CHAPTER 1 LECTURE – ANALYZING ECONOMIC PROBLEMS

ECONOMICS can be defined as the study of how society allocates its scarce (limited) resources to satisfy unlimited wants.

We look at choices and try to estimate the expected benefits and costs, and we make decisions. We also try to understand the consequences of some actions, those consequences that are not so apparent in the first place. Think of some examples.

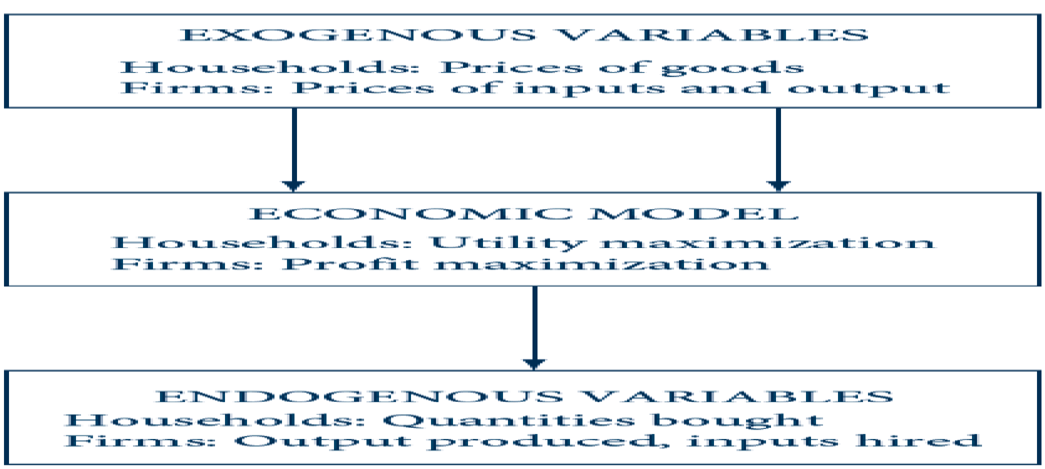
MICROECONOMICS studies the economic behavior of individual economic decision makers, such as a consumer, a worker, a firm, or a manager. It also analyzes the behavior of individual households, industries, markets, labor unions, or trade associations.

HOW TO STUDY MICROECONOMICS

Any model, whether it is used to study chemistry, physics, or economics, must specify what variables will be taken as given in the analysis and what variables are to be determined by the model. This brings us to the important distinction between exogenous and endogenous variables.

An **exogenous variable** is one whose value is taken as given in a model. In other words, the value of an exogenous variable is determined by some process outside the model being examined.

An **endogenous variable** is a variable whose value is determined within the model being studied.



No matter what the specific issue is—coffee prices in Qatar, or decision making by firms on the Internet— microeconomics uses the same three analytical tools:

- **Constrained optimization**
- **Equilibrium analysis**
- **Comparative statics**

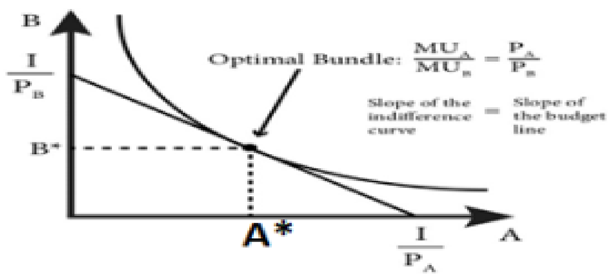
CONSTRAINED OPTIMIZATION

Economics is the science of constrained choice. The tool of **constrained optimization** is used when a decision maker seeks to make the best (optimal) choice, taking into account any possible limitations or restrictions on the choices. We can therefore think about constrained optimization problems as having two parts, an objective function and a set of constraints. An **objective function** is the relationship that the decision maker seeks to "optimize," that is, either maximize or minimize.

For example, a consumer may want to purchase goods to maximize her satisfaction. In this case, the objective function would be the relationship that describes how satisfied she will be when she purchases any particular set of goods. Similarly, a producer may want to plan production activities to minimize the costs of manufacturing its product.

The **constraints** in a constrained optimization problem represent restrictions or limits that are imposed on the decision maker.

Examples of Constrained Optimization



(a) What is the objective function for this problem?

(b) What is the constraint?

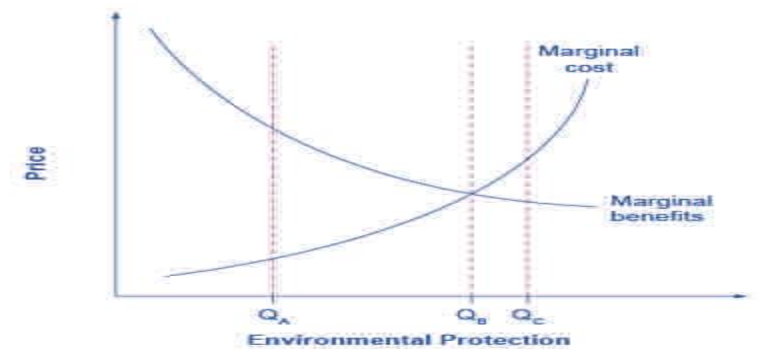
(c) Which of the variables in this model (I, P_A, P_B. A, and B*)* are exogenous? Which are endogenous? Explain.

Explain the Solution

Marginal Reasoning and Constrained Optimization

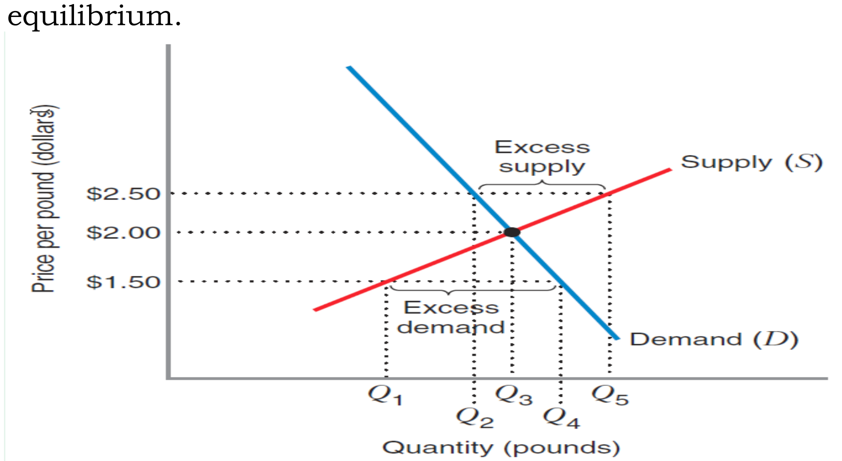
The solution to any constrained optimization problem depends on the *marginal* impact of the decision variables on the value of the objective function. The term *marginal* in microeconomics tells us how a *dependent variable* changes as a result of adding one unit of an *independent variable.*

Marginal cost measures the *incremental impact* of the last unit of the independent variable (output) on the dependent variable (total cost).



EQUILIBRIUM ANALYSIS

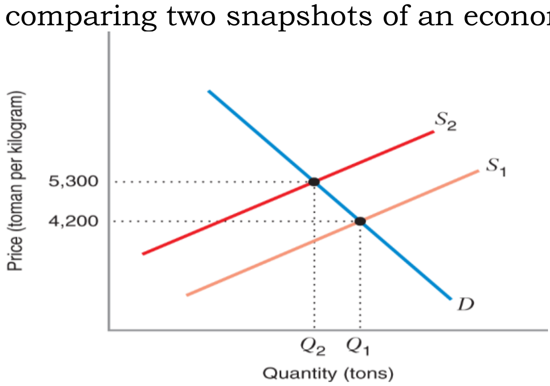
A second important tool in microeconomics is the analysis of *equilibrium*, a concept found in many branches of science. An **equilibrium** in a system is a state or condition that will continue indefinitely as long as exogenous factors remain unchanged—that is, as long as no outside factor upsets the equilibrium.

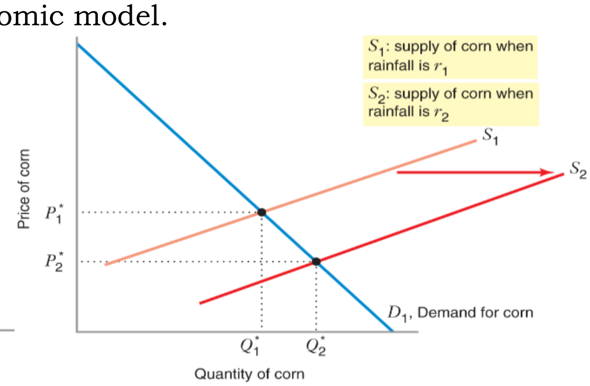


You should be able to explain how the market moves to equilibrium if it is out of equilibrium**.**

COMPARATIVE STATICS

Our third key analytical tool, **comparative statics** analysis, is used to examine how a change in an exogenous variable will affect the level of an endogenous variable in an economic model. Comparative statics analysis can be applied to constrained optimization problems or to equilibrium analyses. Comparative statics allows us to do a “before and- after” analysis by comparing two snapshots of an economic model.





Looking again at the Cost-Benefit Approach - If the benefit of an activity exceeds its cost, do it.

We look at the concept of **Reservation Price**. The reservation price of activity x: the price at which a person would be indifferent between doing x and not doing x. Another way to look at this is the price for an asset above which a buyer is not willing to pay and/or below which a seller is not will to take. This tension between the buyer wanting a low price and the seller wanting a high price helps create the market price for the asset.

We will emphasize a model called the **"Perfectly Competitive Market Model."** This model achieves **"allocative efficiency,"** that is, it allocates scarce resources in such a way that social welfare is maximized. We have to admit, however, that "social welfare" is very narrowly defined, and that the perfectly competitive market model does not assure equity in the distribution of goods and services.

POSITIVE AND NORMATIVE ECONOMICS ONCE AGAIN

Positive Economics- Deals with objective or scientific explanations of the working of the economy. Emphasis here is on EXPLANATION with OBJECTIVITY.

Example: 'If a tax is imposed on a good, its price will tend to rise.'

Normative Economics - Offers prescriptions or recommendations based on personal value judgements. The emphasis here is more SUBJECTIVE, or what we think OUGHT to be.

Example: 'A tax SHOULD be imposed on tobacco to discourage smoking.'

We are going to develop some models of the "market" system. The market system operates fundamentally via prices to solve the questions <u>what</u>, <u>how</u>, and <u>for whom</u> in a context of scarcity.

CETERIS PARIBUS (assumption) - Translated from the Latin as all other things being equal or holding everything else constant.

Ceteris paribus example - “other things being equal”. An analysis is conducted whereby one variable is changed while all other parameters are assumed stable.

For example, given the following functional relationship: $z = F(x_1, x_2, x_3, \ldots, x_n)$

Then the change in the dependent variable z given a change in the independent variable x_1 is:

$\frac{\partial z}{\partial x_1} = \frac{\partial F}{\partial x_1} = F_1$ So if:

a. $F_1 < 0$, a Δx_1 has a negative impact on z.
b. $F_1 > 0$, a Δx_1 has a positive impact on z.

$\frac{\partial z}{\partial x_1}$ is the partial derivative of variable z with respect to x_1; it relates the change in z given a change in x_1, all other variables, i.e., $x_2, x_3 \ldots\ldots, x_n$, remaining stable, i.e., *ceteris paribus*.