

# Engineering Economics

**Md. Roni Hossain**  
**Assistant Professor**  
**Department of Economics**  
**Jahangirnagar University**

# **Lecture 1**

## **The Issues, Problems and Methods of Economics**

# Engineering Economics

## ❑ Engineering Economics

- Economics is defined as the study of allocation of scarce resources among unlimited ends (or wants).
- Our wants are unlimited or at least increasing ever and to satisfy all these wants, we need unlimited supply of productive resources which could provide necessary goods and services to the community.
- However, resources are scarce i.e. limited in supply and obtained at some cost. In other words, resources are scarce in relation to its needs.

# Engineering Economics

## ❑ Engineering Economics

- Engineering economics deals with the methods that enable one to take economic decisions towards minimizing costs and/or maximizing benefits of project implementation.
- Engineering economics involves the systematic evaluation of the economic merits of proposed solutions to engineering problems.
- To be economically acceptable (i.e. affordable), solutions to engineering problems must demonstrate a positive balance of long-term benefits over long-term costs.

# Engineering Economics

## ❑ Engineering Economics

- All engineering decisions involve number of feasible alternatives or options. These feasible alternatives must be properly evaluated before implementing them.
- The products or services generated should use optimized utilization of various resources so that cost of production is not high, affordable to users and compete with similar product and services of competitors in the market.

# Classification of Economics

- The field of economics is traditionally divided into two broad subfields.
  - **Microeconomics** and
  - **Macroeconomics**
- Microeconomics is the study of how households and firms make decisions and how they interact in specific markets.
- On the other hand, Macroeconomics is the study of economy wide phenomena.
- A microeconomist might study the effects of rent control on housing in New York City, the impact of foreign competition on the U.S. auto industry, or the effects of minimum wage law on workers' welfare.

# Classification of Economics

- In contrast, a macroeconomist might study the effects of borrowing by the federal government, the changes over time in the economy's rate of unemployment, or alternative policies to raise growth in national living standards.
- More specifically microeconomics is the branch of economics that studies decision-making by a single individual, household or firm.
- On the other hand, macroeconomics is the branch of economics that studies decision-making for the economy as a whole.

# Economic Models

## ❑ The Circular-Flow Diagram

- To understand how the economy works, we need a model that explains, how the economy is organized and how participants in the economy interact with one another.
- The circular-flow diagram is a visual model of a simple economy that shows how dollars flow through markets among households and firms.



# Economic Models

## ❑ The Circular-Flow Diagram

- The economy is simplified to include only two types of decision makers

### ❑ Firms

- Produce and sell goods and services
- Hire and use factors of production

### ❑ Households

- Buy and consume goods and services
- Own and sell factors of production

# Economic Models

## ❑ The Circular-Flow Diagram

- Households and firms interact in two types of markets.

### ❑ Markets for Goods and Services

- Firms sell
- Households buy

### ❑ Markets for Factors of Production

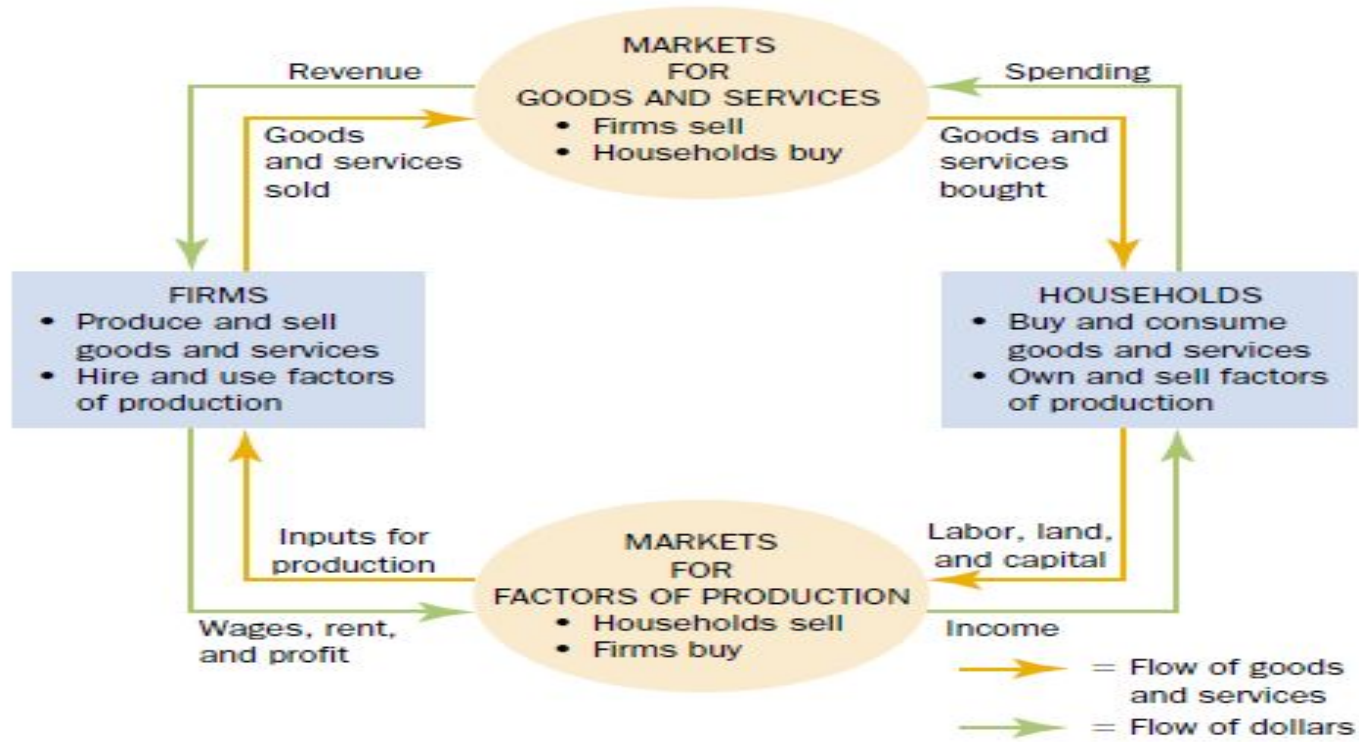
- Households sell
- Firms buy

### ❑ Factors of Production

- Inputs used to produce goods and services
- Land, labor, capital, entrepreneurship.

# Economic Models

## ❑ The Circular-Flow Diagram



# Economic Models

## ❑ The Circular-Flow Diagram

- The circular flow diagram offers a simple way of organizing all the economic transactions that occur between households and firms in the economy.
- The inner loop of the diagram shows the flows of inputs and outputs.
- The households sell factors to the firms in the markets for factor of production.
- The firms then use these factors to produce goods and services which in turn are sold to households in the markets for goods and services.

# Economic Models

## ❑ The Circular-Flow Diagram

- The outer loop of the diagram shows the corresponding flow of dollars.
- The households spend money to buy goods and services from the firms. The firms use some of the revenue to pay for the factors of production which in turn owned by the households.
- Hence spending on goods and services flows from households to firms and in the form of wages, rent and profit flows from firms to households.

# Basic Three Economic Problems

## ❑ Basic Three Economic Problems

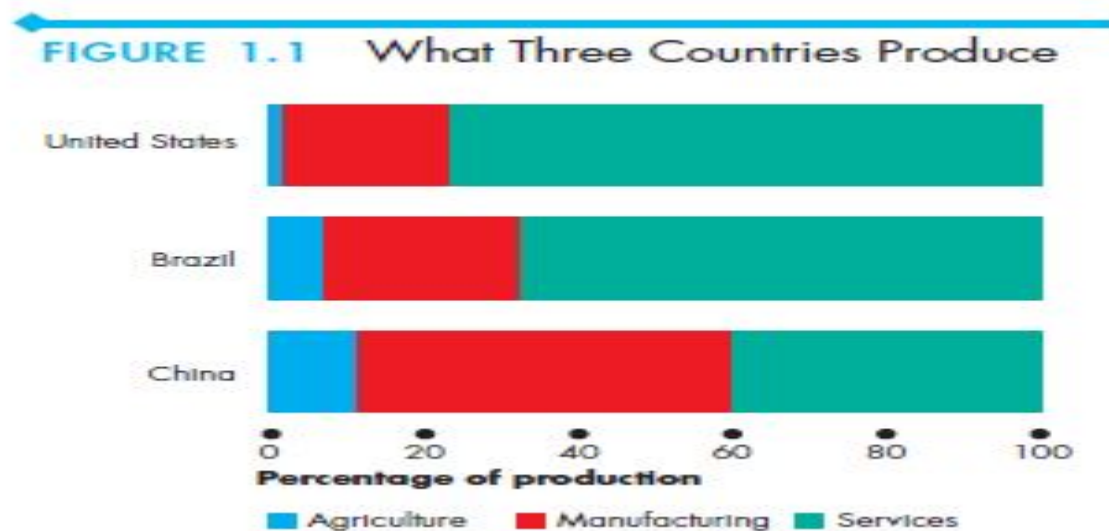
- The basic three economic problems are,
  - ❑ What to produce?,
  - ❑ How to produce?, and
  - ❑ For whom to produce?

## ❑ *What to Produce*

- What we produce varies across countries and changes over time.

# Basic Three Economic Problems

## □ *What to Produce?*



## □ *What determines these patterns of production?*

# Basic Three Economic Problems

## □ *How to Produce?*

- Goods and services are produced by using productive resources that economists call factors of production.
- Factors of production are grouped into four categories:
  - Land
  - Labor
  - Capital
  - Entrepreneurship

## □ *What determines the quantities of factors of production that are used to produce goods and services?*



# Basic Three Economic Problems

## □ *For whom to Produce?*

- Who consumes the goods and services that are produced depends on the incomes that people earn.

## □ *What determines the earnings of factors of production?*

- People with large incomes can buy a wide range of goods and services. People with small incomes have fewer options and can afford a smaller range of goods and services.
- People earn their incomes by selling the services of the factors of production they own:
  - Land earns rent.
  - Labor earns wages.
  - Capital earns interest.
  - Entrepreneurship earns profit.

# Basic Three Economic Problems

❑ ***For whom to Produce?***

❑ ***Which factor of production earns the most income?***

- **Knowing how income is shared among the factors of production doesn't tell us how it is shared among individuals.**
- **And the distribution of income among individuals is extremely unequal.**
- **Economics provides some answers to all these questions about what, how, and for whom goods and services are produced and much of the rest of this course will help you to understand those answers.**

# Economic Systems

## ❑ Market, Command, and Mixed Economies

- *What are the different ways that a society can answer the questions of what, how, and for whom?*
- Different societies are organized through alternative economic systems, and economics studies the various mechanisms that a society can use to allocate its scarce resources.
- We generally distinguish two fundamentally different ways of organizing an economy. One is command economy or socialism and the other is market economy or capitalism.

# Economic Systems

## ❑ **Market, Command, and Mixed Economies**

- **A market economy is one in which individuals and private firms make the major decisions about production and consumption.**
- **A system of prices, of markets, of profits and losses, of incentives and rewards determines what, how, and for whom to produce.**
- **Firms produce the commodities that yield the highest profits (the what ) by the techniques of production that are least costly (the how ).**
- **Consumption is determined by individuals' decisions about how to spend the wages and property incomes generated by their labor and property ownership (the for whom ).**

# Economic Systems

## ❑ **Market, Command, and Mixed Economies**

- **In a market economy, the government keeps its hands off economic decisions.**
- **So in market economy, decisions are made in markets, where individuals or enterprises voluntarily agree to exchange goods and services, usually through payments of money.**

# Economic Systems

## ❑ **Market, Command, and Mixed Economies**

- **By contrast, a command economy is one in which the government makes all important decisions about production and distribution.**
- **In a command economy, the government owns most of the means of production (land and capital); it also owns and directs the operations of enterprises in most industries.**
- **Govt. is the employer of most workers and tells them how to do their jobs; and it decides how the output of the society is to be divided among different groups of people.**

# Economic Systems

## ❑ **Market, Command, and Mixed Economies**

- **In short, in a command economy, the government answers the major economic questions through its ownership of resources and its power to enforce decisions.**
- **No contemporary society falls completely into either of these polar categories. Rather, all societies are mixed economies, with elements of market and command.**

# Readings

1. **Michael Parkin - Microeconomics, 10th Edition, Chapter 1.**
2. **N. G. Mankiw- Principles of Microeconomic, Chapter 2.**
3. **Lecture Note 1**





**Thank You**