ECONOMICS I

BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS

Lecturer: Krisztina Sőreg
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Introduction

Krisztina Sőreg

Status, position: PhD Candidate, University Lecturer
Profession: Economist in International Business
Research field: Economic Growth and Development

Courses: Microeconomics, Macroeconomics, Management, Sectoral Analysis of Global Markets

Lecturing experience: National University of Public Service, Milton Friedman University, University of Sopron, Budapest University of Technology and Economics

List of publications:
https://m2.mtmt.hu/gui2/?type=authors&mode=browse&sel=10057980

E-mail: krisztina.soreg@gmail.com

Requirements and Literature

Aim of the subject: to introduce the basic elements of standard economic thinking and to embed it into the theory of economic thoughts.

Credit value: 2 credits

Subject acceptance: regular presence on lectures + completing min. 50% of both written tests

TEST DATES:
- 1st test: **28th March 2019**
- 2nd test: **16th May 2019**
- Repetitive tests: **23rd May 2019**

Literature:

N. Gregory Mankiw (2015): Principles of Microeconomics

Recommended readings:

Hal R. Varian: Intermediate Microeconomics

David A. Besanko, R. R. Braeutigam: Microeconomics (4th Edition)

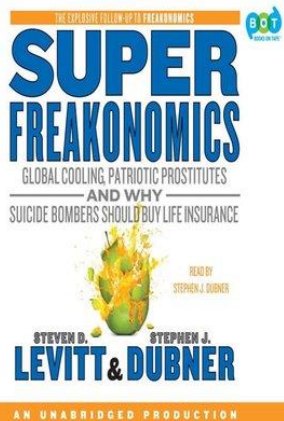Levitt-Dubner: SuperFreakonomics

Grades: **40-54%: 2**
            55-69%: 3
            70-84%: 4
            85%- : 5

Materials:
http://en.kgt.bme.hu/courses/bsc/BMEGT301004

TIMELINE OF THE SEMESTER

| Week	Topic	Date
1.	Introduction – Basic Definitions of Microeconomics	7th Febr 2019
2.	Market Theory: The Basics of Supply And Demand	14th Febr 2019
3.	Markets and Welfare	21st Febr 2019
4.	Consumer Theory	28th Febr 2019
5.	Production and Cost Theory	7th Mar 2019
6.	**1st Test**	**14th Mar 2019**
7.	**SPRING BREAK**	**21st Mar 2019**
8.	*Sketch Design week*	*28th Mar 2019*
9.	Firm Behaviour and the Organization of Industry: Competitive Markets & Monopolistic Competition	4th Apr 2019
10.	Firm Behaviour and the Organization of Industry: Monopoly	11th Apr 2019
11.	Firm Behaviour and the Organization of Industry: Oligopolistic Markets	18th Apr 2019
12.	The Economics of Labour Markets	25th Apr 2019
13.	Externalities, The Economics of the Public Sector	2nd May 2019
14.	**2nd Test**	**9th May 2019**
15.	*Draughting Week*	*16th May 2019*
16.	*Re-Submission: Repetitive Tests*	*22nd May 2019*

Section I

I. Introduction: What is Economics?
II. Circular Flow Diagram
III. Rationality and Adam Smith

What is Economics Good For?

SKIP ECONOMICS CLASS???
THE OPPORTUNITY COST IS TOO DAMN HIGH
mgflip.com

- Why is Starbucks coffee so expensive?
- What's the best way to catch a terrorist?
- What is the price of students' class attendance?
- Did TV cause a rise in crime?
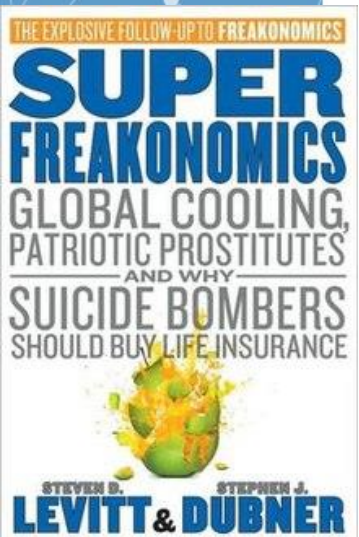- What do hurricanes, heart attacks, and highway deaths have in common?
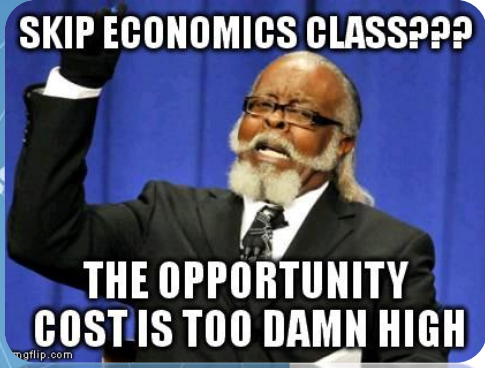
Steven D. Levitt & Stephen J. Dubner
# SuperFreakonomics

Table of Content

Am I a Homo Oeconomicus?

- o „A theoretical human being who rationally calculates the costs and benefits of every action before making a decision"
- o „Having the infinite ability to make rational decisions"

- ✓ Professional lier → self-interest at its peak!
- ✓ Constantly deceives everyone → living by utility functions
- ✓ Chameleon nature → following preferences in any situation
- ✓ Prejudices in all spheres → economic boundary conditions
- ✓ No direct answers → „it depends!"
- ✓ Takes away and doesn't give anything → profit maximization and cost minimization
- ✓ **Outcome: homo oeconomicus = sociopath?**

HOMO OECONOMICU$

Operating with Models

Exogenous variables

Model

Endogenous variable
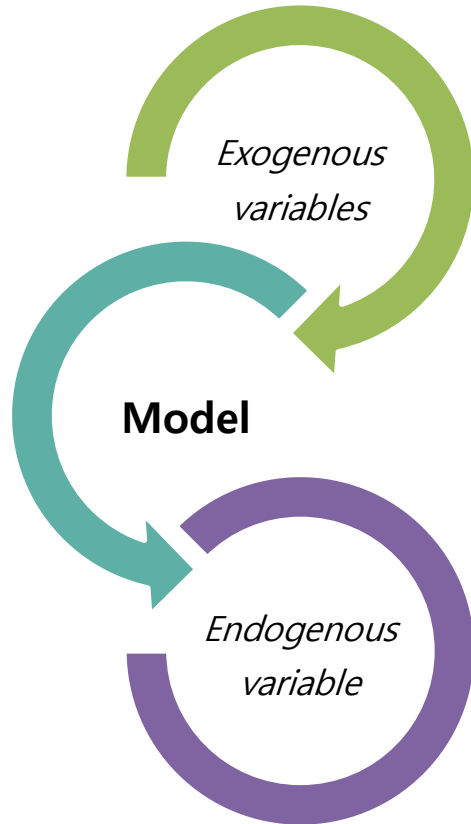
Economic models: simplified theories showing the key relationships among economic variables.

Exogenous: its value is taken as given in the analysis of an economic system. *E.g. price of products, produced quantity*

Endogenous: its value is determined within the given economic system. *E.g. income, population*

Economic Analysis: Positive and Normative Statements

„Minimum-wage laws cause unemployment."
„The government should raise the minimum wage."

o **Positive statements** are descriptive → they make a claim about how the world is.

o **Normative statements** are prescriptive. They make a claim about how the world ought to be.

Ceteris Paribus: 'all other things remaining equal' → something will occur as a result of something else if nothing else changes.

If demand drops - ceteris paribus - then prices will fall to meet demand.

If demand drops, all other things being equal, prices will too.

What is Economics?

o **Economy**: oikonomos → the "one who manages a household"
o **Economics**: a social science that examines <u>how people choose among the alternatives available</u> to them:

      - social: it involves people and their behavior

      - science: it uses a scientific approach in its investigation of choices

o All choices mean that one **alternative** is selected over another.

Selecting:
- Scarcity
- Choice
- Opportunity cost
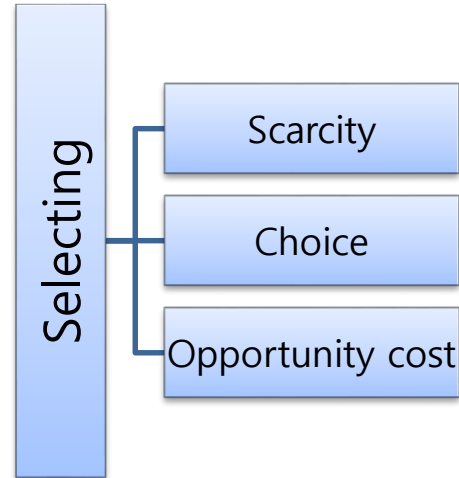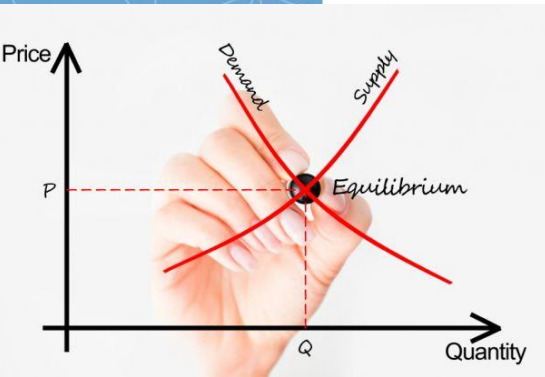
Basic Questions of Economics

What goods and services will be produced and in what quantities?

Who will produce the goods and services and how?

Who will receive the goods and services?

Studying the behavior of individual economic units

What is Economics?

Three basic principles

1. Wants and <u>desires</u> of human beings are <u>unlimited</u>.
2. Means or <u>resources</u> needed to obtain desired goods and services are <u>limited</u>.
3. Science of economics: how to best allocate limited resources in a manner that comes closest to fulfilling unlimited wants.

Economics studies the way in which societies use their scarce resources to efficiently produce goods and services to be distributed among individuals.

A science devoted to the study of greedy people → people normally act as if they are unhappy, and are focused on their own self- interests.

Basic Models of Economics

Neoclassical Model

1. Market actions driven by **prices**;
2. **Prices move freely** & reflect the current status of the market;
3. **Flexible price system** → stable equilibrium: prices don't move, actors are in optimal position;
4. **Total empoyment**: movement of wages ensures the balance of labour market;
5. Role of state: minimal → to ensure the conditions of equilibrium (full employment) → **passive economic policy**

Keynesian Model

1. **Insufficient demand** → demand should be increased;
2. The state is also a consumer;
3. Private sector is not capable of generating sufficient demand;
4. **Unemployment** is current, prices are rigid;
5. State interventions are needed;
6. **Active role of the state**: equilibrium through the economic role of the state

The Phillips Curve

Japan Phillips Curve, 1982-2013
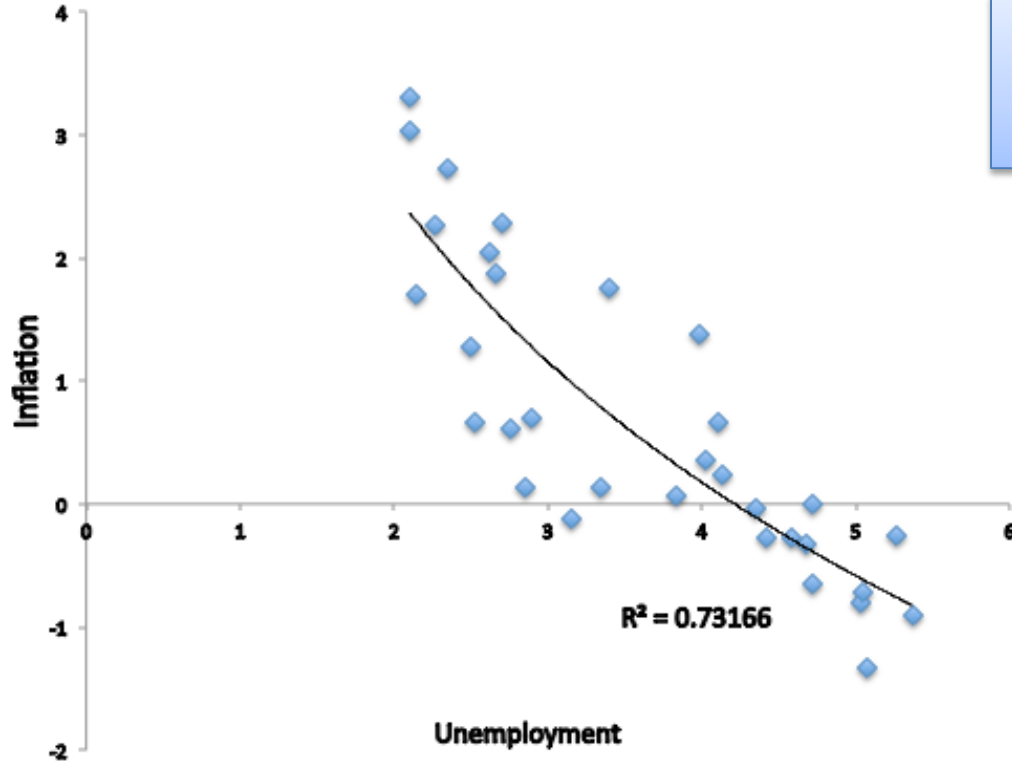
Keynesian assumption: Negative relation between inflation and unemployment

Economic growth → inflation → more jobs and less unemployment

Oil crisis: Fuel and commodity prices increased → inflation and unemploymnet grew → GDP fell → stagflation!

The Basic Fields of Economics

Microeconomics

❖ Studies the economic behavior of <u>individual economic decision makers</u> (consumers, labourers, companies)

❖ Analyzes the behavior of individual households, industries, markets, labor unions, or trade associations.

Macroeconomics

❖ Analyzes how an entire <u>national economy performs</u> work.

❖ Examines aggregate levels of income and employment, the levels of interest rates and prices, the rate of inflation, and the nature of business cycles.

Analytical Tools of Microeconomics

Constrained optimization: making the best (optimal) choice, taking into account any possible limitations or restrictions on the choice. *E.g. consumer's choice*

Equilibrium (analysis): a state or condition that will continue indefinitely as long as factors exogenous to the system remain unchanged.

E.g. *a price at which the quantity offered for sale just equals the quantity demanded by consumers*

Comparative statics: to examine how a change in some exogenous variable will affect the level of some endogenous variable in an economic system.

E.g. changes in market supply and demand

Constrained optimization, equilibrium analysis or comparative statics?

Trump: Mexico will pay for the wall.

The Main Subjects of Microeconomics

Consumers
- Limited incomes which can be spent on a wide variety of goods and services
- or saved for the future spendings.

Workers
- Constraints and trade-offs
- To decide whether and when to enter the workforce
- Choice of employment
- How many hours per week they wish to work

Firms
- Having limits in the produced items or services
- Limits in the availability of resources

Rational People Think at The Margin

o **Firms** decide how many workers to hire and how much of their product to manufacture and sell to maximize profits.
o **Individuals** decide how much time to spend working and what goods and services to buy with the resulting income to achieve the highest possible level of satisfaction.

o **Marginal changes**: small incremental adjustments to an existing plan of action
o Rational people often make decisions by comparing marginal benefits and marginal costs → The marginal benefit depends on how many units a person already has.

Marginal benefit of drinking water and diamonds

Marginal benefit of drinking water and diamonds

Paradox of value: Adam Smith

$P_{diamond} > P_{water}$
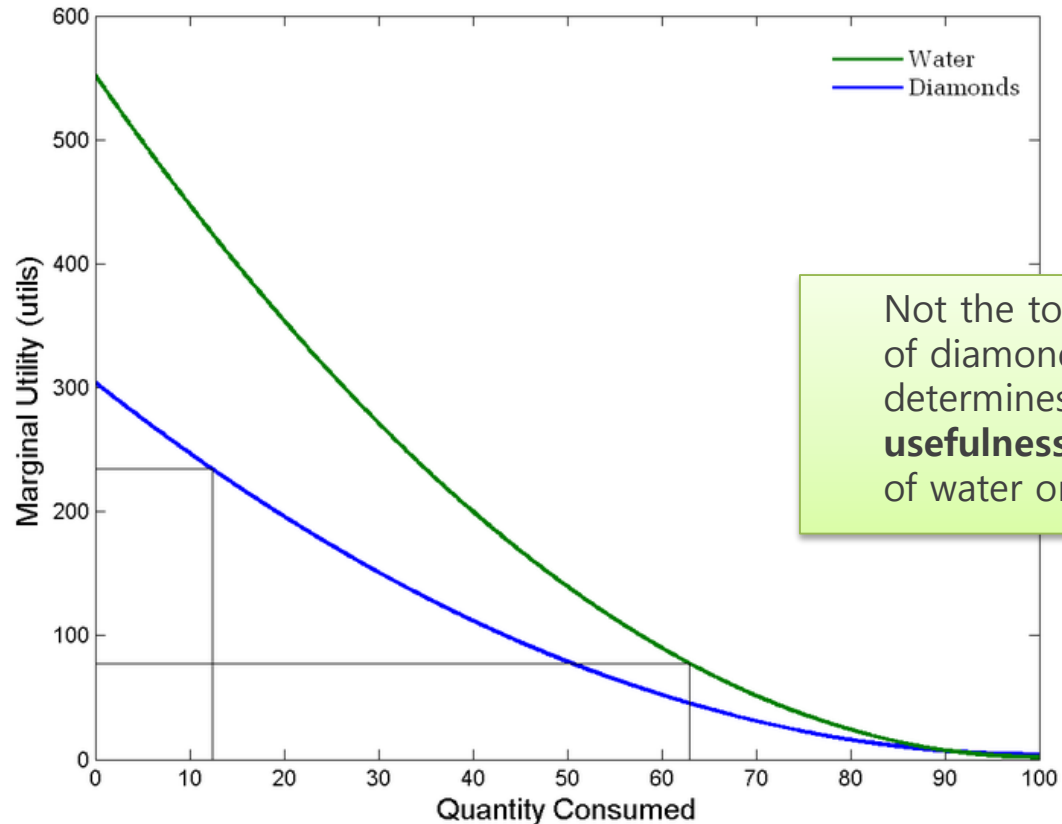
Not the total usefulness of diamonds or water determines price → the **usefulness of each unit** of water or diamonds

1ˢᵗ Model: Circular Flow Diagram

two types of decision makers: firms and households

firms produce goods and services: factors of production
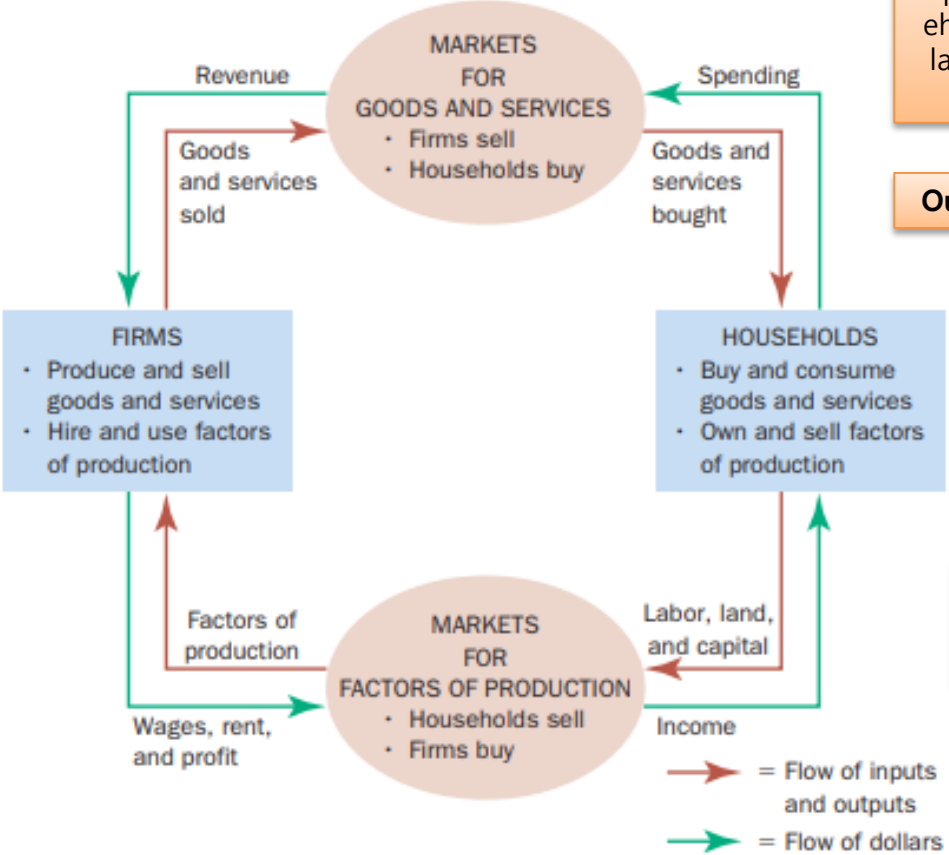
households own the factors of production and consume

markets for goods and services: households are buyers and firms are sellers

markets for the factors of production: households are sellers, and firms are buyers

Inner loop: flows of inputs and outputs → households sell the use of their labor, land, and capital to the firms

Outer loop: flow of dollars

Factors of production: land, capital, labor, entrepreneurship

MARKETS
FOR
GOODS AND SERVICES
· Firms sell
· Households buy

Revenue

Spending

Goods and services sold

Goods and services bought

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

Factors of production

Labor, land, and capital

MARKETS
FOR
FACTORS OF PRODUCTION
· Households sell
· Firms buy

Wages, rent, and profit

Income

→ = Flow of inputs and outputs

→ = Flow of dollars

Governments Can Sometimes Improve Market Outcomes

o   The „invisible hand": the unobservable market force that helps the demand and supply of goods in a free market to reach equilibrium automatically → if each consumer is allowed to choose freely what to buy and each producer is allowed to choose freely what to sell and how to produce it, the market will settle on a product distribution and prices that are beneficial to all the individual members of a community → **Adam Smith**

Property rights: to own and exercise control over scarce resources.

Market failure: a situation in which a market left on its own fails to allocate resources efficiently (e.g. private health care with no state support at all)

Externality: the impact of one person's actions on the well-being of a bystander

Market power: the ability of a single economic actor (or small group of actors) to have a substantial influence on market prices.

# Section II

The Concept of Scarcity

o Our resources are limited → but our wants, our desires for the things that we can produce with those resources, are unlimited.

o The condition of having to choose among alternatives.

o **Scarce good**: the choice of one alternative requires that another be given up.

Scarcity: the limited nature of society's resources

1. What should be produced?
2. How should goods and services be produced?
3. For whom should goods and services be produced?
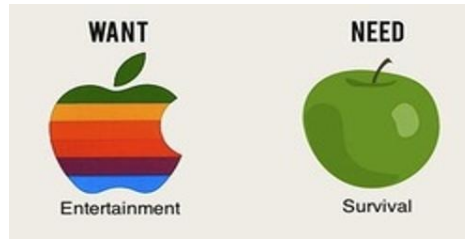
Opportunity cost

- o *"There ain't no such thing as a free lunch."*
- o People face **trade-offs**: making decisions requires comparing the costs and benefits of alternative courses of action.
- o The value of the next-highest-valued alternative use of that resource.

Examples
- ➤ The profit a company could have earned from its capital, equipment, and real estate if these assets had been used in a different way;
- ➤ Owning an office ➔ not renting it out;
- ➤ The value of five years' job experience given up to go to university;
- ➤ Saving your company's resources instead of making an investment.

2nd Model: The Production Possibilities Frontier
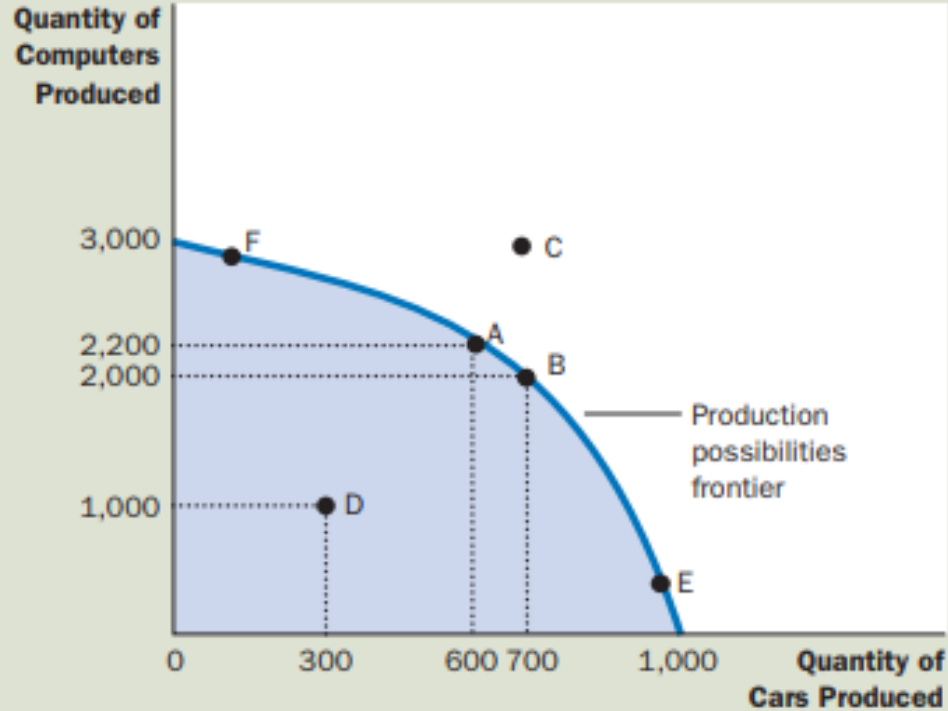
o The combinations of output: e.g. cars and computers - that the economy can possibly produce.

o The economy can produce any combination *on or inside the frontier*.

o Points outside the frontier are not feasible given the economy's current resources.

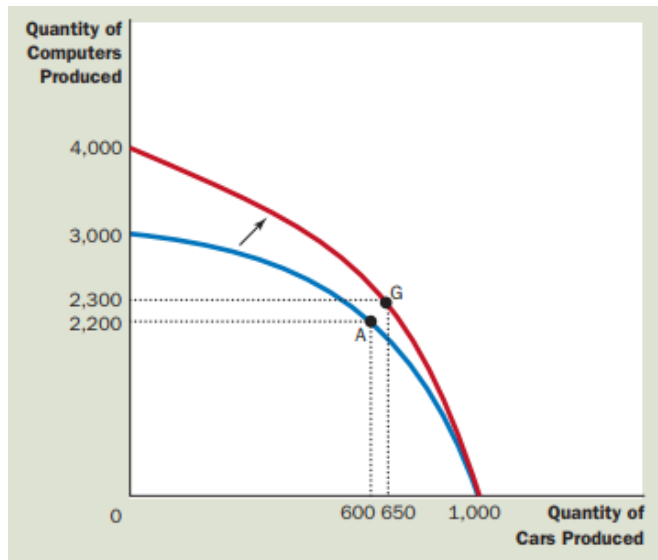# 2ⁿᵈ Model: The Production Possibilities Frontier
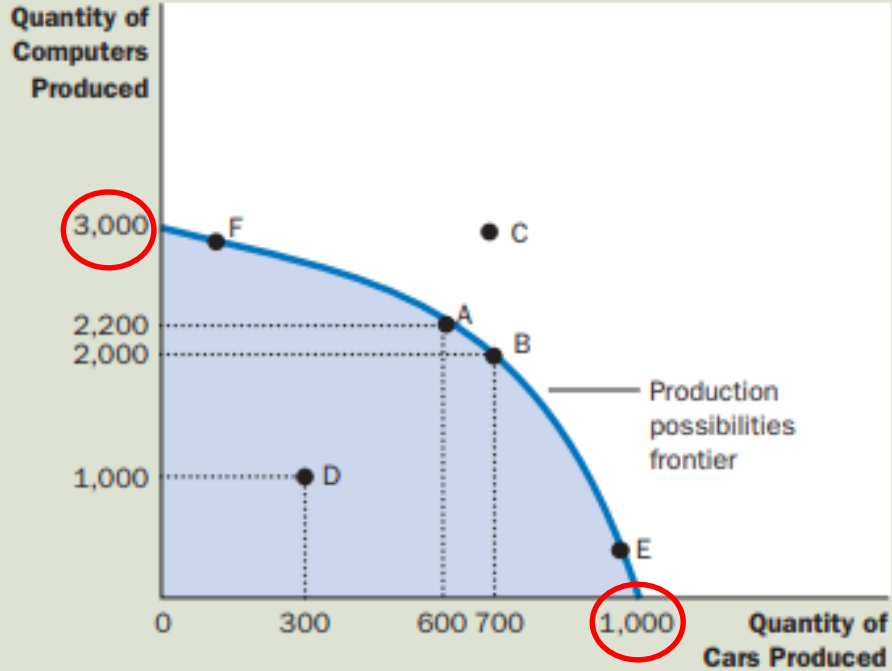
- If the economy uses all its resources in the car industry, it produces 1,000 cars and no computers (**E point**)

- If it uses all its resources in the computer industry, it produces 3,000 computers and no cars (**F point**) → *extreme possibilities*.

- Reality: the economy <u>divides its resources</u> between the two industries → **A point**
  600 cars and 2,200 computers

The Production Possibilities Frontier
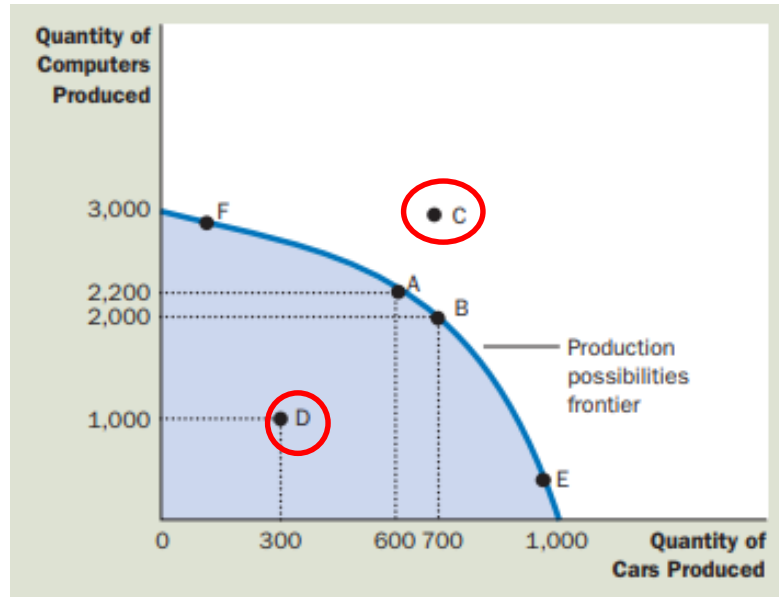
- o <u>Point C</u>: we cannot produce at points outside the frontier (not enough factors)
- o <u>Point D</u>: an inefficient outcome → the economy is producing less than it could: 300 cars and 1,000 computers → let's move from D point to A point!
- o <u>Trade-off</u>: the only way of getting more of one good is to get less of the other
- o Opportunity cost: from A to B point → it gives up 200 computers to get 100 additional cars

A Shift in the Production Possibilities Frontier

o   A <u>technological advance</u> in the computer industry enables the economy to produce more computers for any given number of cars.

o   As a result, the production possibilities frontier shifts outward.

o   If the economy moves from point A to point G, then the production of both cars and computers increases.

Constrained Optimization

o Economics is the science of **constrained choice**.

o When a decision maker seeks to make the best possible choice taking into account any possible limitations or restrictions.

o <u>Objective function</u>: the relationship that the decision maker seeks to "optimize" that is, either maximize or minimize.

o *Example: how satisfied you will be when you purchase any particular set of goods or services*

Resources
(factors of
production
or INPUTS)
{
LAND
LABOR
CAPITAL

➡ SCARCITY

Constrained Optimization – Exercise 1

Suppose a farmer plans to build a rectangular fence as a pen for his sheep. He has F feet of fence and cannot afford to purchase more. However, he can choose the dimensions of the pen, which will have a <u>length of L feet</u> and a <u>width of W feet</u>. He wants to choose the dimensions L and W that will maximize the area of the pen. He must also make sure that the total amount of fencing he uses (the perimeter of the pen) does not exceed F feet.

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

The relationship that the farmer is trying to maximize - in this case, the area LW → the farmer will choose L and W to maximize the objective function LW.

Constrained Optimization – Exercise 1

Suppose a farmer plans to build a rectangular fence as a pen for his sheep. He has F feet of fence and cannot afford to purchase more. However, he can choose the dimensions of the pen, which will have a <u>length of L feet</u> and a <u>width of W feet</u>. He wants to choose the dimensions L and W that will maximize the area of the pen. He must also make sure that the total amount of fencing he uses (the perimeter of the pen) does not exceed F feet.

(b) What is the constraint?

The constraint will describe the restriction imposed on the farmer.

We are told that the farmer has only F feet of fence available for the rectangular pen. The constraint will describe the restriction that the perimeter of the pen <u>2L + 2W</u> must not exceed the amount of fence available, F. Therefore, the constraint can be written as <u>2L + 2W ≤ F</u>.

Constrained Optimization – Exercise 1

Suppose a farmer plans to build a rectangular fence as a pen for his sheep. He has F feet of fence and cannot afford to purchase more. However, he can choose the dimensions of the pen, which will have a <u>length of L feet</u> and a <u>width of W feet</u>. He wants to choose the dimensions L and W that will maximize the area of the pen. He must also make sure that the total amount of fencing he uses (the perimeter of the pen) does not exceed <u>F feet</u>.

(c) Which of the variables in this model (L, W, and F) are exogenous? Which are endogenous?

The farmer is given only F feet of fence to work with. Thus, the perimeter <u>F is an exogenous variable</u>, since it is taken as given in the analysis. The endogenous variables are L and W, since their values can be chosen by the farmer (determined within the model).

Constrained Optimization – Exercise 2

Total Spent	New Beer Sales Generated (in barrels per year)	
	TV	Radio
$ 0	0	0
$ 100,000	4,750	950
$ 200,000	9,000	1,800
$ 300,000	12,750	2,550
$ 400,000	16,000	3,200
$ 500,000	18,750	3,750
$ 600,000	21,000	4,200
$ 700,000	22,750	4,550
$ 800,000	24,000	4,800
$ 900,000	24,750	4,950
$1,000,000	25,000	5,000

New Beer Sales Resulting from Amounts Spent on TV and Radio Advertising → **How would you allocate your advertising budget if your objective is to maximize the new sales of beer?**

Constrained Optimization – Exercise 2

Total Spent	New Beer Sales Generated (in barrels per year)	
	TV	Radio
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$ 200,000	9,000	1,800
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$ 500,000	18,750	3,750
$ 600,000	21,000	4,200
$ 700,000	22,750	4,550
$ 800,000	24,000	4,800
$ 900,000	24,750	4,950
$1,000,000	25,000	5,000

Constrained optimization problem: the total amount spent on TV and radio must not exceed your $1 million advertising budget.

$$\max_{(T,R)} B(T, R)$$

subject to: $T + R = 1$ million

Constrained Optimization – Exercise 2

	New Beer Sales Generated (in barrels per year)	
Total Spent	TV	Radio
$ 0	0	0
$ 100,000	4,750	950
$ 200,000	9,000	1,800
$ 300,000	12,750	2,550
$ 400,000	16,000	3,200
$ 500,000	18,750	3,750
$ 600,000	21,000	4,200
$ 700,000	22,750	4,550
$ 800,000	24,000	4,800
$ 900,000	24,750	4,950
$1,000,000	25,000	5,000

e.g. 24,750 + 950 = **25,700**

First solution: allocate your entire $1 million budget to TV spots and spend nothing on radio → 25,000 barrels of new sales → incorrect!

Second solution: $900,000 on TV ads and $100,000 on radio ads: TV ads would then generate 24,750 barrels of new beer sales, and radio ads would generate 950 barrels of new beer sales → 25,700!

$800,000 on TV and $200,000 → 25,800 barrels!

(24,750 - 24,000) / 100,000 → 0.0075

(24,000 + 950 - 24,000) / 100,000 → 0.0095

barrels per additional dollar spent on radio advertising

Section III

Curves in the Coordinate System: The Demand Curve

	Income		
Price	$20,000	$30,000	$40,000
$10	2 novels	5 novels	8 novels
9	6	9	12
8	10	13	16
7	14	17	20
6	18	21	24
5	22	25	28
	Demand curve, D_3	Demand curve, D_1	Demand curve, D_2

The demand curve traces out the effect of a good's price on the quantity of the good consumers want to buy.
E.g. When our income increases, we spend part of the additional income on novels and part on other goods.
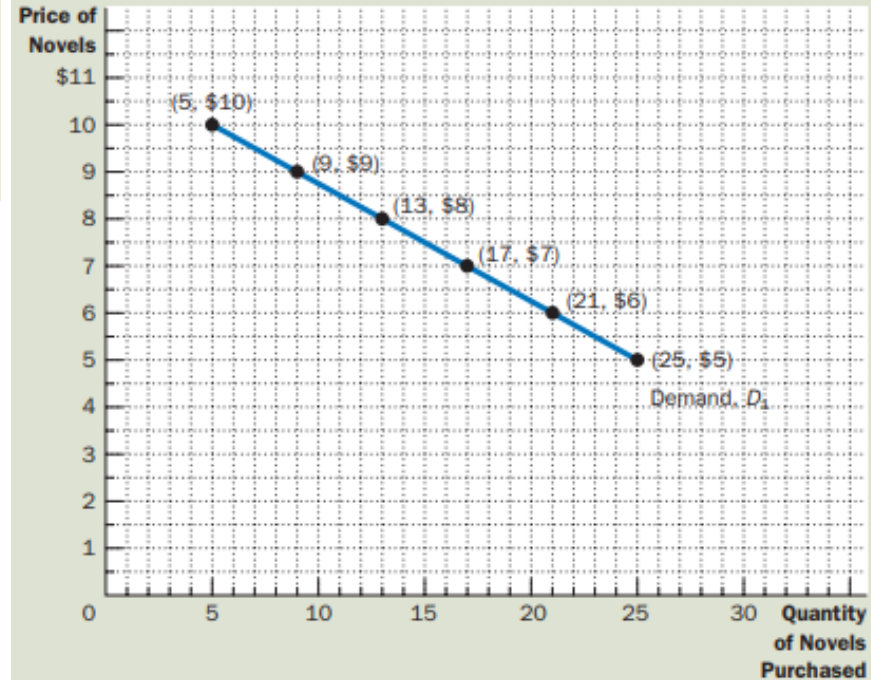
Curves in the Coordinate System: The Demand Curve

o **3 variables**: the price of novels, income and the number of novels purchased → income is handled as constant!

o The **demand curve** is downward sloping → a higher price reduces the quantity of novels demanded.

o The quantity of novels demanded and the price move in opposite directions → **negatively related**.

o When two variables move in the same direction, the curve relating them is upward sloping → **positively related**.
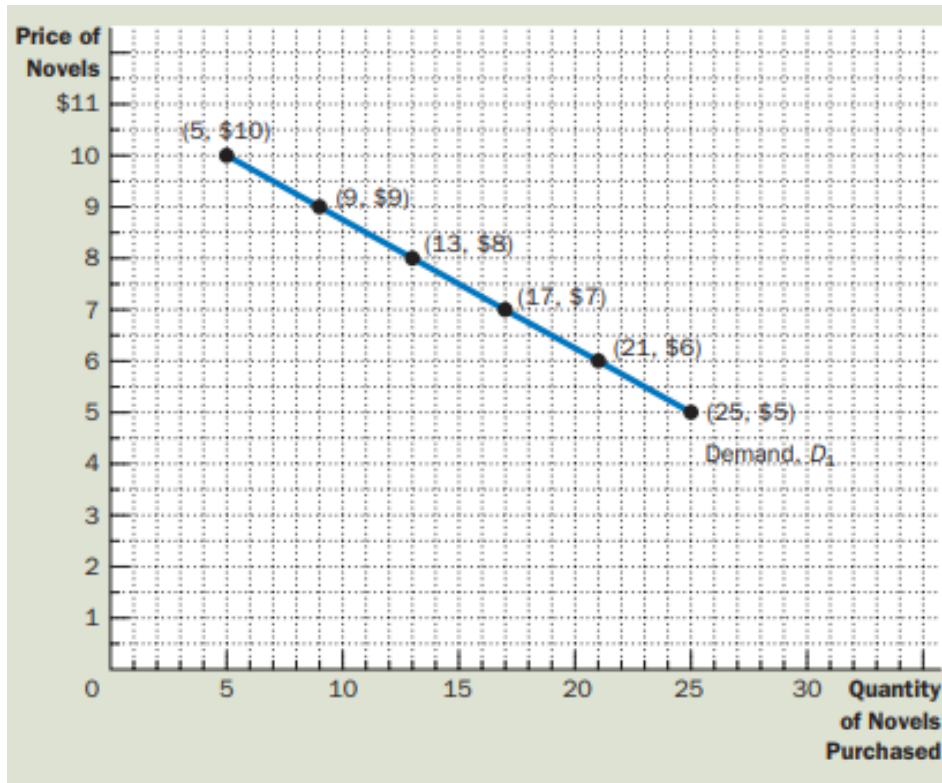
Curves in the Coordinate System: The Demand Curve

o Now suppose that our income rises to $40,000 per year → purchasing more novels

o **D₂ curve**: demand curve for novels shifts to the right when our income increases
o **D₃ curve**: demand curve would shift to the left when incomes decrease ($20,000)

o When a variable that is not named on either axis changes, the curve shifts → higher income

o When the price changes → we move along the curve (it remains fix).
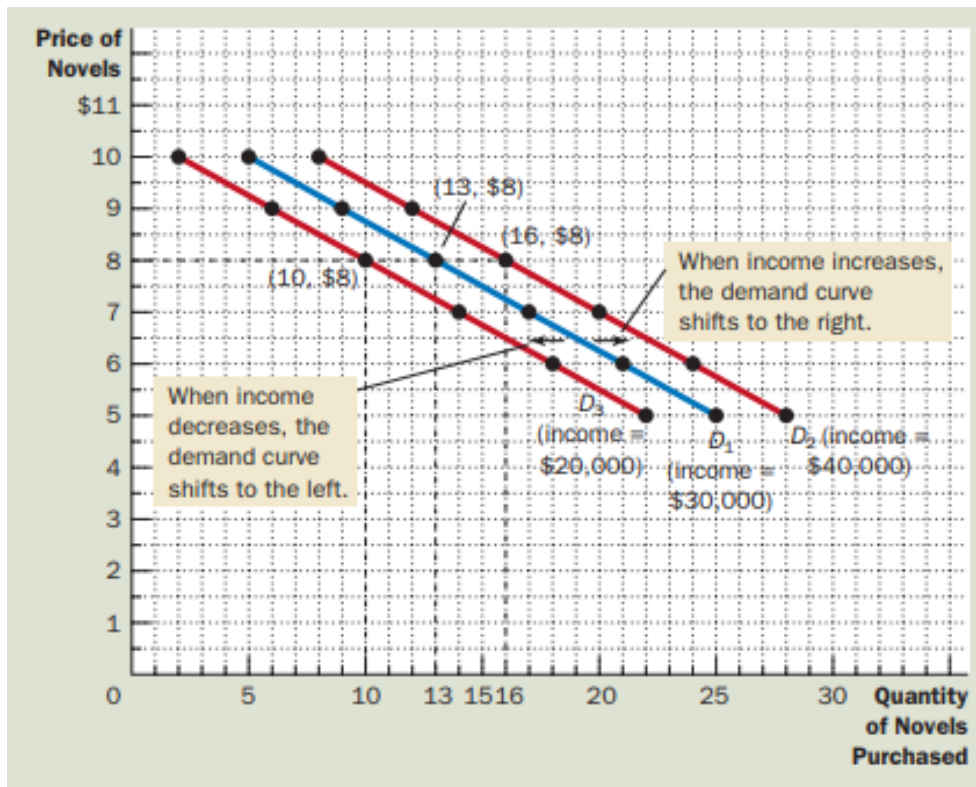
# Calculating the Slope of a Line
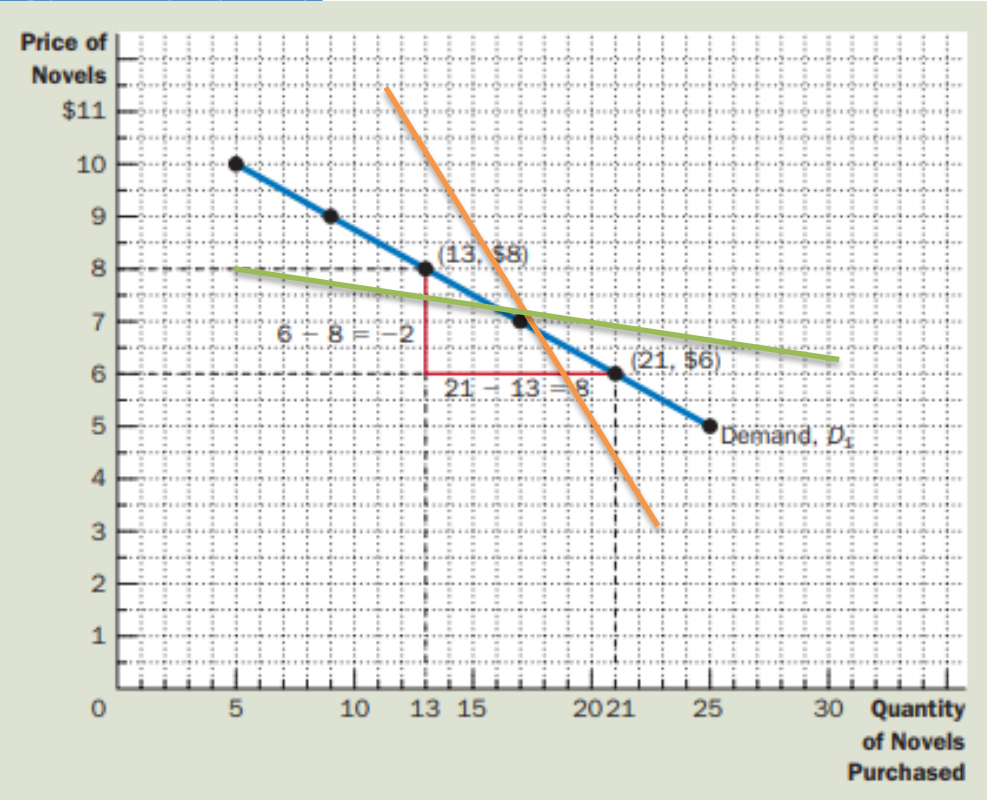
- o **Steep curve**: purchasing nearly the same number of novels regardless of their price
- o **Flat curve**: buying fewer novels when the price rises
- o **The slope of a line is the ratio of the vertical distance covered to the horizontal distance covered as we move along the line.**

$$\text{slope} = \frac{\Delta y}{\Delta x},$$

- o When the price changes → we <u>move along the curve</u> (it remains fix).
- o *Delta* stands for the change in a variable
- o A horizontal line has a slope of zero.
- o Vertical line: it has an infinite slope.

Calculating the Slope of a Line
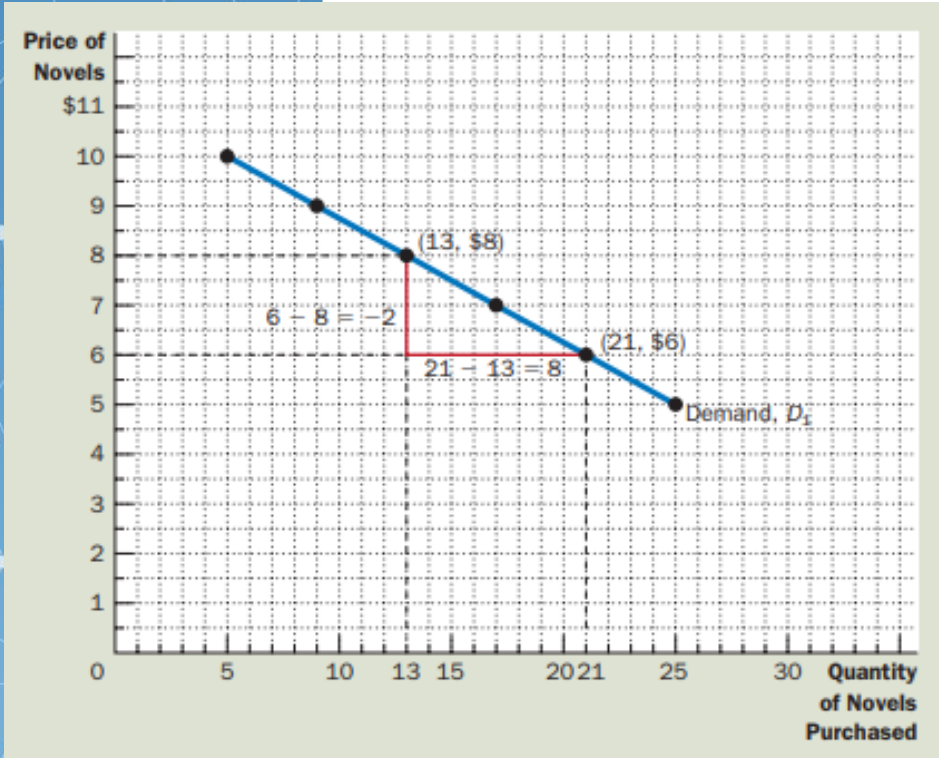
o   We must choose two points on the line
o   We can look at the changes in the x- and y-coordinates as we move from the point (21 novels, $6) to the point (13 novels, $8)

$$\text{slope} = \frac{\Delta y}{\Delta x} = \frac{\text{first } y\text{-coordinate} - \text{second } y\text{-coordinate}}{\text{first } x\text{-coordinate} - \text{second } x\text{-coordinate}} = \frac{6-8}{21-13} = \frac{-2}{8} = \frac{-1}{4}$$

o   A **small slope** (a number close to zero) means that the demand curve is relatively flat
o   A **larger slope** (a number farther from zero) means that Emma's demand curve is relatively steep.
o   Y: dependent variable
o   X: independent variable

Equilibrium Analysis

An equilibrium in a system is a state or condition that will continue indefinitely as long as exogenous factors remain unchanged.
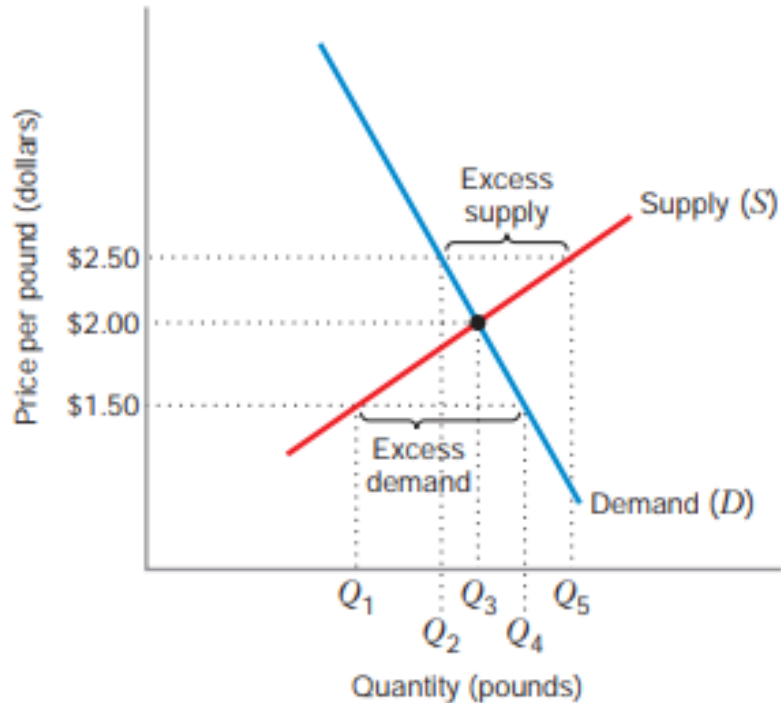
**Demand curve**: what quantity of coffee beans (Q_D) would be purchased in that market.

Supply curve: what quantity of coffee beans would be offered for sale in the market at any given price (Q_S).

Equilibrium: at a price at which the quantity offered for sale just equals the quantity demanded by consumers.

The market would not be in equilibrium at a price above $2.00 → excess supply.

The market would also not be in equilibrium at a price below $2.00, → excess demand.

Comparative Statics
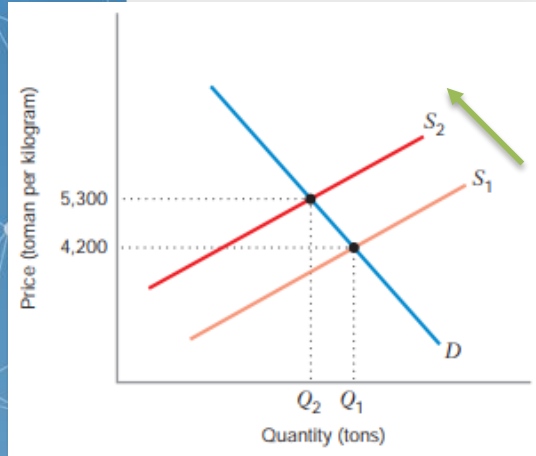
- o How a change in an exogenous variable will affect the level of an endogenous variable in an economic model:
- o 1st year: S_1 supply curve (4200 and Q1)
- o 2nd year: S_2 supply curve (5300 and Q2) → shock in the market increased prices
- o **The shift in the supply curve results in an increase in the equilibrium price**.

- o The market equilibrium occurs at the intersection of D1 and S, and the equilibrium price is $1,100.
- o The recession of 2009 caused a leftward shift in the demand curve from D_1 to D_2, and the market equilibrium price of Masters badges fell to $600.

THANK YOU FOR YOUR ATTENTION!

Mankiw: Principles of Microeconomics
Chapter 1,2,3; pp. 1-48