the phenomenon that each additional unit of gain leads to an ever-smaller increase in subjective value.
- **For example**, three bites of candy are better than two bites, but the twentieth bite does not add much to the experience beyond the nineteenth (and could even make it worse).
- This effect is so well established that it is referred to as the “**law of diminishing marginal utility**” in economics, and is reflected in the concave shape of most subjective utility functions. *Figure 3-2.*

Figure 3-2. An important consequence of diminishing marginal utility is that subjective value changes most dynamically near the zero point, and quickly levels off as gains (or losses) accumulate.



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The Theory of Insurance

- **Risk-averse** describing someone who **dislike risk** unwilling to take risks or wanting to avoid risks as much as possible
- **Risk-prone** or **Risk-Loving** describing someone who is willing to take big risk to increase the potential return on investment.
- **Stochastic process**, in probability theory, a process involving the operation of chance. More generally, a **stochastic process** refers to a family of random variables indexed against some other variable or set of variables

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The Theory of Insurance

- **Health care expenses and lost labor earnings** due to illness represent a major **source of risk** for individuals and families.
- **Exposure to such risks is costly** in itself (if individuals are risk averse), but can also have long term effects especially on the poor.
- **Selling assets**, withdrawing children from school to care for ill parents, and exiting the labor market can leave low incomes families trapped in poverty.

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The Theory of Insurance

- **There are a number of types of risk** associated with health. There is the risk to one's health and life associated with illness or disease.
- **There is the additional risk** that if one undertakes treatment, it may or may not cure or alleviate symptoms of disease.
- **There are also the costs associated with the treatments** of illness and disease. A person can take action to reduce the risk of illness such as getting vaccines, avoiding unhealthy environments, and leading a healthy lifestyle. **One cannot insure against** bad health outcomes, though.

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The Theory of Insurance

- **Protection against the risks of ill health can be achieved** by reducing the size and variability of the underlying **stochastic process**, for instance by improving public goods that affect health outcomes (pollution, etc.), **and by spreading risks across individuals.**
- **People can insure themselves against some or all of the financial loss associated with the treatment of illness by buying health insurance policies.**

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The Theory of Insurance

- **People don't generally self-insure by saving money when they are well to use in times of illness. Much of this is due to the fact that people cannot save enough for catastrophic illnesses. Even people with extensive wealth buy insurance due to the fact that most people are "risk-averse."**
- **Economists define risk aversion as a characteristic of people's utility functions.**
- **Consumers' attitudes toward risk depends on the marginal utility of an extra dollar that may be different in different ranges of wealth.**

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The Theory of Insurance

- **If the marginal utility of wealth decreases as wealth increases, there is a small probability of a smaller amount of wealth when the probability weighted or expected value of the alternatives is equal.**
- **That is a situation of risk aversion.**
- **Risk-loving people gamble when gambling involves an unfair bet. Betting on lotteries would be rational behavior in a range of wealth when the marginal utility of an extra dollar is increasing.**

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The Theory of Insurance

- **In general, it is assumed that people are more likely to buy insurance to cover low probability events involving large losses than high-probability events that are associated with small losses, and they are more likely to buy lottery tickets when there is a low probability of winning a large amount.**

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Consumer theory

- ***Consumer theory* assumes** that if consumers are perfectly informed, they maximize their **utility** as a function of consuming various goods, given relative prices, their income and preferences.
- **Changes in prices and income influence** how much of different goods rational consumers will buy.
- **Health insurance is expected to be a normal good** with a positive income **elasticity of demand**, implying that the poor are less likely to insure.

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Consumer theory

- **A price increase of a substitute for insurance – such as user fees – is expected to raise the insurance demand, as is a decrease in insurance premium.**
- **However, due to uncertainty** about the unknown future health, insurance choice is **not made based on utility alone** but on consumers' expectation about factors such as their health status.
- **Thus, theories on decision-making under uncertainty** are generally used to describe insurance enrolment.

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Price Elasticity of Demand

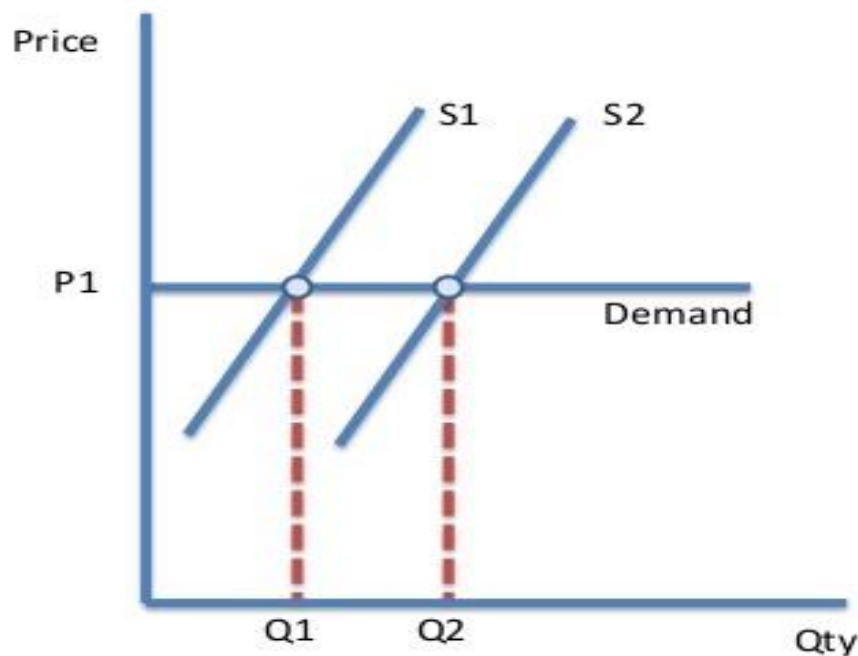
- *The price elasticity of demand* is the response of the quantity demanded to change in the price of a commodity.
- It is assumed that the consumer's income, tastes, and prices of all other goods are steady.
- It is measured as a percentage change in the quantity demanded divided by the percentage change in price.

The price elasticity of demand is the response of the quantity demanded to change in the price of a commodity.

Perfectly Elastic Demand ($P_{ed} = \text{infinity}$)

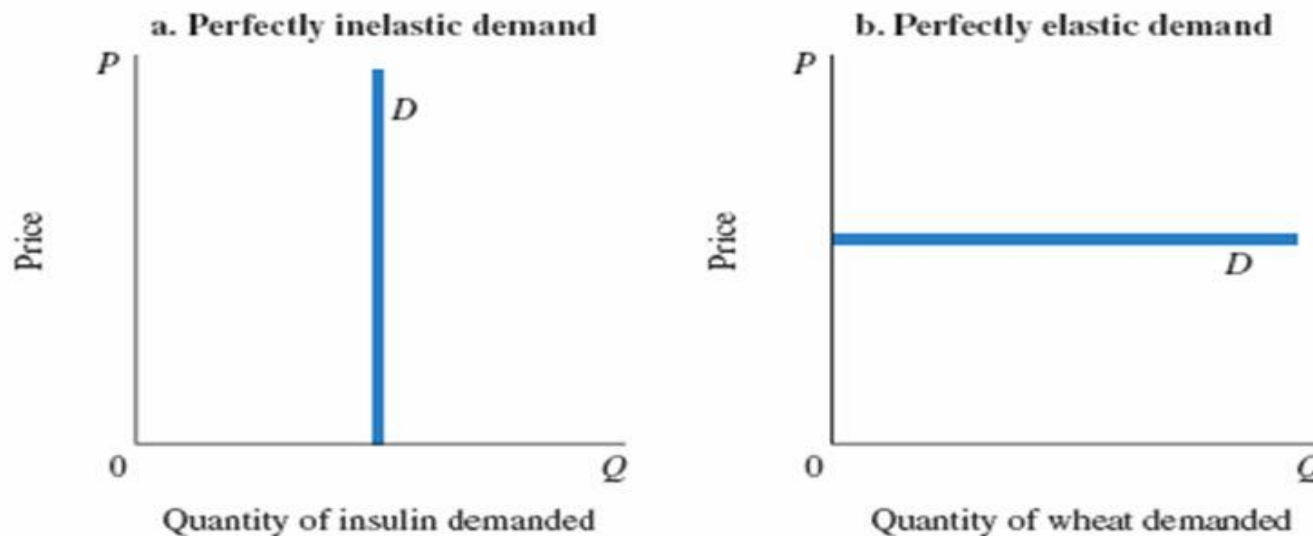
If the co-efficient of PED = infinity, then demand is **perfectly elastic** – there is one price at which consumers are prepared to pay

- If demand is **perfectly elastic**, a change in market supply (shown on the right as an outward shift of supply) will not lead to any change in the equilibrium price.
- This demand curve applies to highly **competitive markets** where no supplier has any “pricing power”



The price elasticity of demand is the response of the quantity demanded to change in the price of a commodity.

FIGURE 5.2 Perfectly Inelastic and Perfectly Elastic Demand Curves



Panel (a) shows a perfectly inelastic demand curve for insulin. Price elasticity of demand is zero. Quantity demanded is fixed; it does not change at all when price changes. Panel (b) shows a perfectly elastic demand curve facing a wheat farmer. A tiny price increase drives the quantity demanded to zero. In essence, perfectly elastic demand implies that individual producers can sell all they want at the going market price but cannot charge a higher price.

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- ***State-dependent utility theory*** A healthy person might optimistically expect to remain healthy in the near future, which has implications on the insurance choice.
- **The resulting insurance coverage may be below full loss coverage**, if the anticipated insurance pay-off is below the real loss in case of illness.
- **Hence, the anticipated need for medical care given the current *state*, and the *magnitude of the related insurance pay-off* in case of sickness will affect individuals' insurance demand.**

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- *State-dependent utility theory* suggests that consumers' **utility level** and tastes are influenced by their state, such as their **health or socio-economic status**.
- **Accordingly**, people may have different degrees of **risk aversion**, which could influence their insurance decision and the magnitude of their expected insurance pay-off. Most people insure when they are healthy.

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- *Regret and disappointment theories* are based on the assumption that people have a **loss aversion** and conservative preferences.
- **Individuals try to avoid regret** and disappointment and do not just consider the eventual outcome, as suggested by **Expected Utility (EU)** theory.
- They factor in their *feelings of regret, in case the decision would have been wrong, and of disappointment, if the outcome does not correspond to what they have expected.*

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Regret and disappointment theories

- **Hence, individuals may prefer to remain uninsured because they might regret their decision, or be disappointed if they do not benefit from an insurance payout; or they insure to avoid feelings of regret from falling ill while uninsured.**
- **Regret and disappointment theory may be combined with state-dependent utility theory: an individual in a less fragile health state may factor in a ‘smaller amount of regret’ when deciding whether to insure.**

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Poverty literature

- **The *poverty literature* describes additional concepts that influence decision-making, namely *time preferences* and *poor households' risk aversion against risky investments*.**
- **This literature suggests that households are expected to become increasingly risk averse as they move closer to poverty, as any further drop in income can push them below the survival point.**

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Poverty literature

- **Poor households who are more likely to have credit constraints in the future may be more willing to sacrifice current income and insure in order to have less risk in the future.**
- **According to concepts of time preference, those with a higher value for future protection than current consumption are more likely to purchase insurance.**
- **On the other hand, the poor might not insure, as out of necessity they may have to choose present over future consumption.**

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The Theory of Insurance

- Two points are important here.
- **First**, the **risk premium** is the measure of our willingness to pay for insurance. It is the amount over and above the **expected loss** that we are willing to pay to avoid the consequences of the loss. **This is the reason why insurance can exist.** Insurers must pay to settle claims; claims are the expected losses. If insurers are to cover administrative and marketing costs, and make at least a normal profit, they have to collect something over and above the expected loss (**Loading Fee**). The presence of a (big enough) **risk premium** allows this to occur.

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The Theory of Insurance

- **Second**, the risk premium reflects *the most* that we are willing to pay. If the insurance market is competitive, we may end up paying much less than what we are willing to pay for coverage, just as we often pay much less than what we are willing to pay for a cup of hot coffee. **Not everyone has the same degree of risk aversion.** Most of us are at least somewhat uncomfortable dealing with risk, others are very uncomfortable, and some love it. **Thus, in principle, each of us has our own unique total utility curve like that shown in *Figure 3-1*.**

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The Theory of Insurance

To summarize: This simple model is the basis of the demand for health insurance. **In the absence of employers, tax subsidies, and the like**, we expect to see four sorts of behavior:

- People who are **more risk averse** will buy more health insurance.
- People will be **more likely to buy insurance** for events that have large financial consequences.
- People will be **less likely to buy insurance** for events that are very unlikely or very likely to occur.
- People will be **less likely to buy insurance** as their wealth position increases.