

Lesson 1

Intro & Math

1. **What is Economics?**
2. **What is Microeconomics?**
3. **Basic Principles**
4. **PPF Model**
5. **Supply-Demand Model:**
6. **Math Review**

1. **What is Economics?**

Study of the allocation of scarce resources among alternative uses.

- decisions made by many

Resources? (capital, land, labor, entrepreneurship)

How are they allocated to different uses?

Direct allocation or market

2. **What is Microeconomics?**

Study of economic choices individuals and firms make and of how these choices create markets.

Tools - models – simplifications of reality,

- make simplifying assumptions to reach general conclusions, answers to the question (human body, map, airplane)

Testing, verifying models, how good they are:

- testing assumptions – rationality, empirically
- testing predictions – “as if”, M. Friedman ‘53

Positive and normative economics

We are trying to get the “facts”

3. Basic Principles

- scarcity
- opportunity costs - increasing, real terms

Application 1.

Scarcity in evolution – b/c of scarcity you have costs and benefits and you compare them.

Birds – how long they fly depends on availability of food and distance

- when the level of food falls they stop hunting. Why?

1. **PPF Model**

- PPF – application of opportunity costs and general equilibrium, supply side

Assume: technology constant, 2 goods, all resources used

- opportunity cost: what you have to give up to get something (one, the best)
- increasing with the amount of good produced – the other side of the law of diminishing returns (explanation: all resources are not equally productive in any use)
- compute opportunity costs from the curve

- shape of the curve: convex – increasing
linear – constant
concave - decreasing

2. **Supply-Demand Model:**

- 1776 A. Smith The Wealth of Nations – saw the role of prices – labor-based theory of price
- price is relative

- D. Ricardo – international trade and industrial production,
Diminishing returns – new and less fertile land brought into cultivation
What is the price equal to?
Subsistence argument

- A. Marshall “Principles of Economics” – relative price of food and other necessities did not rise in 19th century
- law of diminishing returns + “law of diminishing benefits” – marginalism, forces of supply and demand simultaneously determine the price – market equilibrium

- non-equilibrium outcome: price control – price floor (min price) and price ceiling (max price)
- Example: oil shortages in 70’ ies, NY rent control, min wage

-change in market equilibrium: **change in demand** or **supply** results in change of equilibrium price and in the change in **quantity** demanded and supplied

- shifters of demand: income, preferences, prices of other goods (substitutes and complements), number of buyers

- shifters of supply: costs, technology, number of sellers

3. Math Review

- algebra – elements, variables

- relationship between variables – functions

I Functions of one variable

$Y = f(X)$ – general

a. Linear

$$Y = a + bX$$

$$Y = 3 + 2X$$

- intercept
- slope: $\Delta Y / \Delta X$ (calculus)
- changes in intercept
- changes in slope (bigger – steeper, infinite, 0)
- slopes and units of measurement

b) non-linear

$$Y = -X^2 + 15X$$

X	X	Y	Y
-3		-54	
-2		-34	
-1		-16	
0		0	
1		14	
2		26	
3		36	
4		44	
5		50	
6		54	

- impact of X on Y – marginal and average

How much each additional worker produces ?

- marginal effect: slope of the function- Y / X

slope changes – diminishes – law of diminishing returns – diminishing marginal effect

How much on average each worker produces?
- average effect – Y/X (slope of the cord)

II Functions of 2 variables

a) $Y = f(X,Z)$

$Y = X * Z$

X	Z	Y
1	1	1
1	2	
1	3	
1	4	
2	1	
2	2	
2	3	
2	4	
3	1	
3	2	
3	3	
3	4	
4	1	
4	2	
4	3	
4	4	

b. Simultaneous equations

$$X + Y = 3$$

$$X - Y = 1$$

- solution – equilibrium point
- change in X only – no solution
- change in equilibrium ($X + Y = 5$) – the whole line shifts

HW 1: There are 4 Applications in Ch 1.

Choose one, application and use economic concept(s) you know to show how they are illustrated in the application (3-4 sentences)

Do: Problems 1.3, 1.5, 1.6, 1.10

HW is due on Tu, Sept 9, before the class. You need to be in the class to submit HW.

Late HWs are not accepted.