МИНИСТЕРСТВО ОБРАЗОВАНИЯ РЕСПУБЛИКИ БЕЛАРУСЬ

УЧРЕЖДЕНИЕ ОБРАЗОВАНИЯ
«БРЕСТСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ»

Кафедра управления, экономики и финансов

МЕТОДИЧЕСКИЕ УКАЗАНИЯ

для подготовки к практическим занятиям и экзамену
по курсу **«Экономическая теория»**
на английском языке

Брест 2015

УДК 334.01

Методические указания разработаны в соответствии с учебными планами подготовки студентов **обучающихся на английском языке** по специальности **1-53 01 02 «Автоматизированные системы обработки информации».** Содержат структуру курса «Экономическая теория», краткий конспект лекций, задания для работы на практических занятиях.

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Course description:

Economics is one of the basic courses in economic background. This course focuses on the basic concepts, categories, methods, laws and models in Economics in order to create fundamentals of economic way of thinking, to teach how to use this knowledge for the solution of the problems of different kind and to develop self-reading skills. The course combines conceptual approach and wide use of analytical and graphical models which provides a complete view of economic interdependences and laws.

Course of economics include 2 parts:

1. Microeconomics.
2. Macroeconomics.

Microeconomics. The application of economic reasoning to the decisions of consumers and producers. Topics include opportunity cost, resource allocation, the price system, the organization of industry, market failures, distribution of income, public sector economics.

Macroeconomics. The contents of the Macroeconomics course cover the basic objectives of macroeconomics, and an understanding about basic macroeconomic indicators – gross national product, gross domestic product, and national income. Topics under discussion in this course include aggregate demand and supply, Keynesian and classic views on aggregate amounts.

Teaching and learning methods

The course is organized as a combination of lectures, practical tasks (problem solving), individual work of student.

Week Number	Topics	Lecture (In-class hours)	Practice (In-class hours)
1.	**Economics as a science**	1	-
1.	**Basic concepts of Economics**	1	2
2.	**Demand and supply**	2	2
3.	**Elasticity of demand and supply**	2	4
4.	**The Rational Consumer**	2	4
5.	**Behind the Supply Curve: Inputs and Costs**	2	4
6.	**Types of Market Structure** (Market Structures. Perfect Competition. Monopoly.)	2	2
7.	**Types of Market Structure** (Monopolistic competition. Oligopoly.)	2	2
8.	**The Science and Data of Macroeconomics.**	2	4
Total hours		**16**	**24**

Grading Weight

Quizzes (Midterm in Practice class hours) 30%
Attendance/participation 20%
Final exam (Test) 50%
Total 100%

Course Objectives

By the end of the semester, you should be able to understand:

1. Explain the economic behavior of households and individual firms
2. Apply the principles of supply and demand to determine prices and identify the factors that affect supply and demand
3. Consumer theory: How households make decisions in the face of scarcity and how these decisions vary in response to changes in the economic environment.
4. Firm theory: How firms make decisions in the face of scarcity and how these decisions vary in response to changes in the economic environment.
5. The organization of markets: Describe and distinguish between various forms of market structures. How perfectly competitive, monopolistic, monopolistically competitive, and oligopolistic markets are organized and the outcomes of these markets.
6. Questions and problems analyzed by macroeconomists; the measurements and models used; the concepts of macroeconomic analysis; the key data of macroeconomics: gross domestic product, the consumer price index, the unemployment rate.

Course Duration

Total – 42 hours:

Lectures – 16 hours

Practical classes – 24 hours

Students independents work –2 hours

LECTURE 1

Module 1

Economics as a science.

The subject of economics. Methodology. Economic models.

After studying this module, you should be able to answer the following questions:

1. What is the economics about?
2. How should we study economics? What is the character of methodology of economics?
3. What specific problems and limitations might we encounter in studying economics?
4. What is meant by an economic theory and how economic theories are developed by building and testing economic models?
5. What is the difference between microeconomics and macroeconomics?

The **objectives** of the course are to learn and to apply in practice the following:

Key concepts of the economic theory;

Various methods and theories of economic analysis including the analysis of economic models;

Various factors influencing the economic activity both at the micro- and macroeconomic level;

Basic concepts of micro- and macroeconomics;

Major characteristics of various market structures, their advantages and disadvantages;

Behavior of consumers and producers;

Main forms of business ownership;

Basics of micro- and macroeconomic policy, economic growth and efficiency;

Basic issues of international economics and its applications in the real world;

There are many definitions of economics. One of them was formulated by Paul Samuelsson, a prominent American economist and the author of textbooks on economics which have been used by economics students all over the world for decades:

Economics is the study of how societies use scarce resources to produce valuable commodities and distribute them among different people.

Economics is concerned with the following:

1. The **production** of goods and services: how much the economy produces; what particular combination of goods and services; how much each firm produces; what techniques of production it uses; how many people it employs.

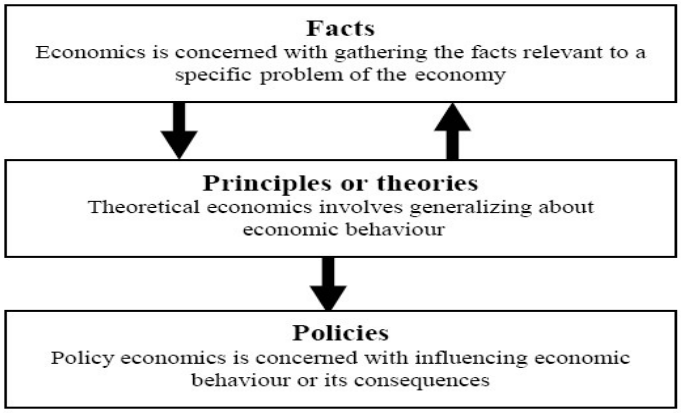
2. The **consumption** of goods and services: how much the population as a whole spends (and how much it saves); what pattern of consumption is in the economy; how much people buy of particular items; how people's consumption is affected by prices, advertising, fashion and other factors.

Methodology

What do economists do? What procedures do they employ?

The economist must first gather the facts which are relevant to consideration of a specific economic problem. Then the economics puts this collection of facts in or-

der and summarizes them, and finds out a principle concerning the way individuals and institutions actually behave. Deriving principles from facts is called "economic theory" or "economic analysis". Finally, the general knowledge of economic behavior which economic principles provide can then be used in developing policies for correcting or avoiding the problem. This final aspect of the field is called "applied economics" or "policy economics".



Picture 1.1 – *Economic analysis.*

Microeconomics deals with the problems that consumers and firms face in their economic activity. Microeconomics also studies the way that individual markets work and the detailed way that government activities such as regulations and taxes affect individual markets. Much of microeconomics focuses on trying to understand what factors affect the prices and quantities traded in individual markets.

Macroeconomics deals with the economy as a whole. It is concerned with the economy of a country and regulation of the economy by the governments. In particular, it studies the overall values of output as a whole, of unemployment and of inflation.

Module 2

Basic concepts of Economics.

Basic concepts of economics. The central economic problem is about scarcity and choice. Factors of production. Choice and opportunity cost.

After studying this module, you should be able to answer the following questions:

1. What is the central economic problem faced by all individuals and societies?
2. What are the three fundamental questions of economics?
3. Why is it essential for people to make economic decisions?
4. What is the Production Possibility Curves?
5. What is meant by 'opportunity cost'?

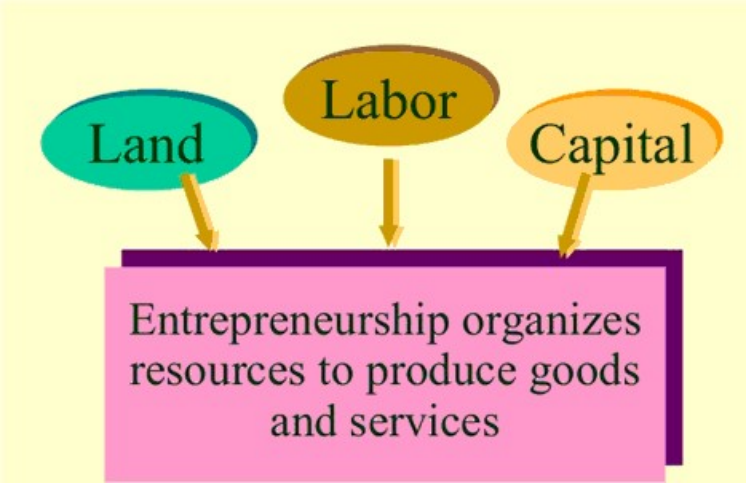
The central economic problem is about scarcity and choice

Human wants are virtually unlimited whilst the resources to satisfy our wants are limited.

At any time people in different countries of the world can produce only a limited amount of goods and services because the available resources are limited, or scarce. These resources or **factors of production** as they are often called are of four types:

1. **Labor**: all forms of human input, both physical and mental, into production. The labor force is limited both in number and in skills.

2. **Natural resources**: land and raw materials. They are inputs into production that are provided by nature. The world's land area is limited, as are its raw materials.
3. **Capital:** all inputs that have themselves been produced, e.g. factories, machines, transportation and other equipment. All of them are also limited. Moreover, the productivity of capital is limited by the state of technology.
4. **Entrepreneurs** – The creative ability of individuals to seek profits by combining resources to produce innovative products.



Three fundamental questions of economics arise because of scarcity and the need to choose between alternative uses of scarce resources.

1. **What goods and services are going to be produced?** For example, how many cars, how much wheat, how many rock concerts, how mush education, etc. The answer depends not only on resources but also on the needs: in Finland consumers need mare warm clothes because of the climate. In China consumers need more rice because it is traditional everyday food there.

2. **How are things going to be produced**? Resources can be used in different proportions. Labor-intensive production versus capital-intensive production: In Brazil maize is grown with a lot of labor and limited capital, and in the Netherlands tomatoes are grown with a lot of capital and limited labor. In India electronic devices are produced in small workshops with relatively more labor than capital, and in Germany electronic goods are made with more capital and less labor than in India.

3. **For whom are things going to be produced?** How will the nation's income be distributed? Historically there have been various answers: according to traditions and customs: in the primitive society hunters got the best food; according to the principle of equality: in the former communist-block countries; according to people's ability to pay: in contemporary Russia. In answering this question, modern economics is more focused on the following aspects of the problem: What will the wages of farm workers, builders, accountants, teachers be? How much will pensioners receive?

Choice and opportunity cost

Choice involves sacrifice. The more food we choose to buy, the less money we have to spend on other goods. The more food a nation produces, the less resources there will be for producing other goods. In other words, production and consumption of one good involves the sacrifice of alternatives. The opportunity cost of something is

what you give up to get it/do it. For example, if a farmer's production is either 1000 tones of carrots or 2000 tones of potatoes, then the opportunity cost of producing 1 tone of carrots is the 2 tones of potatoes forgone. Another example is from a student's everyday life: the opportunity cost of buying a textbook is a new pair of trainers you also wanted that you will have to go without. Consumers' rational decisions involve choosing those goods that give you the greatest benefit relative to cost.

The same principles apply to firms when deciding what to produce. Rational choices are also needed in production. The problem is associated with the allocation of the limited resources.

For example, should a car manufacturer open up another production line? A rational decision will again involve weighing up the *benefits* and *costs*. The benefits are the revenues that the firm will earn from selling the extra cars. The costs will include the extra labor costs, raw material costs, costs of component parts, etc.

To sum up, we can say that the basic economic problem is concerned with the **allocation of scarce resources** among competing and virtually unlimited wants of consumers in society. All nations have to decide in some way what, how and for whom to produce.

Production Possibility curves

The production possibility curve is a hypothetical representation of the amount of two different goods that can be obtained by shifting resources from the production of one, to the production of the other. The curve is used to describe a society's choice between two different goods.

LECTURE 2

Module 3

Demand and supply.

Demand and supply. Factors of demand. Supply and its factors. Demand curve and supply curve. Shortage or surplus. Demand and supply curve shifts. Individual and market demand. Income effect and constitution effect . Market equilibrium. Changes in the market equilibrium.

After studying this module, you should be able to answer the following questions:

1. What determines the amount that consumers buy of a product?
2. What determines how much producers supply of a product?
3. How are market prices determined and when they are likely to rise or fall?
4. How do markets respond to changes in demand or supply?

Supply and demand are mechanisms by which our market economy functions. Changes in supply and demand affect prices and quantities produced, which in turn affect profit, employment, wages, and government revenue.

Demand is the willingness and the ability of consumers to buy goods and services. In other words, demand is related to people's unlimited wants and influences consumers decisions what, how much and at what price to buy.

The **demand curve** is a graph which shows the relationship between the price of a good and the quantity of the good demanded.

Price is measured on the vertical axis; quantity demanded is measured on the horizontal axis.

The Law of Demand

The downward-sloping demand curve illustrates the inverse relationship between the price and quantity sold. According to the Law of Demand, at a lower price, consumers are willing and able to buy more; at a higher price, they buy less.

The demand curve slopes downward for three reasons:

• Diminishing marginal utility. The more of a good a person has, the less utility will be gained from each additional unit; therefore, firms must lower the price of the next unit to entice customers to buy more. Shoe stores run a standard "buy one pair, get the next pair half off" sale for this reason.

• The income effect. When the price falls, consumers have more real income (purchasing power) available to buy more. If you planned to buy a pack of gum for $1.00 and the store had a half-price sale, you could now buy two packs of gum because your dollar stretched further than before the sale.

• The substitution effect. When the price falls, customers buy more as a substitute for other products that now look relatively more expensive. If you had planned to buy a pack of gum and a candy bar for $1.00 each and then noticed the half-price sale on gum, you might choose to spend the entire $2.00 to buy four packs of gum because the gum is now so much less expensive than the candy bar.

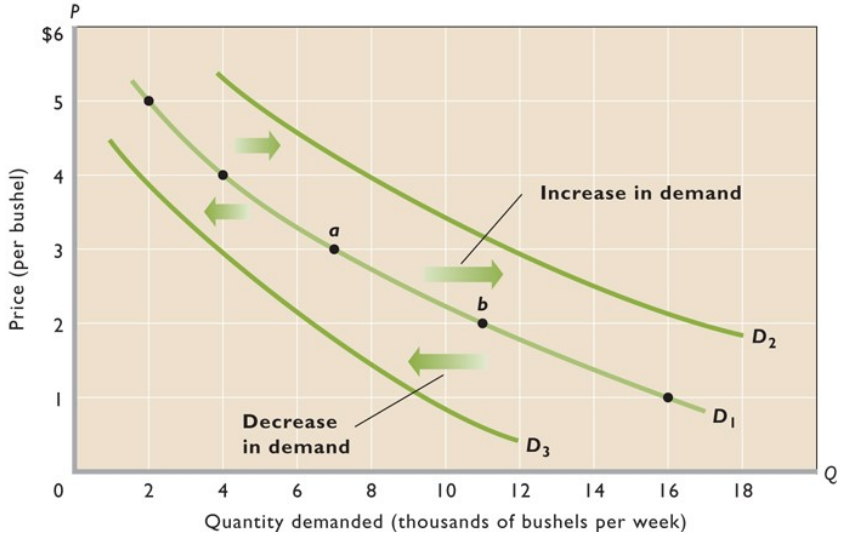
Change in Quantity Demanded

The change in quantity demanded refers to a movement from one point to another point on the demand curve. The demand curve did not move. Only a change in the price of the product can cause a change in quantity demanded. Returning to the gum example, you only bought more gum because the price fell. It is very important to keep this definition in mind, because it can be very easily confused with a change in demand.

Market Demand

While study of one consumer's demand can help us understand the principles of demand, producers rarely consider the demand of a single customer. Instead, they focus on market demand — the demand of all customers together. To find the market demand, simply add the quantity demanded by all of the market's individual consumers at each price. By determining the demand of millions of customers, the gum manufacturer can determine how many packs it would need to produce to satisfy market demand at each price.

Change in Demand



Changes in demand

A number of events can actually shift the demand curve. A change in demand results in consumers buying more (or less) of the product at every possible price. Increases in demand shift the curve to the right, while decreases in demand shift the curve to the left.

One factor that can change demand is a change in **consumer taste**. Consumer willingness to buy a product is often fueled by advertising, recommendations, or fads. As technology improved, consumer tastes in music changed from cassette tapes to CDs to MP3 files. A change in the **number of buyers** also affects demand. As more immigrants entered the United States, stores responded to the increased demand by providing more ethnic foods.

Changes in **consumer income** affect the ability of consumers to buy products as well. But the effects of income depend on the type of product. Most goods are normal goods, for which demand increases when incomes rise and demand falls when incomes fall. Other products known as inferior goods have the reverse relationship to income. When incomes fall, consumers increase demand for inferior goods. If income falls, consumers buy more generic food rather than name brand food. It is important to understand that consumers aren't actually buying more because their incomes fell; they are buying lower-priced substitutes for the products they would have purchased with a higher income.

A **change in the price of related products** can also shift demand. Substitutes are products that can be used in place of each other. When the price of a good rises, consumers seek lower-priced substitutes. If you normally buy Mountain Dew and the store has a sale on Mello Yello, your demand for Mello Yello may increase. Complements are products that are used together. When the price of a product rises significantly, consumers will buy less of that product and the products that are used with it. When the price of gas rose, the demand for SUVs significantly fell because they just became too expensive to use.

Supply

Supply is the quantity of goods producers are willing and able to produce. Just as with demand, a supply schedule is developed by determining how many products the producer will provide at each potential price.

The Law of Supply

The upward-sloping supply curve illustrates the direct relationship between price and quantity sold. According to the Law of Supply, as the price rises, producers increase the quantity supplied; as the price falls, firms produce less. If a firm can make more money from product sales, the profit motive entices the firm to increase output. In addition, after some point, the cost of production begins to increase as the firm hires more workers or buys additional equipment; therefore, a higher price is necessary to cover those increased production costs. The firm can afford to produce more if the revenue it receives from selling the product is higher. In our analysis of supply, we again make the ceteris paribus assumption that nothing else in the world is changing except for the price of the product.

Market Supply

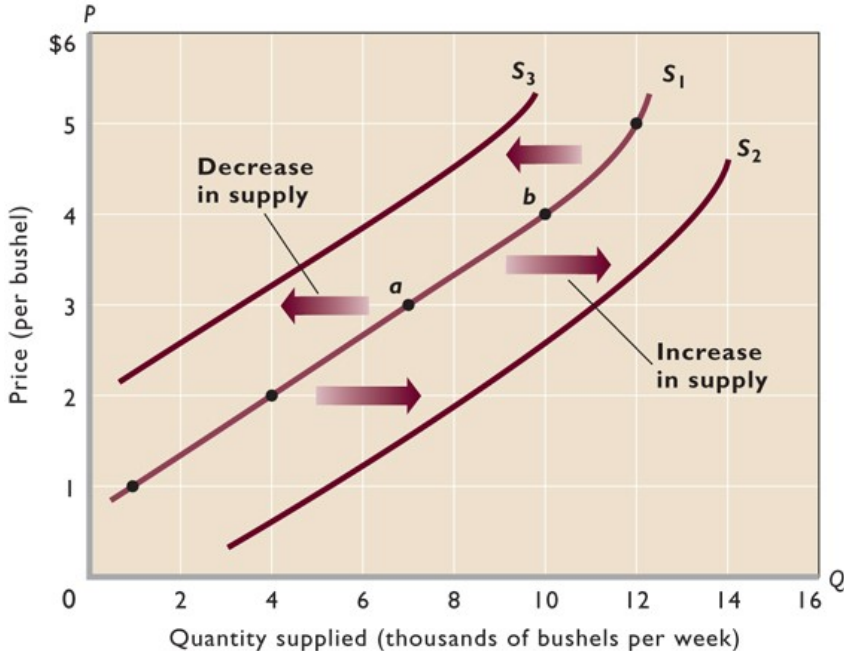
Market supply is the sum of individual firms' supply curves in an industry. The market supply of cars includes the quantity supplied by all of the automakers at each price.

Change in Quantity Supplied

A change in quantity supplied is a movement from one point to another point on the supply curve.

When a producer is able to sell the product for a higher price, the quantity supplied by the firm increases; when the price of the product falls, the quantity supplied falls. The curve has not moved; the producer has only responded to a change in the price of the product. It is very important to remember that a change in quantity supplied only occurs when the producer sees a higher or lower price for the product and adjusts the firm's output as a result; nothing has caused the supply curve itself to move.

Change in Supply



Changes in supply

A change in supply is an actual shift of the supply curve. An increase in supply is shown by a shift of the curve directly to the right, as producers make more of the product at each potential price. A decrease in supply is shown by a shift directly to the left, as producers produce fewer products at each potential price.

One factor affecting supply is a change in the cost of resources firms need in order to produce their products. Higher labor, equipment, or utility costs lower profits, so firms produce less at each price; therefore, an increase in the cost of production reduces supply and shifts the curve to the left. On the other hand, if production costs fall, the firm earns additional profit and is willing to produce more at every price, so supply increases.

Changes in technology can also affect supply. When firms adopted the use of computers, automation, and other technologies, the firms were able to produce more products at a lower cost of production, so supply of those products increased.

Taxes and subsidies can also affect product supply. Because taxes are considered a cost of production for the company, higher taxes result in a lower supply of products, while lower taxes can increase product supply. A subsidy is a government payment to a firm to encourage some activity, such as expanding a factory in an urban area. Because the subsidy lowers the cost of production, the firm increases its supply of products.

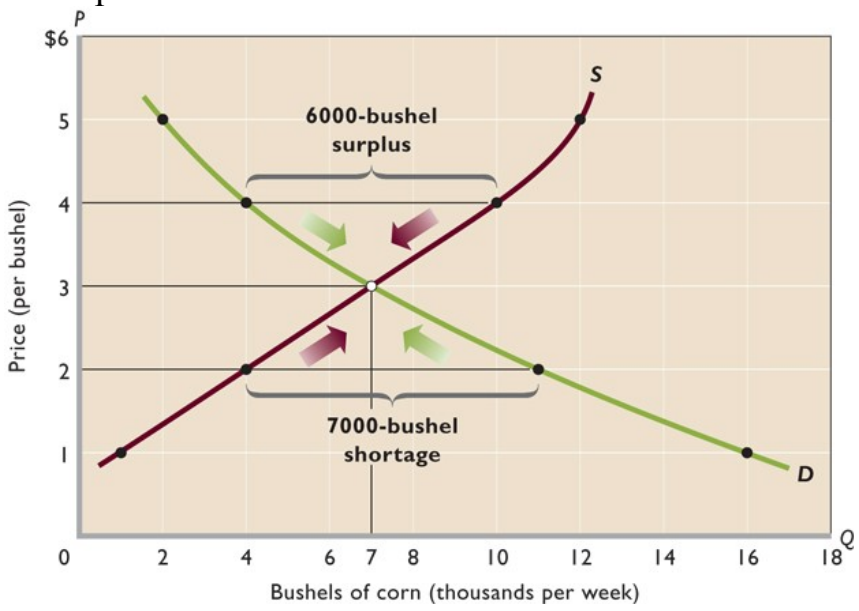
Changes in the prices of other products can also stimulate changes in supply. If firms discover they can make more profit by producing other products, they may choose to do so. When increased production of ethanol significantly increased demand for corn in commodity markets, the price of corn soared. As a result, many farmers who had previously grown soybeans switched to produce corn, and the supply of soybeans fell.

Producer expectations about the future price of a product can also affect supply, though the producer's reaction may depend on the ability to quickly respond to that price change. If a rice farmer expects rice prices to significantly increase in the next month, there is no time to plant an additional crop; instead, the farmer may reduce the supply of rice for sale right now, waiting for the price to rise before selling it. However, if a carpet producer expects carpet prices to significantly increase in the next month, there is time to make more carpet, and the firm is likely to increase production to earn that higher revenue.

Another factor that changes supply is the number of firms in the industry. In general, the more producers in an industry, the greater supply of products at all prices; with fewer firms, fewer products are produced.

Market Equilibrium

When supply and demand are put together on a graph, the point of intersection is called equilibrium. At the equilibrium quantity, the quantity demanded by consumers equals the quantity supplied by producers. The equilibrium price is also called the market-clearing price, because at that price, all of the products produced will be bought by consumers; there are no leftovers or shortages. In this graph of the corn market, the equilibrium price is $3 per bushel and the equilibrium quantity is 7,000 bushels of corn sold per week.



Equilibrium prices and quantity

Markets seek equilibrium, and in the absence of government intervention or factors that shift either curve, the equilibrium will be found. If corn producers tried to sell corn for $4 per bushel, producers would supply 10,000 bushels, but consumers would only demand 4,000 bushels, leaving a 6,000 bushel surplus. The quantity supplied is greater than the quantity demanded.

How can we resolve the surplus? Reduce the price. At a price of $3, the quantity demanded by consumers increases while the quantity supplied by producers falls until equilibrium is reached.

If corn producers instead tried to set the price at $2 per bushel, consumers would demand 11,000 bushels, but producers would only produce 4,000 bushels, resulting in a 7,000 bushel shortage—the quantity demanded is greater than the quantity supplied. How do we resolve the shortage?

Raise the price. By raising the price to $3, producers are willing to increase the quantity of corn supplied, while consumers reduce the quantity of corn they demand until equilibrium is again reached.

LECTURE 3

Module 4

Elasticity of demand and supply.

Elasticity of demand. Price elasticity of demand. Income elasticity of demand. Cross-price elasticity of demand. Price elasticity of supply.

After studying this module, you should be able to answer the following questions:

1. What is the definition of elasticity?
2. What is the meaning and importance of:
    a. price elasticity of demand?
    b. income elasticity of demand?
    c. price elasticity of supply?
3. What factors influence the size of these various elasticities?
4. How the cross-price elasticity of demand measures the responsiveness of demand for one good to changes in the price of another good.
5. What is the price elasticity of supply?

An important aspect of a product's demand curve is how much the quantity demanded changes when the price changes. The economic measure of this response is the price elasticity of demand.

Price elasticity of demand is calculated by dividing the proportionate change in quantity demanded by the proportionate change in price.

Measuring the price elasticity of demand: We need to compare the size of the change in quantity demanded with the size of the change in price in percentage. This gives us the following formula for the price elasticity of demand (**P**εd):

$$\mathbf{P\varepsilon d = \%\Delta Qd / \%\Delta Pd}$$

where ε (a Greek letter *'epsilon'*) is the symbol we use for elasticity,

and Δ (a capital Greek letter '*delta*') is the symbol we use for 'a change in', **Q** is quantity, and **P** is price.

For example, if a 40 per cent rise in the price of oil caused the quantity demanded to fall by 10 per cent, the price elasticity of oil would be:

$$\mathbf{-10\% / 40\% = -0.25}$$

On the other hand, if a 5 per cent fall in the price of tangerines caused a 15 per cent rise in the quantity demanded, the price elasticity of demand for tangerines would be:

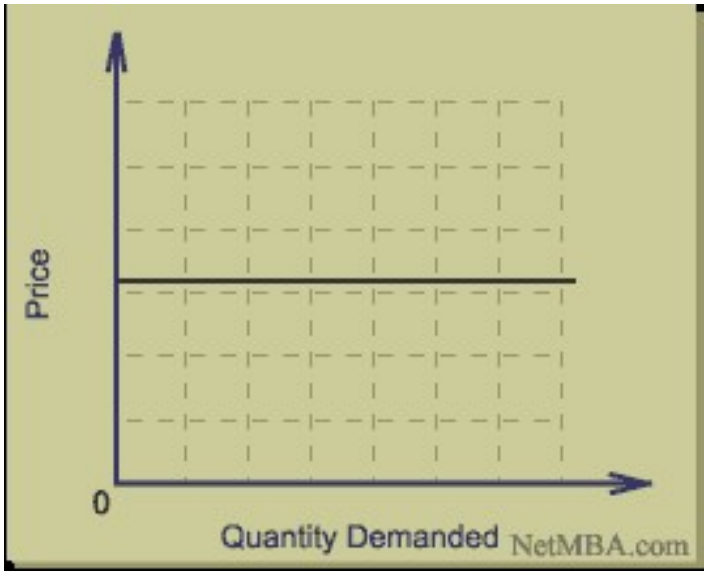
15% / – 5% = – 3

The figures (–0.25 and –3) show that tangerines have a more elastic demand than oil. The sign is negative, because price and quantity change in opposite directions. Thus when calculating price elasticity of demand, we either divide a negative change by a positive figure, or positive figure by a negative.

The value (greater or less than 1): if we focus on the number and ignore the sign, we can know whether demand is elastic or inelastic.

Elastic demand (ε > 1). Change in demand is larger than change in price.

Perfectly Elastic Demand Curve



From this demand curve it is easy to visualize how an extremely small change in price would result in an infinitely large shift in quantity demanded.

Inelastic demand (ε < 1). Change in demand is a smaller number than change in price.

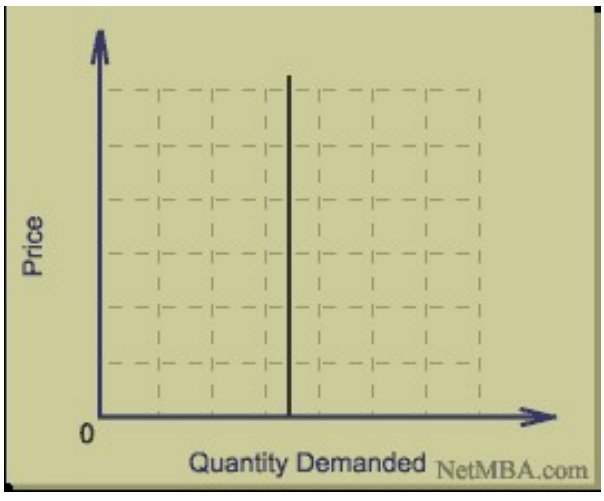
In this case, the change in quantity demanded is proportionately smaller than the change in price. An increase in price would result in an increase in revenue, and a decrease in price would result in a decrease in revenue. In the extreme case of elasticity near 0, the demand curve would be nearly vertical, and the quantity demanded would be almost independent of price. The case of zero elasticity is described as being perfectly inelastic.

Perfectly Inelastic Demand Curve

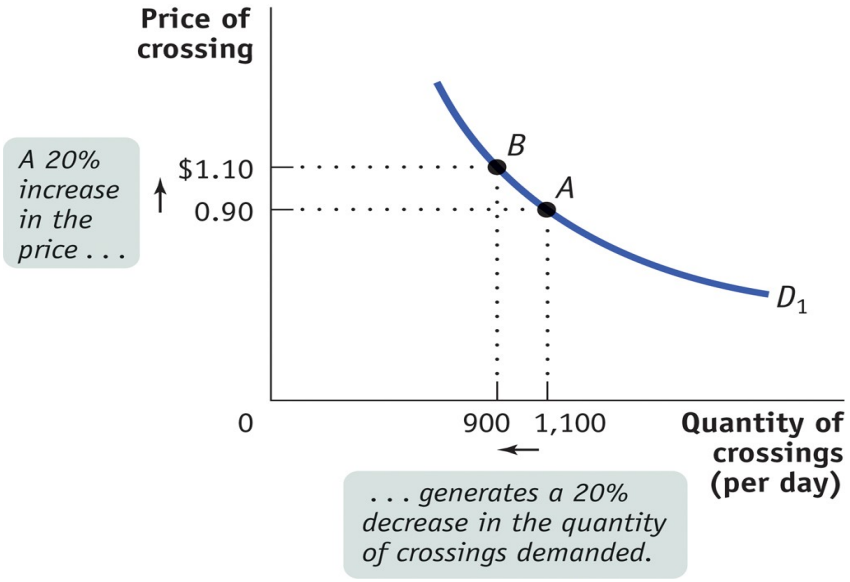
From this demand curve, it is easy to visualize how even a very large change in price would have no impact on quantity demanded.

Unit elastic demand (ε = 1). This is where the price and quantity demanded change by the same proportion.

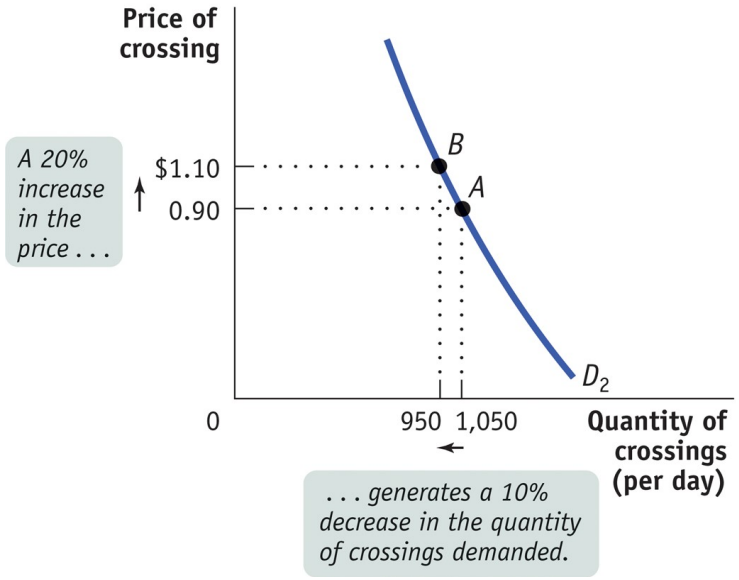
This case is referred to as unitary elasticity. The change in quantity demanded is in the same proportion as the change in price. A change in price in either direction therefore would result in no change in revenue.



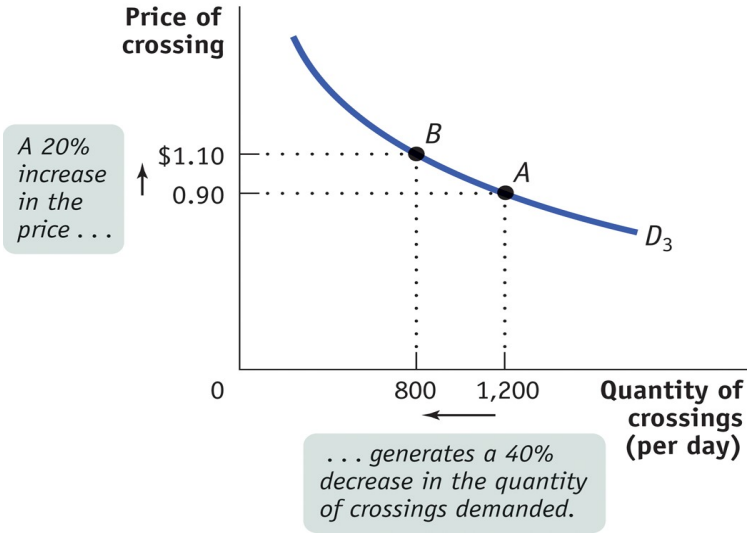
(a) Unit-Elastic Demand: Price Elasticity of Demand = 1



(b) Inelastic Demand: Price Elasticity of Demand = 0.5



(c) Elastic Demand: Price Elasticity of Demand = 2



1. Determinants of price elasticity of demand:

1. The **number of substitute goods**;

2. The **proportion of income** spent on the good.

The larger the number of substitute goods and the proportion of income spent on a good, the greater will be the price elasticity of demand. For example, salt has a very low price elasticity of demand, but if mortgage interest rates rise (the 'price' of loans for house purchase), people may have to cut down on their demand for housing.

3. The **time period**. When price rises, people may take time to find alternatives. The longer the time period after a price change, the more elastic the demand is likely to be.

To illustrate this, let us return to our example of oil. Between December 1973 and June 1974 the price of crude oil quadrupled, which led to similar increases in the prices of petrol and other oil products. Over the next few months, there was only a very small fall in the consumption of oil products. Demand was highly inelastic (people still wanted to drive their cars).

Over the time, however, as the higher prices persisted, many people switched to smaller cars. Demand was thus much more elastic in the long run.

2. Responsiveness of demand to changes in income

In addition to price elasticity of demand (**Pεd**) there is also income elasticity of demand (**Yεd.**). The letter ***Y*** is used for income because letter ***I*** is already used for 'investment'). This measurement enables us to predict how much the demand curve will shift for a given change in income. The formula is as follows:

Yεd = %ΔQd / %ΔY

For example, if a 2 per cent rise in income caused an 8 per cent rise in a product's demand, then its income elasticity of demand will be:

8% / 2% = 4

The major determinant of income elasticity of demand is the degree of 'necessity' of the good. In a developed country, the demand for luxury goods increases rapidly as people's incomes rise, whereas the demand for basic goods, such as bread, rises only a little. Thus items such as cars and holidays abroad have a high income elasticity, whereas items such as potatoes and bus journeys have a low income elasticity of demand.

The demand for some goods actually decreases as incomes rise. These are **inferior goods** such as cheap margarine. As people earn more, they switch to butter or better-quality margarine. Unlike **normal goods**, which have a positive income elasticity of demand, inferior goods have a negative income elasticity of demand.

3. The third type of elasticity of demand is known as **cross elasticity of demand**. It is a measure of the responsiveness of demand for one product to a change in the price of another (either a substitute or a complement). The formula for the cross elasticity of demand (**Cεd**) is:

Cεdab = %ΔQda / %ΔPb

If a good ***b*** is a substitute for good ***a***, ***a***'s demand will rise as ***b***'s price rises. In this case, cross elasticity will be a positive figure.

For example, if the demand for butter rose by 2% when the price of margarine (a substitute) rose by 8%, then the cross elasticity of demand for butter with respect to margarine would be:

2% / 8% = 0.25

If good ***b*** is complementary to good ***a***, ***a***'s demand will fall as ***b***'s price rises and thus the quantity of ***b*** demanded falls. In this case, cross elasticity of demand will be a negative figure. For example, if a 4% rise in the price of bread led to a 3% fall in demand for butter, the cross elasticity of demand for butter with respect to bread would be: – 3% / 4% = – 0.75

Firms will wish to know the cross elasticity of demand for their product when considering the effect on the demand for their product of a change in the price of a rival's product. These are vital pieces of information for firms when making their production plans.

4. Responsiveness of supply to changes in price

Price elasticity of demand = $\frac{\text{\% change in quantity demanded}}{\text{\% change in price}}$ (dropping the minus sign)	
0	**Perfectly inelastic:** price has no effect on quantity demanded (vertical demand curve).
Between 0 and 1	**Inelastic:** a rise in price increases total revenue.
Exactly 1	**Unit-elastic:** changes in price have no effect on total revenue.
Greater than 1, less than ∞	**Elastic:** a rise in price reduces total revenue.
∞	**Perfectly elastic:** any rise in price causes quantity demanded to fall to 0. Any fall in price leads to an infinite quantity demanded (horizontal demand curve).
Cross-price elasticity of demand = $\frac{\text{\% change in quantity } \textit{of one good} \text{ demanded}}{\text{\% change in price } \textit{of another good}}$	
Negative	**Complements:** quantity demanded of one good falls when the price of another rises.
Positive	**Substitutes:** quantity demanded of one good rises when the price of another rises.
Income elasticity of demand = $\frac{\text{\% change in quantity demanded}}{\text{\% change in income}}$	
Negative	**Inferior good:** quantity demanded falls when income rises.
Positive, less than 1	**Normal good, income-inelastic:** quantity demanded rises when income rises, but not as rapidly as income.
Greater than 1	**Normal good, income-elastic:** quantity demanded rises when income rises, and more rapidly than income.
Price elasticity of supply = $\frac{\text{\% change in quantity supplied}}{\text{\% change in price}}$	
0	**Perfectly inelastic:** price has no effect on quantity supplied (vertical supply curve).
Greater than 0, less than ∞	ordinary upward-sloping supply curve.
∞	**Perfectly elastic:** any fall in price causes quantity supplied to fall to 0. Any rise in price elicits an infinite quantity supplied (horizontal supply curve).

LECTURE 4

Module 5

The Rational Consumer.

The utility of a consumer. Total utility and marginal utility. The principle of diminishing marginal utility. The optimal consumption bundle. Income and substitution effects.

After studying this module, you must to know:

1. How consumers choose to spend their income on goods and services.
2. Why consumers make choices by maximizing utility, a measure of satisfaction from consumption?
3. Why the principle of diminishing marginal utility applies to the consumption of most goods and services?
4. How to use marginal analysis to find the optimal consumption bundle.
5. What income and substitution effects are?

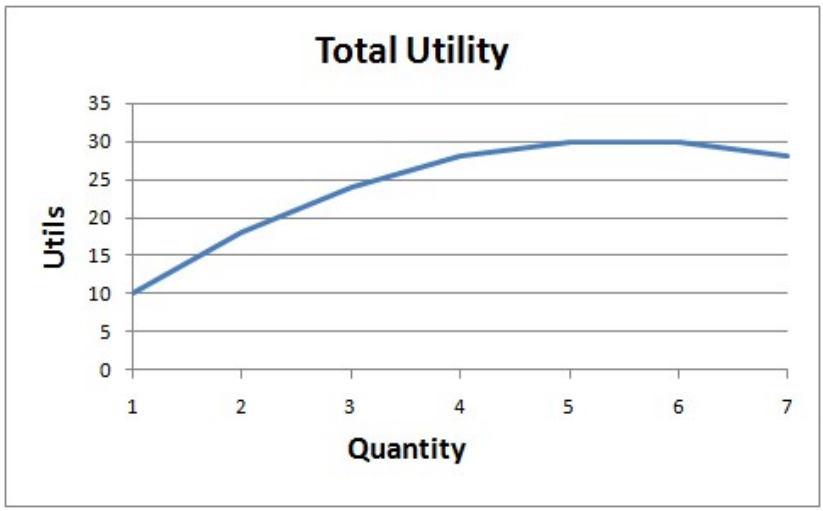
Utility is the satisfaction that a person derives from the consumption of a good or service. **Total utility** is the total satisfaction received from consuming a given total quantity of a good or service, while **marginal utility** is the satisfaction gained from consuming another quantity of a good or service. Sometimes, economists like to subdivide utility into individual units that they call utils.

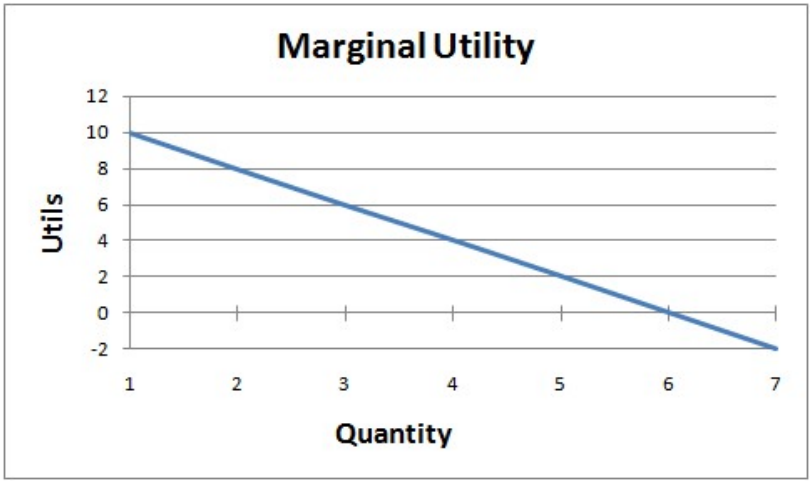
One quality of marginal utility is that it always declines for each successive quantity consumed of a particular good. If you like ice cream, and you eat one scoop, the first scoop will provide the greatest satisfaction. If you eat another scoop, you'll probably enjoy that also, but the satisfaction will be less than for the first. At some point, you will not want any more ice cream. The marginal utility will drop to zero and will even become negative. This is an everyday illustration of the law of diminishing marginal utility. **Marginal utility declines** for everything. Although many people want to amass great wealth, each dollar that is accumulated becomes worth less and less, because the marginal utility of what it can buy declines.

Quantity	Marginal Utility	Total Utility
1	10	10
2	8	18
3	6	24
4	4	28
5	2	30
6	0	30
7	-2	28
1	10	10

Declining marginal utility explains why the demand curve slopes downward as the supply quantity is increased, and why people will only consume more if the price declines, since people's willingness to pay also declines.

Marginal utility can also be related to the elasticity of demand. If demand is inelastic, then the quantity demanded drops off sharply as the price increases; with elastic demand, quantity drops off more slowly. So a product for which there is inelastic demand will have a marginal utility that drops off sharply, while a product with elastic demand will have a marginal utility that declines more slowly.





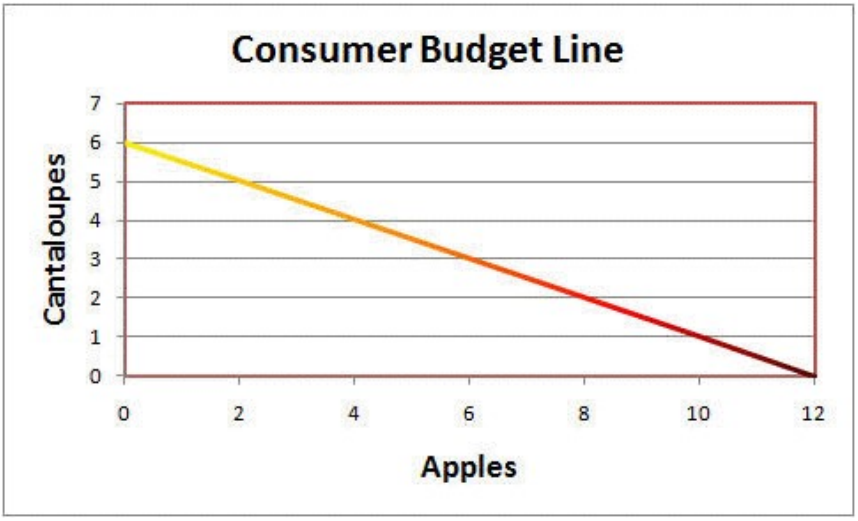
Marginal analysis is use to find the optimal consumption bundle. Consumer choice is guided by preferences for specific products, budget constraints, prices, and the marginal utility of products. A budget constraint exists because the consumer only has so much money, so he can only spend so much; therefore, even among things that he desires, he must still make a choice. This choice will depend on the marginal utility of the product and its price. Because marginal utility declines with quantity, while the price does not vary, a consumer will tend to buy as much product until the marginal utility of the product falls below the marginal utility of other products that the consumer can buy. Hence, the consumer stops buying more of a product when the marginal utility of an additional amount is less than its price. In this way, the total utility of what the consumer can purchase within his budget is maximized. So the marginal utility of each type of product divided by its price will be roughly equal to the marginal utility of the other products that the consumer purchased divided by their prices.

$$\frac{\text{Marginal Utility of Product A}}{\text{Price of Product A}} = \frac{\text{Marginal Utility of Product B}}{\text{Price of Product B}}$$

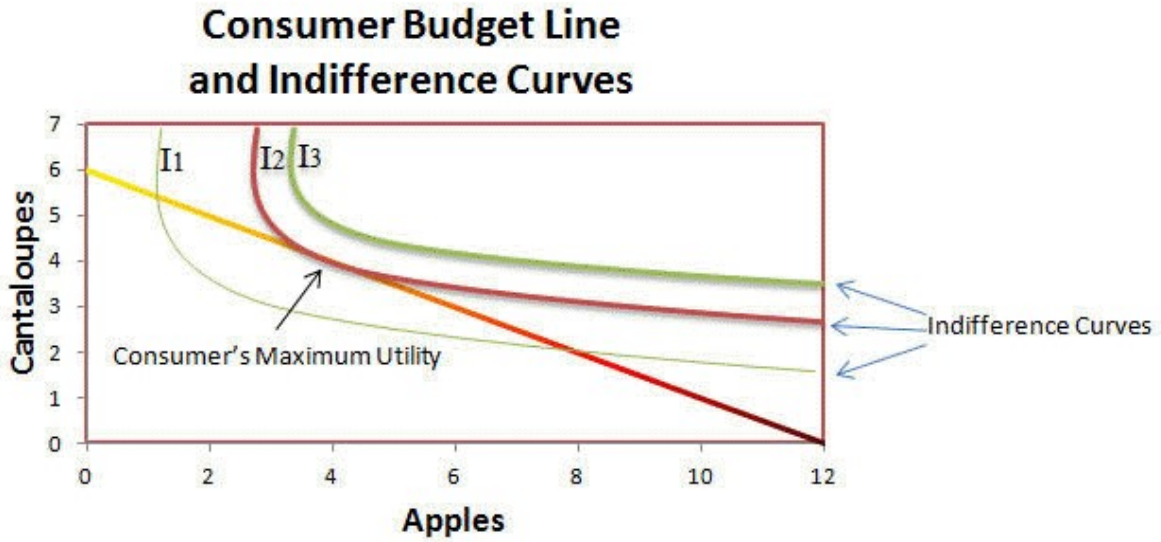
How consumer choice varies with marginal utility is sometimes depicted with **indifference curves**. Each point on an indifference curve represents a combination of

products that yields the same total utility for the consumer. Because each consumer's purchasing power is limited, this budget constraint, represented by a budget line, limits the choices that the consumer can actually make.

Indifference curve analysis is simplified by assuming that the consumer spends all of her money on 2 products. For instance, suppose the consumer has $12 to spend on cantaloupes and apples. Each cantaloupe costs $2 apiece and each apple costs $1 apiece. The following table shows what can be purchased:



An indifference curve for this example would yield every combination of apples and cantaloupes that yield the same total utility. Indifference curves are convex to the origin because of the law of diminishing marginal utility — when there is a predominance of cantaloupes, then the marginal utility of an additional cantaloupe is less than the marginal utility of an additional apple, and vice versa. In other words, consumers like variety. A tangent line to an indifference curve represents the marginal rate of substitution (MRS) of one product for the other that maintains total utility.



LECTURE 5

Module 6

Behind the Supply Curve: Inputs and Costs.

The Theory of Production. Inputs and Output. Production function. A marginal product. There are diminishing returns to an input. Types of costs. A fixed input. A variable input. The total product curve. Operating revenue and profit. Principle of profit maximization

After studying this module, you must to know:

1. The importance of the firm's production function, the relationship between quantity of inputs and quantity of output.
2. Why production is often subject to diminishing returns to inputs.
3. The various types of costs a firm faces and how they generate the firm's marginal and average cost curves.
4. Why a firm's costs may differ in the short run versus the long run.
5. How the firm's technology of production can generate increasing returns to scale.

A **production function** is a formal mathematical relation that describes the efficient process of transforming inputs into outputs.

A simple production function describes the process of transforming a set of inputs K, L, etc. into a quantity Q of output (goods or services): Q = Q (K, L etc.).

Total product (TP) is the entire output of the production process, and often denoted as the Q, or quantity of output.

Marginal product (MP) of a particular factor of production, for example labor, is defined to be the change in output (Q) resulting from a one-unit change in the input (ex: one more hour worked, or one more worker employed). If again we use the symbol Δ to mean 'change in', then we have:

$$MP_L = \frac{\Delta TP}{\Delta L}$$

= where ΔL is a particular input, such as labor.

Average product (AP) is the average amount of output produced with each unit of input:

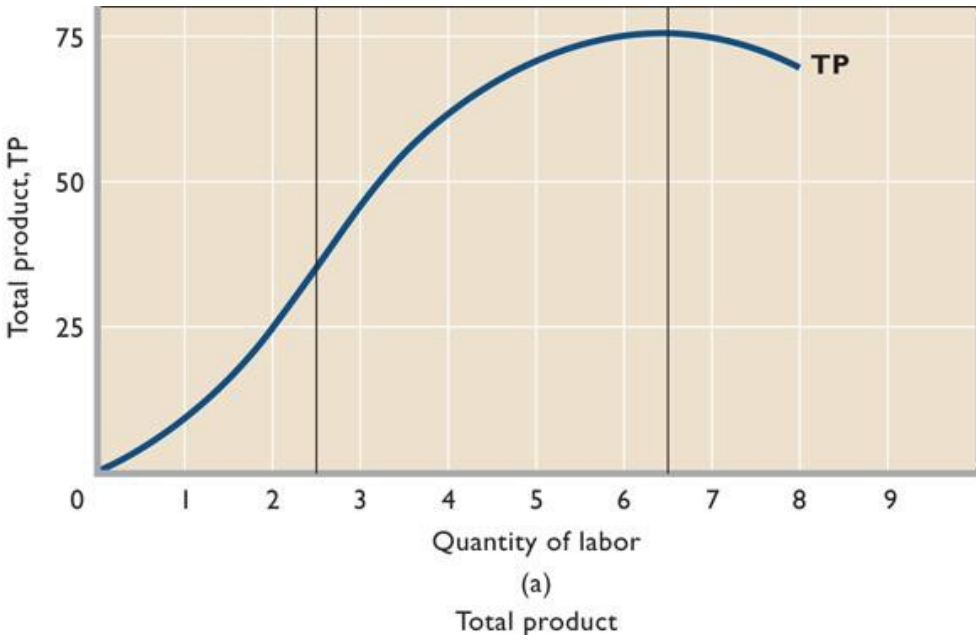
$$AP_L = \frac{TP}{L}$$

Keep in mind that TP = Q so we can also:

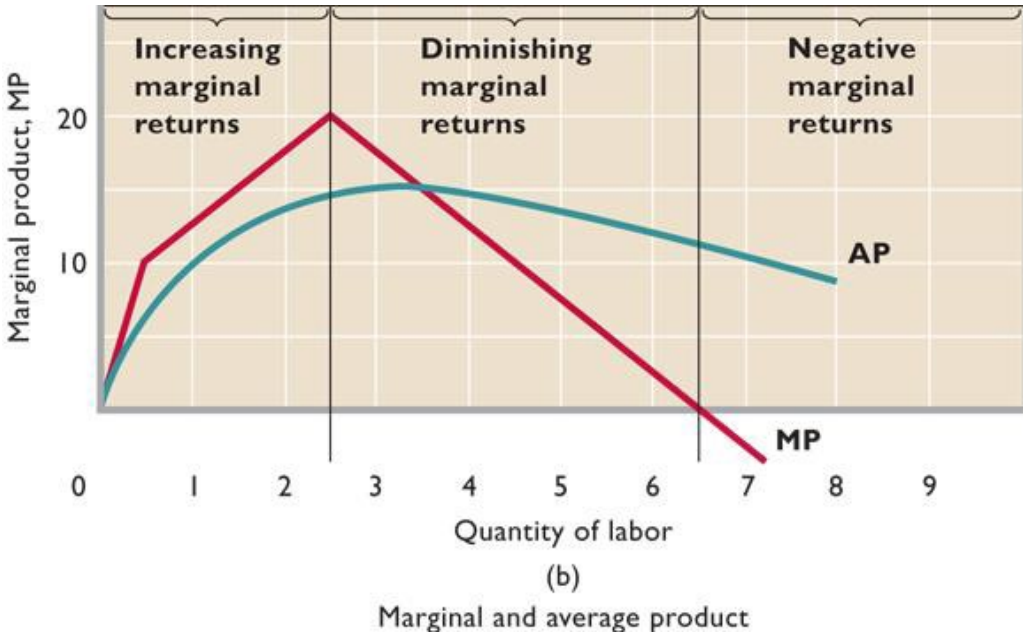
$$MP_L = \frac{\Delta Q}{\Delta L} \text{ and } AP_L = \frac{Q}{L}$$

Total, Marginal, and Average Product

(1) Units of the Variable Resource (Labor)	(2) Total Product (TP)	(3) Marginal Product (MP), Change in (2)/ Change in (1)	(4) Average Product (AP), (2)/(1)
0	0		—
		10 (Increasing marginal returns)	
1	10		10.00
		15 (Increasing marginal returns)	
2	25		12.50
		20 (Increasing marginal returns)	
3	45		15.00
		15 (Diminishing marginal returns)	
4	60		15.00
		10 (Diminishing marginal returns)	
5	70		14.00
		5 (Diminishing marginal returns)	
6	75		12.50
		0 (Negative marginal returns)	
7	75		10.71
		−5 (Negative marginal returns)	
8	70		8.75



(a) Total product



(b) Marginal and average product

Law of diminishing returns states that with a given state of technology if the quantity of one factor input is increased , by equal increments, the quantities of other factor inputs remaining fixed, the resulting increment of total product will first increase but decrease after a particular point.

Short and Long Run

Short Run – period of production during which some inputs cannot be varied. Eg. For a company it is easy to add new labor than add new equipments. So Labor as a factor of input can be varied in the short run and thus it impacts the production

Long Run – period of production that gives managers adequate time to vary all the inputs used to produce a good. Eg. Adding new equipments to the existing setup to increase the production

Relation – Total, Average and marginal Product

1. According to law of diminishing returns, the marginal product first increases and then decreases beyond a point.
2. The Total product is maximum when the marginal product becomes 0
3. When *TP* is at a maximum, *MPL = 0*.
4. When the *APL* is increasing, then *MPL > APL*.
5. When *APL* is at a maximum, *MPL= APL*.
6. When the *APL* is declining, then *MPL < APL*.

The total cost is simply all the costs incurred in producing a certain number of goods.

Total Cost = TC

Total Cost is made up of two components in the short run: Total Fixed Cost and Total Variable Cost:

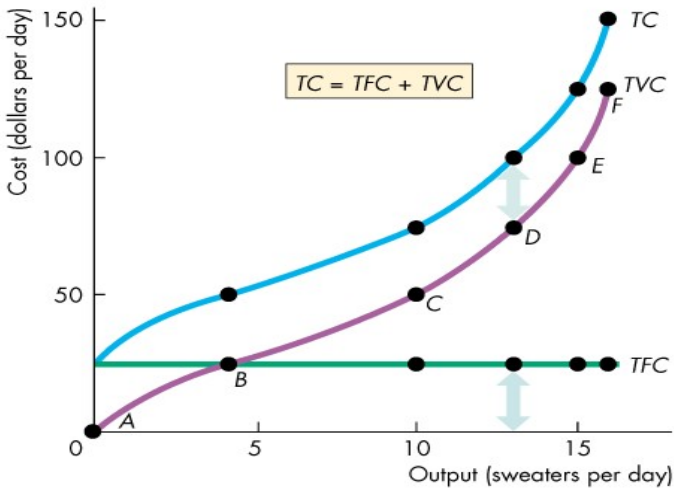
TC = TFC + TVC

Total Fixed Costs (TFC). The Fixed Costs do not change as output varies in the short run, so they may be represented as a horizontal line:

Total Fixed Cost = TFC

Total Variable Costs are the costs associated with hiring various levels of variable inputs in order to vary the rate of output in the short run.

Total Variable Cost = TVC



Average Total Cost . **Other cost concepts** are average cost (**AC**) and average total cost (**ATC**), average fixed cost (**AFC**) and average variable cost (**AVC**). If **Q** represents the quantity of output produced, these concepts can be defined as follows:

AFC = TFC/Q:
AVC = TVC/Q;
ATC = TC/Q;
ATC = AFC + AVC

Marginal cost (MC) is an increase in total cost when one additional unit of output is produced.

$$MC = \frac{\Delta TC}{\Delta Q}$$

The firm's **marginal revenue**(MR) is the extra income generated by producing an additional unit of output. In a competitive output market, firms take prices as given, and MR is just the equilibrium price of the good they produce: MR = p

The Concept of Profit Maximization

Profit is defined as total revenue minus total cost.

Profit = TR – TC

Total revenue (TR) is the total amount of money the firm collects in sales. Thus, if P is the price and q is the quantity the firm sells.

TR = P*Q

Marginal revenue is the change in total revenue from increasing quantity by one unit.

That is, MR = ΔTR/Q, where the change in Q is usually one.

The firm uses MR and MC to decide how much to produce.

1. Suppose increasing output by one unit will bring in more additional revenues than it costs to produce. That is, MR > MC. Then it makes sense to produce the unit, because doing so will create more added benefit than added cost.

2. On the other hand, suppose your last unit cost more to produce than it brought in additional revenue. Then MR < MC. And it makes sense to cut back your production (not produce that unit after all), because the last unit created more added cost than added benefit.

3. So the only point at which you're satisfied is where MR = MC. This is the general rule for profit maximization, which we'll use with any firm, whether a perfect competitor, monopolist, or anything in between.

Graphically, we find the quantity Q* where the MR and MC curves cross.

LECTURE 6, 7

Module 7

Types of Market Structure.

Market Structures. Perfect Competition. Monopoly. Monopolistic competition. Oligopoly.

After studying this module, you must to know:

1. What a perfectly competitive market is and the characteristics of a perfectly competitive industry.
2. How a price-taking producer determines its profit-maximizing quantity of output.
3. The significance of monopoly, where a single monopolist is the only producer of a good.
4. How a monopolist determines its profit-maximizing output and price.
5. The difference between monopoly and perfect competition, and the effects of that difference on society's welfare.
6. The meaning of monopolistic competition.
7. Why oligopolies and monopolistically competitive firms differentiate their products.
8. The meaning of oligopoly, and why it occurs.

Types of Market Structures

The term market structure refers to the level of competition experienced by businesses in an industry. This factor determines the nature of the product sold, how easy it for new businesses to enter that industry and the amount of information available concerning that industry.

Monopoly

A monopoly exists when only one supplier has control over an entire market for a particular good or service. Examples of monopoly in Caribbean countries are a single electricity and water supplier which may be owned by the government or a private company.. The monopolist sells a product for which there are no close substitutes. The monopolist controls the market because it is difficult for other firms to enter such industries. The challenges include high start-up costs and difficulty in obtaining strategic raw materials or information regarding business operation. The monopolist has great market power and can therefore set the price of products sold in the market.

Oligopoly

Oligopoly describes a market structure in which there are few large firms. They offer the same product for sale and compete aggressively for market dominance. Examples of firms in this market structure are telecommunications and petroleum companies. Entry into this industry is also difficult as start-up costs are very high, there is control of strategic raw material and information is not easily available.

Perfect Competition

This market structure is characterized by many buyers and many sellers of a product. The product is not unique as it is available from many sellers. Firms in this market structure are price takers as they cannot sell above the price of their competi-

tors. Firms must accept the market's price as there are several competitors. There is perfect knowledge about the business and there are no barriers of high start-up cost and control of strategic raw materials.

Monopolistic Competition

Similar to perfect competition this market structure involves many sellers. However, this market structure differs from perfect competition in that each firm sells a branded product. Firms in this market structure are a monopolist for their brand. There is freedom of entry and exist into the industry as there are no barriers such as strategic raw material, very high start –up cost and lack of information.

Table 5.1 – Features of the four market structures

Type of market	Number of firms	Freedom of entry	Nature of product	Market power	Example s
Perfect competition	Very many	Unrestricted	Homogeneous (undifferentiated)	No	Wheat, cabbage
Monopolistic competition	Many/several	Unrestricted	Differentiated	Yes, but limited	Restaurants, builders
Oligopoly	Few	Restricted	1.Undifferentiated or 2. Differentiated	Yes, but limited	1.Cement 2. Cars
Monopoly	One	Restricted or completely blocked	Unique	Yes	Prescription drugs

LECTURE 8

Module 8

The Science and Data of Macroeconomics.

Questions and problems analyzed by macroeconomists; the measurements and models used; the concepts of macroeconomic analysis; the key data of macroeconomics: gross domestic product, the consumer price index, the unemployment rate. Total production of goods and services; factors of production; the division of national income; the supply and demand for goods and services; equilibrium in the market for goods and services

After studying this module, you must to know:

1. Explain the difference between macroeconomics and microeconomics. How are these two fields related?
2. Why do economists build models?
3. What is a market-clearing model? When is it appropriate to assume that markets clear?
4. List the two things that GDP measures. How can GDP measure two things at once?
5. What does the consumer price index measure?

Economic growth is measured in terms of an increase in the size of a nation's economy. Definition: Gross Domestic Product (GDP) is the best way to measure a country's economy. It includes everything produced by all the people and companies that are in the country.

There are three approaches to calculating GDP:

1. expenditure approach - described above; calculates the final spending on goods and services.

2. product approach - calculates the market value of goods and services produced.

3. income approach - sums the income received by all producers in the country.

These three approaches are equivalent, with each rendering the same result.

GDP generally is defined as the market value of the goods and services produced by a country. One way to calculate a nation's GDP is to sum all expenditures in the country. This method is known as the expenditure approach and is described below.

The expenditure approach calculates GDP by summing the four possible types of expenditures as follows: GDP = Consumption + Investment + Government Purchases + Net Exports.

1. Consumption is the largest component of the GDP. In the U.S., the largest and most stable component of consumption is services. Consumption is calculated by adding durable and non-durable goods and services expenditures. It is unaffected by the estimated value of imported goods.

2. Investment includes investment in fixed assets and increases in inventory.

3. Government purchases are equal to the government expenditures less government transfer payments (welfare, unemployment payouts, etc.)

4. Net exports are exports minus imports. Imports are subtracted since GDP is defined as the output of the domestic economy.

This approach calculates National Income, NI. NI is the sum of the following components:

1. Labor Income (W)
2. Rental Income (R)
3. Interest Income (i)
4. Profits (PR)

$$\mathbf{NI = W + R + i + PR}$$

Labor Income (W):

Salaries, wages, and fringe benefits such as health or retirement. This also includes unemployment insurance and government taxes for Social Security.

Rental Income (R):

This is income received from property received by households. Royalties from patents, copyrights and assets as well as imputed rent are included.

Interest Income (i):

Income received by households through the lending of their money to corporations and business firms. Government and household interest payments are not included in the national income.

Profits (PR):

The amount firms have left after paying their rent, interest on debt, and employee compensation. GDP calculation involves accounting profit and not economic profit.

From national income, three more adjustments are needed in order to get to GDP.

First, you may notice that government receipts are not part of this equation.

That is because income tax receipts include money that is part of the incomes of the other segments of the economy. They are already being counted elsewhere. However, some taxes are collected from consumers by businesses, who have to turn this money over to the government. These taxes include state and local sales taxes, and excise taxes. Together, they are called indirect business taxes. In order to balance income and expenditures, this amount needs to be added to NI. This yields a number that is called net national product, or NNP.

NNP = NI + Indirect Business Taxes

This number (NNP) still does not equal GDP**. GDP using the expenditures approach** includes an item called 'gross private domestic investment'. Not all of this amount is received as income. Some of it is used to replace worn-out equipment, plus the replacement of damaged or accidentally destroyed equipment. This replacement value is called capital consumption allowance. The routine replacement of worn-out equipment is called depreciation, and is computed and allocated over the lifetime of the equipment using an accounting procedure at each individual firm. Since depreciation makes up the vast majority of the capital consumption allowance, often this allowance is simply referred to as depreciation. In order to balance income and expenditures, this amount needs to be added to income. Adding the capital consumption allowance (or depreciation) to NNP will yield a number that is called Gross National Product, or GNP.

GNP = NNP + Capital Consumption Allowance (or Depreciation)

GDP per Capita: This is the best way to compare Gross Domestic Product between countries. That's because some countries have a large economic output because they have so many people. To get a more accurate picture, it's helpful to use GDP per capita. This divides Gross Domestic Product by the number of people, and shows the real productivity of the population.

You've probably already guessed that the best way to compare Gross Domestic Product by year and to other countries is with real GDP per capita. This takes out the effect of inflation, exchange rates and differences in population.

PRACTICAL PART OF DISCIPLINE

Besides common tasks the practice part of economics includes tests on the basic issues, concepts and formulas module. Studied issues of the discipline are focused on the behavior of individual economic agents and their cooperation, the ways of determining the main micro- , macroeconomics indicators.

Practice part is provided at the end of each module of material to assist you in preparing for the exam.

Methods of practical training:

1. Reviewing and analysing the material given at the lecture.
2. Discussing during seminars, reviewing practical examples.
3. Analysing problems, case study and problem solving.
4. Analysing practical cases and current economic issues.

Lesson 1

Module 2. Basic concepts of Economics.

Important issues of the module 2. Economic theory as a science. Economic problem and its sub-parts. Economic methodology. Famous economists. Types of economic systems. Forms of business ownership.

TEST

1. The study of economics is primarily concerned with:

a. keeping private businesses from losing money.
b. demonstrating that capitalistic economies are superior to socialistic economies.
c. choices which are made in seeking to use scarce resources efficiently.
d. determining the most equitable distribution of society's output.

2. The "economic perspective" refers to:

a. macroeconomic phenomena, but not microeconomic phenomena.
b. microeconomic phenomena, but not macroeconomic phenomena.
c. the making of rational decisions in a context of marginal costs and marginal benefits.
d. unlimited resources in a context of limited material wants.

3. Rational behavior suggests that:

a. everyone will make identical choices.
b. resource availability exceeds material wants.
c. individuals will make different choices because their information and constraints differ.
d. an individual's economic goals cannot involve tradeoffs.

4. Economics involves "marginal analysis" because:

a. most decisions involve changes in the status quo.
b. marginal benefits always exceed marginal costs.
c. marginal costs always exceed marginal.
d. much economic behavior is irrational.

5. The assertion that "There is no free lunch" means that:

a. there are always tradeoffs between economic goals.

b. all production involves the use of scarce resources and thus the sacrifice of alternative.
c. goods.
d. marginal analysis is not used in economic reasoning.
e. choices need not be made if behavior is rational.

6. Generally speaking, the inductive method:
a. begins with hypotheses which are then tested against real-world facts.
b. confuses correlation with cause and effect.
c. moves from facts to generalizations or theory.
d. cannot be applied in economic analysis.

7. The deductive method:
a. begins with hypotheses which are then tested against real-world facts.
b. confuses correlation with cause and effect.
c. begins with facts and moves to generalizations or theory.
d. applies to the physical sciences, but not to social sciences.

9. Economic models:
a. are of limited use because they cannot be tested empirically.
b. are limited to variables which are directly related to one another.
c. emphasize basic economic relationships by abstracting from the complexities of the real world.
d. are unrealistic and therefore of no practical consequence.

10. Which of the following is a normative statement?
e. The temperature is high today.
f. The humidity is high today.
g. It is too hot to play tennis today.
h. It will cool off later this evening.

TASKS

1. Complete the definition.

Economy is	a) a person who…..
Economics is	b) a science which…..
An economist is	c) a system of…..

2. Guess the meanings of these words. Which of them can be used as special economic terms?

Principle, luxury, discipline, activity, service, human, to practice, stable, production, distribution, dynamics.

3. Connect the name of well-known economist and his publication.

Well-known economist	Publication
Karl Marx	Military Spending: Facts and Figures
Joseph Schumpeter	Kapital
Adam Smith	The Future of Non-Fuel Minerals in the U.S. And World Economy
Wassily Leontief	Wealth of Nations
Joseph Schumpeter	Communist Manifesto
Adam Smith	Theory of Moral Sentiments
Wassily Leontief	The Theory of Economic Development
Adam Smith	Inquiry into the Nature and Causes of the Wealth of Nations
Karl Marx	Capitalism, Socialism and Democracy

4. Fill in the table.

Economic system	Advantages	Disadvantages
Traditional		
Command		
Market		
Mixed Economy		

Answer the following questions:

1. What is economics?
2. On what problems do economists focus their attention?
3. Into what fields can be standard economics divided?
4. What are the three fundamental questions of economics?

Lesson 2

Module 3. Demand and Supply.

Important issues of the module 3. The Law of Demand. The Law of Supply. Construct graphs. Demand and Supply curve: shifts vs. movement. Individual and market demand. Market Equilibrium. Changes of the market equilibrium. Construct graphs.

TEST

1. Which of the following is an accurate description of the primary theme of microeconomics?

a) analyzing tradeoffs;
b) a set of constrained optimization problems;
c) studying how individuals and firms make themselves as well off as possible given conditions of scarcity;
d) all of these.

2. What is a model?

a) any description of the relationship between two or more economic variables;
b) a description of an economic phenomenon that makes no extra assumptions;
c) a full description of a particular economic phenomenon;
d) an empirical study that analyzes how a certain part of the economy works.

3. What is the key assumption in microeconomics?

a) firms maximize sales;
b) firms maximize profits;
c) individuals maximize their income;
d) individuals maximize utility and firms maximize profits.

4. What is the distinction between empirical and theoretical economics?

a) theoretical economics analyzes long-term phenomena and empirical economics analyzes short-term;
b) theoretical economics tests models, and empirical economics builds them;
c) theoretical economics analyzes individuals and empirical economics analyzes firms;
d) theoretical economics builds models, and empirical economics test them.

5. Which of the following statements represents normative, rather than positive analysis?

a) since the supply of water is very large, the price of water is very low;
b) people should not be allowed to purchase bodily organs, because it allows the rich access to a life-saving procedure that the poor may not have access to;
c) the demand for organ transplants currently far exceeds the supply;
d) since the supply of gems is limited, their price is very high.

6. What determines the price and quantity of a good in a perfectly competitive market?

a) the presence or absence of substitute goods;
b) the intersection of the supply and the demand curve;
c) the government;
d) the position of the demand curve.

7. Assume that people enjoy eating either apples or oranges. What happens in the market for oranges when the price of apples goes up?

a) the demand curve shifts left;
b) there is no change in the demand curve;
c) the supply curve shifts left;
d) the demand curve shifts right.

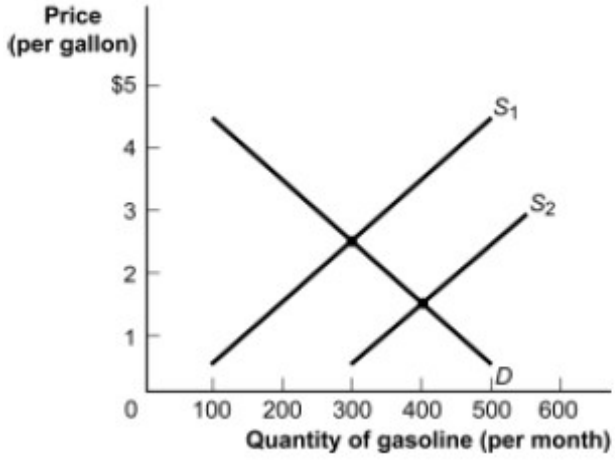
8. Now, assume there is a frost in Florida that destroys part of the orange crop. What happens to the market for oranges in this case?

a) the supply curve shifts up;
b) the supply curve shifts down;
c) there is no shift in the demand or supply curves;
d) the demand curve shifts right.

9. The government imposes a minimum wage for workers. Which of the following phenomena is not a consequence of this policy change?

a) decreased demand for labor by employers;
b) a decline in the average wage paid;
c) increased supply of labor by workers;
d) unemployment.

10. Use the following to answer question (figure: Demand and Supply of Gasoline). The supply curve shifts from S_1 to S_2.



Which statement is most correct?

a) at the old equilibrium price of $2.50, there will be pressure for the price to fall.
b) the new price will be $2.00.
c) the new quantity will be 300.
d) all of the above are true.

TASKS

1. Fill in the table.

Factors influencing the demand	**Factors influencing the supply**

2. Choose the proper word from two variants in brackets.

- The fashion for mini-skirt (increased/reduced) the demand for textile materials.
- Even in (some/the same) middle-income countries many people are very poor.
- Government regulations sometimes (decrease/impose) a change in (technology/quantity) that producers do not want to use.
- Stabilization of prices is of great importance to industrial nations (as we// as /as well) the Third World countries.
- Freeing up prices leads to their (decrease/increase).
- (Inferior/ Normal) goods are usually low-quality goods for which there are higher-quality (improvements/substitutes) sold at higher prices.
- A decrease in (complement/ input) prices makes the production less expensive.

3. Based on the data of the table to build the supply curve.

P	1	3	5	7
Qs	10	40	60	90

4. The table shows supple of individual producers, determine the market supply in the industry. Construct graphs of individual and market supple.

P	**Qs_1**	**Qs_2**	**Qs_3**	**market supple**
2	0	1	1	
4	1	3	2	
6	3	5	4	
8	6	9	7	
10	10	15	12	

5. The table shows supple of individual producers, determine the market supply in the industry. Construct graphs of individual and market supple.

P	**Qs_1**	**Qs_2**	**Qs_3**	**Qs_4**	**market supple**
1	0	0	0	1	
2	1	1	2	3	
3	2	3	4	5	
4	3	5	6	7	
5	4	7	8	9	

6. Based on the data of the table market demand curves and market supply. In the graph, determine the market equilibrium.

P, $	12	9	6	3	1
Qd, unit.	1	2	4	7	10
Qs, unit.	20	17	12	7	2

7. Assume that the demand for a commodity is represented by the equation Qd=60-6P and supply by the equation Qs=4P-20, where Qd and Qs are quantity demanded and quantity supplied, respectively, and P is price. Determine the market equilibrium.

Answer the following questions:

1. The role of prices: examples?
2. Positive vs. normative analysis of the microeconomics?
3. What is the definition of demand?
4. How is supply indicated?
5. What are the determinants of supply?
6. Explain the law of demand. Why does a demand curve slope downward?
7. Explain the law of supply. Why does the supply curve slope upward?

Lesson 3, 4

Module 4. Elasticity of Demand and Supply.

Important issues of the module 4. Price and income elasticity on demand. Interpret the price elasticity. Cross elasticity. Elasticity of supply. Measuring and interpreting. The role of Elasticity of Supply and Demand.

TEST

1. The quantity demanded is

a) the amount of a good that consumers plan to purchase at a particular price;
b) independent of the price of the good;
c) independent of consumers' buying plans;
d) always equal to the equilibrium quantity.

2. A substitute is a good

a) of higher quality than another good;
b) that is not used in place of another good;
c) that can be used in place of another good;
d) of lower quality than another good.

3. Wants, as opposed to demands,

a) depend on the price;
b) are the goods the consumer plans to acquire;
c) are the unlimited desires of the consumer;
d) are the goods the consumer has acquired.

4. A relative price is

a) the ratio of one price to another;
b) the difference between one price and another;
c) the slope of the supply curve;
d) the slope of the demand curve.

5. If the price of a substitute to good X increases, then

a) the demand for good X will increase;
b) the market price of good X will decrease;
c) the demand for good X will decrease;
d) the demand for good X will not change.

6. Which of the following accurately characterize perfectly inelastic demand?

a) the demand curve is horizontal;
b) demand does not change regardless of what happens to price;
c) the demand curve is vertical but does not change regardless of what happens to price;
d) the demand curve is vertical.

7. When do we expect to see a perfectly elastic demand curve?

a) when a good has no substitutes;
b) when a good has a perfect substitute;
c) when a good has many complements;
d) when there is limited supply of a good.

8. Let's say a researcher makes a study of patients in hospitals and finds they are much sicker than the average person in the population. Then he concludes that hospitals make patients sick. The researcher is mixing up two concepts; what are they?

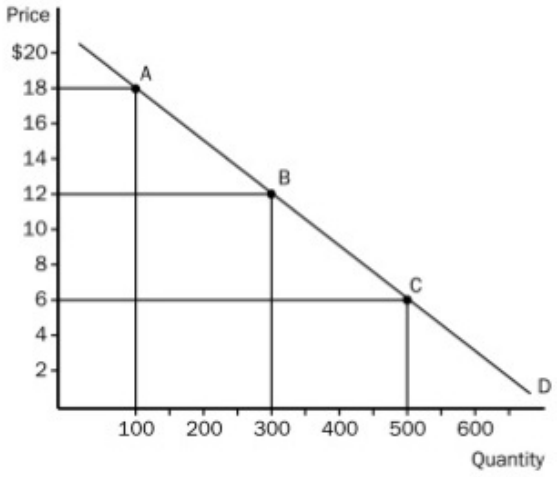
a) correlation and causation;
b) theory and empirics;
c) demand and supply;
d) shifts along the demand curve and shifts in the demand curve.

9. If the elasticity of demand for a good is sufficiently negative, firms may actually lose revenues when they raise the price of the good. Why is this?

a) fewer people buy the good at the higher price, and so overall revenues are lower;
b) consumers substitute from other goods to buy this firm's good;
c) the supply curve shifts in;
d) the elasticity of demand changes.

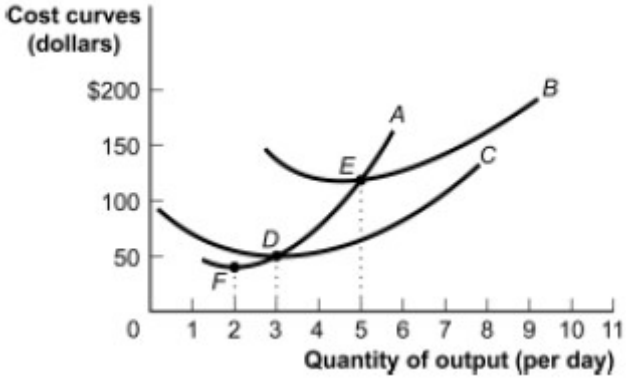
10. On the graph shown, the price elasticity of demand from point A to point B, using the midpoint method would be:

a) 1;
b) 1,5;
c) 2;
d) 2,5.



11. Use the following to answer the question (figure: Shot-Run Costs). The vertical part between curve B (Average Total Cost) and curve C (Average Variable Cost) at any quantity of output is:

Figure: Shot-Run Costs



a) marginal cost;
b) fixed cost;
c) average fixed cost;
d) average variable cost.

TASKS

1. Fill in the gaps.

- Demand is __ if the price elasticity is more negative than -1.
- Demand is __ if the price elasticity lies between -1 and 0.
- If the demand elasticity is exactly -1, we say that demand is __.
- Whether or not demand is elastic is __ required in setting the price.
- Economists will say that the demand for oil is __, but the demand for foreign holidays is __.
- Such statements refer to parts of the demand curve __ prices (__ inflation) that are typically charged for these goods and services.
- If televisions arc considered __, the demand elasticity will be much higher.
- The most important consideration is the ease with which consumers can __ another good that __ approximately the same function.
- With so many other brands __ at unchanged prices, consumers will switch away from the more expensive brand to other __ that basically fulfil the same __.
- The table __ that the demand for general categories of basic commodities is inelastic.
- There is a much wider __ in the demand elasticities for narrower definitions of __.

2. The tables present the following data, calculate the price elasticity of supply and the price elasticity of demand.

Price	Quantity Demanded	Quantity Supplied
$7	200	50
$8	180	90

Price	Quantity Demanded	Quantity Supplied
$8	**180**	**90**
$9	**150**	**150**

Price	Quantity Demanded	Quantity Supplied
$9	**150**	**150**
$10	**110**	**210**

Price	Quantity Demanded	Quantity Supplied
$10	**110**	**210**
$11	**60**	**25**

3. Given the following demand schedule:

Demand PRICE	QUANTITY	REVENUE
20	20	
17	40	
14	60	

4. The price of good A increases by 1% and in response the quantity demanded decreases by 1,7%. Calculate the price elasticity of demand.

Answer the following questions:

1. The Elasticity of Supply and Demand.
2. Using Empirical Economics to Determine Elasticity.
3. The role of Elasticity of Supply and Demand: examples.

Lesson 5, 6

Module 5. The Rational Consumer

Important issues of the module 5. The concept of utility. Calculation the total, average and marginal utilities. The principle of diminishing marginal utility. The utility maximization rule. Income and substitution effects.

TEST

1. If the price of a hot dog is $2 and the price of a hamburger is $4,

a) the money price of a hamburger is 2 hot dogs;
b) the money price of a hot dog is 2 hamburgers;
c) the relative price of a hot dog is 1/2 of a hamburger;
d) the relative price of a hamburger is 1/2 of a hot dog.

2. The opportunity cost of a hot dog in terms of hamburgers is

a) the price of a hot dog minus the price of a hamburger;
b) the ratio of the slope of the supply curve for hot dogs to the slope of the supply curve for hamburgers;
c) the ratio of the slope of the demand curve for hot dogs to the slope of the demand curve for hamburgers;
d) the ratio of the price of a hot dog to the price of a hamburger.

3. Each point on the demand curve reflects

a) the highest price consumers are willing and able to pay for that particular unit of a good;
b) the highest price sellers will accept for all units they are producing;
c) the lowest-cost technology available to produce a good;
d) all the wants of a given household.

4. Which of the following pairs of goods are most likely substitutes?

a) compact discs and compact disc players;
b) lettuce and salad dressing;
c) cola and lemon lime soda;
d) peanut butter and gasoline.

5. How is marginal utility defined?

a) the utility gained from consuming only one good;
b) the derivative of utility with respect to the number of goods consumed;
c) the total utility gained from consuming a bundle of goods;
d) the utility gained from consuming the first unit of a given good.

6. What happens to a consumer when the price of a good she consumes increases, or her income decreases?

a) she is better off;
b) she is worse off;
c) she is better off if a good's price increases, but worse off if her income decreases;
d) she may be better off or worse off, depending on her preferences.

7. How do we graphically represent the utility maximizing?

a) the point where the budget constraint crosses the X or Y axis;
b) the point at which the indifference curve and the budget constraint cross;
c) a point on the indifference curve that is to the right of the budget constraint;
d) the point of tangency between an indifference curve and the budget constraint.

8. You are consuming two goods, pizzas and movies. The marginal utility you would gain from spending an extra dollar on pizza is higher than the marginal utility you would gain from spending an extra dollar on movies. What should you do?

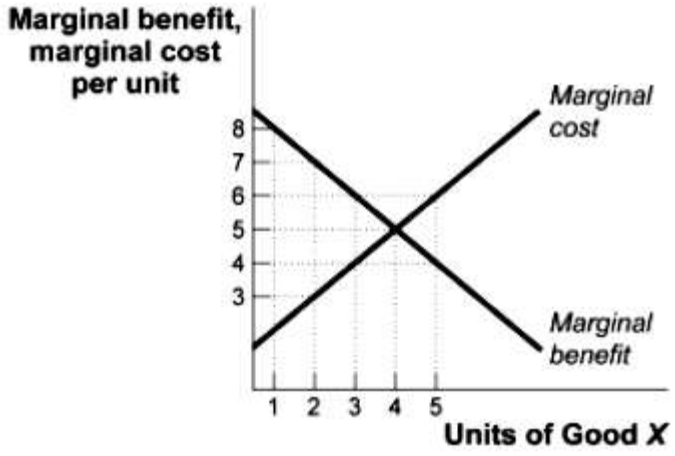
a) purchase more movies;
b) don't change your purchases; you are already consuming the optimal bundle;
c) purchase more pizza;
d) it depends on how much income you have.

9. What is the definition of a corner solution?

a) an optimal quantity of two consumer goods in which the same amount of each good is consumed;
b) an optimal quantity of two consumer goods in which only one type of good is consumed;
c) an optimal quantity of two consumer goods in which the consumer does not spend all of his/her income;
d) none of these.

10. Use the following to answer question (figure: Marginal Analysis of Good X). You are considering consuming units of Good X. The graph represents your marginal benefit and marginal cost curves. If you consume the fifth unit of Good X, you will experience a net change in total benefit equal to:

Figure: Marginal Analysis of Good X



a) 0;
b) -2;
c) 2;
d) 4.

TASKS

1. Determine the average and marginal utilities, if on the table is given the number of units (Q) and the total utility (TU).

Q, unit	1	2	3	4	5
TU	18	30	40	47	50
AU					
MU					

Construct graphs of TU, AU, MU.

2. Determine the total utility of consumption of apples.

Q, unit	1	2	3	4	5
MU	12	23	32	40	46
TU					

3. Any number of values of marginal utility shows the law of diminishing marginal utility? Why?

a) 8,9,6,7,10;
b) 20,19,18,17,16;
c) 20,19,17,14,10;
d) 15,13,10,8,4?

4. Fill in the table.

Economic good	**MU**	**P**
A		7
B	24	3
C	16	

5. Fill in the table and find to consumer equilibrium.

I = $20.00

P_X=$4.00

P_Y=$2.00

X	**TU**	**MU_X**	**MU_X/P_X**	**Y**	**TU**	**MU_Y**	**MU_Y/P_Y**
0	0			**0**	0		
1	40			**1**	35		
2	65			**2**	55		
3	85			**3**	70		
4	100			**4**	80		
5	108			**5**	84		

Answer the following questions:

What you know about…

1. Measures and Properties of Utility.
2. Properties of Indifference Curves.
3. Utility Functions.

Lesson 7, 8.

Module 6. Behind the Supply Curve: Inputs and Costs

Important issues of the module 6. The Theory of Production. Production function. The cost of production. Determining the total, average and marginal costs. Operating revenue and profit. Construct graphs TVC, TFC, TC, TR, PR.

TEST

1. What is the primary objective of firms?

a) minimizing costs;
b) maximizing utility;
c) maximizing profit;
d) maximizing revenue.

2. What is the difference between the short-run and the long-run from the perspective of production theory?

a) in the short run, only labor varies, and in the long run both labor and capital vary;
b) in the short run, all inputs are invariable, and in the long run they are variable;
c) in the short run, all inputs are variable, and in the long run they are invariable;
d) in the short run, only capital varies, and in the long run both labor and capital vary.

3. What is the term used to describe a production function in which you can double all inputs and output increases by more than double?

a) increasing returns to scale;
b) decreasing returns to scale;
c) constant returns to scale;
d) leontief.

4. Which of the following does not apply to economic resources?

a) labor;
b) natural resources;
c) means of production;
d) information resources;
e) no correct answer.

5. To the means of labor does not belong:

a) equipment;
b) building materials;
c) building construction.

6. What is the definition of perfect competition?

a) all firms maximize profits;
b) all firms are price takers on both output and input sides;
c) all firms have the optimal levels of labor and capital;
d) there is at least one firm producing the good of interest.

7. In a competitive market, the marginal revenue for selling an additional good is, by definition, equal to what quantity?

a) the wage;
b) none of these;
c) the price of the good being sold;
d) the price of the primary input.

8. A firm should shut down if what condition holds?

a) price is below average variable cost;
b) price is greater than average variable cost;
c) price is below average total cost, but greater than average variable cost;
d) price is greater than average total cost.

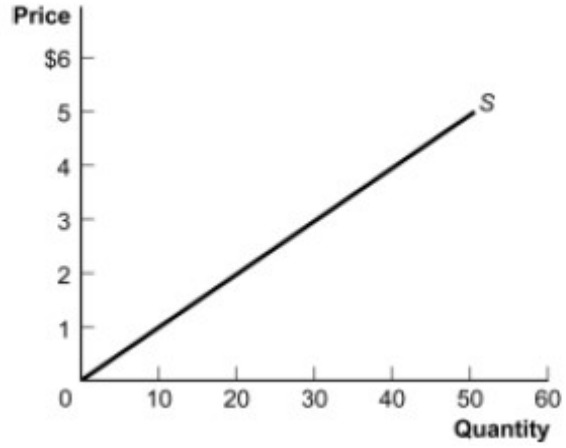
9. What is true about the individual firm demand curve that each firm faces in a competitive market?

a) it is downward-sloping;
b) it is vertical;
c) it is upward-sloping;
d) it is horizontal.

10. Use the following graph to answer the question (figure: Supply of Apples) If the price of apple is $2, producer surplus will equal:

Figure: Supply of Apples

a) 20;
b) 40;
c) 60;
d) 80.



TASKS

1. Activity of the company is characterized by data

Q,unit	TVC	TFC	P, $	TC	AVC	AFC	ATC	MC	TR	PR
0	0	100	50							
1	40	100	50							
2	80	100	50							
3	110	100	50							
4	135	100	50							
5	165	100	50							
6	200	100	50							
7	240	100	50							
8	285	100	50							
9	335	100	50							
10	395	100	50							

Fill missing elements in the table. Construct graphs TVC, TFC, TC.

2. Activity of the company is characterized by data. Fill missing elements in the table. Construct graphs TVC, TFC, TC, TR, PR.

Q,unit	P, $	TFC	AVC	AFC	TC	TVC	MC	TR	PR
1	5	45	17						
2	5	45	15						
3	5	45	14						
4	5	45	15						
5	5	45	19						
6	5	45	29						

3. Activity of the company is characterized by data. Fill missing elements in the table. Construct graphs TVC, TFC, TC.

Q,unit	TVC	TFC	TC	AVC	AFC	ATC	MC
0	0	60					
1	45	60					
2	85	60					
3	120	60					
4	150	60					
5	185	60					
6	225	60					
7	270	60					
8	325	60					

4. Activity of the company is characterized by data. Fill missing elements in the table. Construct graphs TP, AP, MP.

Number of Workers	Total Product (Output)	Marginal Product (of Labor)	Average Product (of Labor)
0	0		
1	30		
2	90		
3	130		
4	155		
5	172		
6	185		

5. You take over a business operation where they spent $17 million to partially build a factory, it will only cost $200,000 to finish the factory. Should you complete the factory?

Answer the following questions:

What you know about…

1. Factors of production and their types.
2. Production process.
3. Short Run Costs.
4. Long Run Costs.

Lesson 9.

Module 7. Types of Market Structure.

Important issues of the module 7. Market Structures. Perfect Competition. Monopoly. Monopolistic Competition. Oligopoly.

TEST

1. Which of the following is a type of market structure?

a) monopoly;
b) perfect competition;
c) oligopoly;
d) all of the above.

2. According to the structure/conduct/performance paradigm, the most important determinant of firm behavior is:

a) a firm's political influence;
b) the size of a firm;
c) the structure of the market in which the firm operates;
d) the technology available to the firm.

3. Suppose there are 100 firms in an industry and these firms produce differentiated products. Which of the following is true?

a) competition will force each firm to charge the same price for its good;
b) consumers perceive these products to be imperfect substitutes, and therefore are willing to pay different prices for the products sold by different firms;
c) firms will exit the industry in the long-run;
d) a firms will not attempt to minimize the cost of producing its product.

4. Which of the following is a characteristic of a perfectly competitive market?

a) a large number of firms exist in the industry;
b) firms in the industry are approximately the same size;
c) it is easy for firms to enter and exit the industry in the long-run;
d) all of the above.

5. A firm in a perfectly competitive market does not choose:

a) the amount of output to produce;
b) the price to charge for its product;
c) the method of production it will use to produce its product;
d) all of the above.

6. In a perfectly competitive industry, we are likely to find:

a) firms producing a variety of differentiated products;
b) barriers to entry that prevent new firms from entering the industry;
c) firms do not spend money to advertise their product;
d) a few large firms that sell most of the product to consumers.

7. Which of the following firms is most likely to be in a perfectly competitive industry?

a) an automobile producer;
b) an airline firm;
c) a soybean farmer;
d) a gasoline station.

8. If the price that a firm receives for its product is equal to the average revenue it earns from selling its product, then we can conclude that it sells its product in which of the following types of markets?

a) perfect competition;
b) monopoly;
c) oligopoly;
d) it could be selling its product in any of the above markets.

9. If the price that a firm receives for its product is equal to the marginal revenue it earns from selling an additional unit of its product, then we can conclude that it sells its product in which of the following types of markets?

a) perfect competition;
b) monopoly;
c) oligopoly;
d) It could be selling its product in any of the above markets

10. Many country inns shut-down in the off-season because:
a) innkeeper can't maximize revenue
b) the off-season market price is below the inn's average fixed cost
c) off-season revenue is not high enough to cover the inn's variable cost
d) innkeepers like to spend the off-season in Florida.

TASKS

1. Fill in the table.

Type of market	Number of firms	Freedom of entry	Nature of product	Market power	Examples
Perfect competition					
Monopoly					
Monopolistic competition					
Oligopoly					

2. Fill in the table.

Type of market	Advantages	Disadvantages
Perfect competition		
Monopoly		
Monopolistic competition		
Oligopoly		

3. Fill in the gaps.

- To understand reports of market behaviour you have to __ the way the market works.
- A market is a __ expression for the process by which households' decisions about consumption of alternative goods, firms' decisions about what and how to produce, and workers' decisions about how much and for whom to work are all __ by __.
- Much of economics is devoted to the study of how markets and prices __ society to solve the problems.
- The cafe owner is in business because it is still possible to sell hamburgers __.
- If rents were higher, it might be more profitable to sell hamburgers in a cheaper area or __ to __ lunches.
- Society is allocating resources into hamburger production __ the price system.
- If nobody liked hamburgers, the owner could not sell enough at a price that __ of running the cafe and society would __ no resources to hamburger production.
- If cattle __, competition to purchase more scarce supplies of beef would __ the price of beef.
- Adjustments in prices would encourage society __ resources to reflect the increased scarcity of cattle.
- The student behind the counter was part of the local __ market.

Answer the following questions:

1. «A car manufacturer may regard his business as highly competitive because he is keenly aware of his rivalry with the other car manufacturers in the market when making pricing and investment decisions. Each car manufacturer undertakes dynamic advertising campaigns seeking to persuade prospective buyers of the superior quality and better style of his cars and reacts very quickly to claims of superiority by his rivals».

Which type of market structure is this?

Lesson 10,11,12.

Module 8. The Science and Date of Macroeconomics.

Important issues of the module 8. Determining GDP in three ways: production, income, expenditure approaches. GDP per capita. Nominal and real GDP growth. Determining the Consumer Price Index (CPI). Positive and negative effects of inflation. The labor force. Employment. Unemployment. Determining the labor force and unemployment rate in the country. Calculation the number of unemployed.

TEST

1. What's NOT included in GDP?

a) intermediate goods;
b) used goods;
c) underground production (black market);
d) financial transactions;
e) household production;
f) transfer payments.

2. What GDP does not tell us:

a) does not measure _____;
b) does not measure non-monetary output or transactions (e.g., barter, household activities);
c) does not take into account desirable externalities, such as _____;
d) does not measure social well-being;
e) correlates to standard of living but is _____.

3. In 2014, the nominal GDP growth of a country was 8% and the real GDP growth was 4%. What was the rate of inflation for this country?

a) 4%;
b) 2%;
c) 4%;
d) 8%;
e) 12%.

4. The business cycle is

a) the relationship between unemployment and inflation;
b) the irregular fluctuations in economic activity;
c) the positive relationship between the quantity of money in an economy and inflation;
d) the predictable changes in economic activity due to changes in government spending and taxes.

5. An increase in the overall level of prices in an economy is referred to as

a) economic growth;
b) inflation;
c) the price effect;
d) the demand effect.

6. Money functions as:
a) a store of value;
b) a hedge against inflation;
c) a medium of exchange;
d) a unit of account.

7. Which of the following does not describe a function of money?
a) a unit of account;
b) a hedge against inflation;
c) a medium of exchange;
d) a store of value.

8. When you buy a hamburger for lunch, you are using money as a
a) store of value;
b) standard of deferred payment;
c) medium of exchange;
d) unit of accounting.

9. Large or persistent inflation is almost always caused by
a) excessive government spending;
b) excessive growth in the quantity of money;
c) foreign competition;
d) higher-than-normal levels of productivity.

10. If the price level doubles, the
a) nominal demand for money increases;
b) nominal demand for money decreases;
c) real demand for money decreases;
d) real demand for money increases.

11. Suppose the money growth rate is 3 percent, and real GDP is growing at 2 percent. What is the inflation rate?
a) 1 percent;
b) 5 percent;
c) 3 percent;
d) 6 percent.

12. If people are holding more money than they would willingly hold, they will ____ bonds. The price of a bond will ____and the interest rate will _____.
a) sell; rise; fall;
b) sell; fall; rise;
c) purchase; rise; fall;
d) purchase; fall; rise.

13. Prices direct economic activity in a market economy by
a) influencing the actions of buyers and sellers;
b) reducing scarcity of the goods and services produced;
c) eliminating the need for government intervention;
d) allocating goods and services in the most equitable way.

14. The term "market failure"
a) means the same thing as "market power";
b) refers to the dissolution of a market when firms decide to quit producing a certain product;
c) refers to the failure of a market to produce an efficient allocation of resources;
d) refers to government's failure to enforce the property rights of households or firms that participate in a certain market.

15. Liquidity is the

a) speed with which the price of an asset changes as its intrinsic value changes;
b) inverse of the velocity of money;
c) same as the velocity of money;
d) ease with which an asset can be converted into money.

TASKS

1. Fill in the table and find real GDP, inflation rate.

Year	Nominal GDP	Change (%) of nominal GDP	GDP deflator	Real GDP	Change (%) of real GDP	Inflation rate
2009	2500		90			
2010	2800		95			
2011	3100		100			
2012	3500		110			
2013	3900		120			
2014	4100		100			

2. Given the following macroeconomic indicators, $. Find GDP, using income and expenditure approaches.

1	Individual taxes	25
2	Net private domestic investment	85
3	Retained profit corporations	27
4	Transfer payments	52
5	Export	26
6	Profit Corporations	157
7	Import	43
8	Income received foreigners	23
9	Wages	365
10	Social security contributions	35
11	Cost of capital consumed	73
12	Government procurement of goods and services	124
13	Consumer spending	532
14	Rents	28
15	Property income	84
16	Interest on government securities	9
17	Indirect business taxes	47
18	Dividends	63
19	Interest payments	51
20	Income received abroad	31

3. The country's economy is characterized by the following indicators:

Year	Nominal GDP, $	GDP deflator,%
2013	46308,5	116,5
2014	55644,0	134,3

Find:

1. Real GDP 2013 and Real GDP 2014.
2. Inflation rate from 2013 to 2014.

4. Family consumes only two goods - apples and bananas. Family buys their monthly 2 kg of apples and 3 kg of bananas. In November apples cost $ 4, the price of bananas - $ 5. In December the price of bananas fell to $ 3, the price of apples has risen to $ 5 Define the CPI for the month.

5. Michael consumes only apples. In year 1, red apples cost $5 each, green apples cost $7 each, and Michael buys 10 red apples. In year 2, red apples cost $10, green apples cost $5, and Michael buys 10 green apples. Compute a consumer price index for apples for each year. Assume that year 1 is the base year in which the consumer basket is fixed. How does your index change from year 1 to year 2?

6. If the price index was 110 last year, and this year – 121. What is the inflation rate this year?

7. In Belarus the nominal GDP growth of a country was 12% and the real GDP growth was 8%. What was the rate of inflation for this country?

8. Fill in the table and find inflation rate, real wage.

Year	CPI	Inflation rate	Nominal wage	Real wage
1	100		$100	
2	110		$130	
3	120		$150	
4	130		$170	

9. This table presents data on the labor force and employment in the first and fifth year of the period.

	First year	Fifth year
labor force	120564	145670
Employed persons	118 690	143860

Calculate the number of unemployed and the unemployment rate in the first and fifth year of the period.

10. Fill in the table and calculate real interest rate.

Year	CPI	Nominal interest rate	Real interest rate
1	100	-	
2	110	15 %	
3	120	12%	
4	130	8 %	

Answer the following questions:

1. What is Gross Domestic Product and how we measure it? Why is this measure important?
2. What are the definitions of the major expenditure components?
3. What are the trends in these components over time?
4. What is inflation?
5. Why not just print more money?
6. What is deflation and how can it be prevented?
7. Should we regulate prices for inflation?
8. What you know about types of unemployment?

ABBREVIATIONS

Symbol	Meaning
Microeconomics	
AFC	Average fixed cost
AP	Average product
AP_k	Average product of capital
AP_l	Average product of labor
AR	Average revenue
ATC	Average total cost
AVC	Average variable cost
C	Cost
D	Demand
E	Elasticity
e	Equilibrium
FC	Fixed cost
FV	Future value
I	Interest
I	Investment
K	Capital
L	Labor
MC	Marginal cost
MP	Marginal product
MR	Marginal revenue
MRC	Marginal resource cost
MRP	Marginal revenue product
MRS	Marginal rate of substitution
MRTS	Marginal rate of technical substitution
MU	Marginal utility
P	Price
PV	Present value
Q	Quantity
R	Rent
R	Revenue
S	Supply
TC	Total costs
TFC	Total fixed costs
TP	Total product
TR	Total revenue
TVC	Total variable costs
TU	Total utility
U	Utility
VC	Variable costs
W	Wage

Macroeconomics	
AD	Aggregated demand
AS	Aggregated supply
AE	Aggregate expenditures
C	Consumption
d	Depreciation
D	Demand of an individual product
D	Deposits
DI	Disposable income
G	Government expenditures
GDP	Gross domestic product
GDPr	Real Gross Domestic Product
GNP	Gross National Product
I	Investment
ID	Investment demand for funds
I_G	Gross investment by businesses
In	Net investment
i or ir	Interest rate (%) (Lower case i is usually nominal interest)
i%	Nominal interest rates
LRAS	Aggregate supply (long run)
M	Money
MB	Marginal benefit
MC	Marginal cost
MPC	Marginal propensity to consume
MPS	Marginal propensity to save
P	Price
PL	Price level
PPC	Production possibilities curve
Q	Quantity (individual products or aggregate q. of GDP)
S	Supply of an individual product
Savings	Savings (use "S" for individual product Supply)
SRAS	Aggregate supply (short run)
T	Taxes
U	Unemployment
u%	Unemployment rate
Un	Natural unemployment
V	Velocity of money
X_N	Net Exports (Exports "minus" Imports)
Y	Income
Y_F	Full employment GDP
Δ	Change

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