Economics
(Introductory lecture)

Dr. Sebastiano Vitali, Ph.D.
Department of
Probability and Mathematical Statistics

Office 151 – 1 floor
e-mail: vitali@karlin.mff.cuni.cz
Office hours: Thursday13:00 – 15:00

Test

- The exam has two parts: written and oral
- Rating written:

  85 – 100 % = výborně (excellent)

  70 – 84 % = velmi dobře (very good)

  55 – 69 % = dobře (good)

  45 – 54 % = ústní část (oral needed)

  0 – 44 % = nevyhověl (failed)

- Who is not satisfied with the mark of the exam, can try his/her luck at the oral ☺

Literature

- Paul A. Samuleson, Wiliam D. Nordhaus Ekonomie (18.vydání, NS Svoboda, 2007)
- N. Gregory Mankiw „Zásady ekonomie“ Grada 1999
- Holman Robert, Ekonomie
- Frank Robert H.: Mikroekonomie a chování
- Soukupová a kol., Mikroekonomie, 3. vydání Management Press, Praha 2002
- Lecture materials www.karlin.mff.cuni.cz\~vitali\Economics

For who is this course

- Those interested in economics
- Students Financial Mathematics
- General mathematics students planning one of the following focus:

  - Financial and Insurance Mathematics

  - The likelihood of mathematical statistics and econometrics

- Students follow-up mag. Studies: FPM, PMSE

ECONOMY

- “Economics examines how various societies use scarce resources to produce useful commodities and how it is allocated among consumers” (Paul A. Samuelson, William D. Nordhaus: Ekonome, Svoboda 2007)

ECONOMY

- “Economics is the study of how society manages its scarce resources”, N. Gregory Mankiw's “Principles of Economics”
- “Economics studies how people make decisions under conditions of scarcity of resources and the impact of their choices on society”, Robert H. Frank, Ben S. Bernanke: “Economy,”

ECONOMY

- Economics is a way of thinking and reasoning about the world, it is not a set of steady-truths

THE THINKER

Scarcity and efficiency

- The two basic concepts of economic definitions

- Scarcity = not free availability of goods they must be either produced or exchanged for other goods
- Efficiency = use of resources in a manner which achieves the highest possible level of satisfaction given the inputs and technologies.

GOODS that are not rare

- Air
- Water
- Road
- Light

It always depends on the circumstances

Commodities, goods, products
- Inconsistent definitions
(the meaning becomes clear according to the context)

- Product: physical object of nonphysical (service), which is the result of econ. activity (production for the market).
  - It is subject to supply and demand on the market and can be sold at a price nonzero
- Goods:
  - synonym for product,
  - extension of the concept of work,
  - brand, intellectual property, ...
- Commodity:
  - physical good, whose offer is often standardized (oil, coffee, electricity, metals, wood, ...)
  - primary input to the production process (raw material)
  - products traded on a commodity exchange

Types of goods - classification according to availability (scarcity)

- **Rare:** the good is limited, consumers are willing to pay for them; most of the goods are rare

- **Free:** goods freely available

Types of goods - by dividing the impact of the benefit to consumers

- **desirable –** goods consumption increases benefit consumers
- **unwanted -** goods consumption reduces the benefit of consumers
- **indifferent -** goods consumption does not affect the consumer's benefit

Types of goods - by dividing the impact of changes in consumer income on the level of consumption

- **Normal** – goods consumption growths proportionally to the growth of the consumer income (food)
- **Luxury** – goods consumption growths more than proportionally to the growth of the consumer income (luxury cars)
- **Necessary** - goods consumption does not growth (water)
- **Poor** - goods consumption growths less than proportionally to the growth of the consumer income (cheap wine)

Types of goods - by dividing the option to exclude possible consumers from consumption

- **Public –** difficult to exclude consumers (air, sea, snow)
- **Private -** a good that is not possible to have unless the owner decides to sell (market goods)
- **Mixed –** goods which are public but is possible to buy or rent (land)

Stand on the shoulders of giants

Economics as a science arose only in the late 18th century, many centuries after the occurrence of natural sciences including mathematics and philosophy. Why? The ancients looked at the accumulation of wealth as something immoral

- “He can not occur without the benefit of some harm others” Publilius Syrus, I century BC.
- “Every of your act which has no relation to the objectives of the generally beneficial, tearing the life and cancels its value” Marcus Aurelius, I century BC.
- “It should be given priority to the general interest over private” Plinio, I century AC

But even in ancient and medieval flickered economically rational opinions

- Ubi bene, ibi patria (where are goods, there is my country). Marcus Tulius in the role of promoter of cosmopolitanism
- Who wants to make a profit, it must have cost. Plautus
- How much should you have? First how much is needed, then how much is enough. Seneca

In the Enlightenment they created the ground for the emergence of "economics"

- Voltaire: When it comes to money, everybody is of the same religion
- Jean Jack Rousseau: The money that we possess is the instrument of liberty, that which we lack and strive to obtain is the instrument of slavery.
- Jonathan Swift: Someone does not accept advice, but everyone would receive money. It follows that money is better than advices.

In the Enlightenment they created the ground for the emergence of “economics”

- Social interests:
  - Voltaire: What is patriotism? A mixture of self-love and prejudice!
  - Voltaire: No one is a good citizen unless is a good son, father, brother, friend and husband (franc. Constitution from r. 1795)
  - Adam Smith: Who monitors its interest is sort of invisible hand guided by the fact that it follows the interests of society (1776)

QUESTIONS

How do economists see the task of economics?

- **Destroy capitalism**: Marx, Lenin

- **Management of the economy**: Kantorovič (Nobel price!!): "There appeared a necessity to shift from study and observation of economic processes and from isolated policy measures to systematic control of the economy, to the common and united planning being based on the common aims and covering a long time horizon. This planning must be so detailed as to include specific tasks to individual enterprises for specific periods and to that common consistency of the whole this giant set of decisions was guaranteed."

How do economists see the task of economics?

- **Create standards of economic behavior**: what is good, what is unethical, how much (relatively) appreciate the values

- **Create a set of economic knowledge as a tool to use in economic policy and economic practice,** but Keynes: Economics is not a set of economic knowledge immediately usable in economic policy. It is a method rather than a doctrine.

- **Value-neutral description:** Parkinson: “It is not the business of the botanist to eradicate the weeds. Enough for him if he can tell us just how fast they grow.”

The which extent the economy is an exact science?

- economic variables are often not precisely quantifiable (utility, risk aversion)
- human behavior (and economical) is subjective and therefore from person to person uniquely determined
- man also on the economic level usually maintains a “way of living”, which is difficult to grasp exactly quantity

How is it that economics as a science is closer to mathematics than art?

- There empirically and deductively conclusive findings (about the existence of a balance of economic phenomena), but:
  - phenomena can be explained in several ways, often mutually incompatible
  - statements about the pleasures of society are often controversial because what is good for one is not good for others, e.g. a better American or European social policy (a smaller number of more suffering or more suffering little)?

What is the most important result of economics?

- Economists!
- Another significant result of economics: to create language. Tool for creating a language model (usually math).

Descriptive (positive) and normative economics

Descriptive economics

- analyzes facts (classifies, quantifies)
- examines how and why the actors behave as they behave
- examines how and why the economy behaves as a whole
- predicts (forecasts) reality in the form of conditional statements
- phenomena not sorted into good and bad behavior of the subjects of ethical and unethical

Normative economics

- It seeks to answer the question, what would be the economic world (eg. welfare economics)
- They are trying to take into account the higher moral principles (!! but if it is part of the "way of living" which is subjective, it is possible to consider some ethical judgments as descriptive)

Paradigm Economics (homo economicus)

- assumed (in the neoclassical paradigm) usually **economic rationality** in the sense of **maximizing material benefits**

- Paradigma = sum of basic assumptions, assumptions, perceptions of the group of scientists. For each paradigm include the methodological rules, solutions, intuitive attitudes and evaluation issues.

Deviations from the basic paradigm (on the edge or outside of economics):

- **Simon** - principle of satisfaction (if I am satisfied, I stop looking for a better situation)
- **Becker** - the accumulation of intangible personal and social capital, positional goods
- **Mauss** - In a gift economy, however, the objects that are given are inalienated from the givers; they are "loaned rather than sold and ceded". It is the fact that the identity of the giver is invariably bound up with the object given that causes the gift to have a power which compels the recipient to reciprocate. Because gifts are inalienable they must be returned; the act of giving creates a gift-debt that has to be repaid. Because of this, the notion of an expected return of the gift creates a relationship over time between two individuals.
- **St. Augustine** - Happier is the one who needs less than he who own more

Pitfalls of economic thinking

- Trend ≠ Rule
- Mistake "after thus“
  (A was before B, therefore A causes B)
- Mistake “it works for a part ⇒ it works for the whole"
- Bias, subjectivity
- Murphy's Law (whenever you get a coffee, the plane becomes in turbulence ⇒ asking for coffee induces turbulence)

Relationship to other social sciences

- Economic analysis can derive some model inputs or premises in other disciplines (sociology, demography, psychology).

Micro and macroeconomics

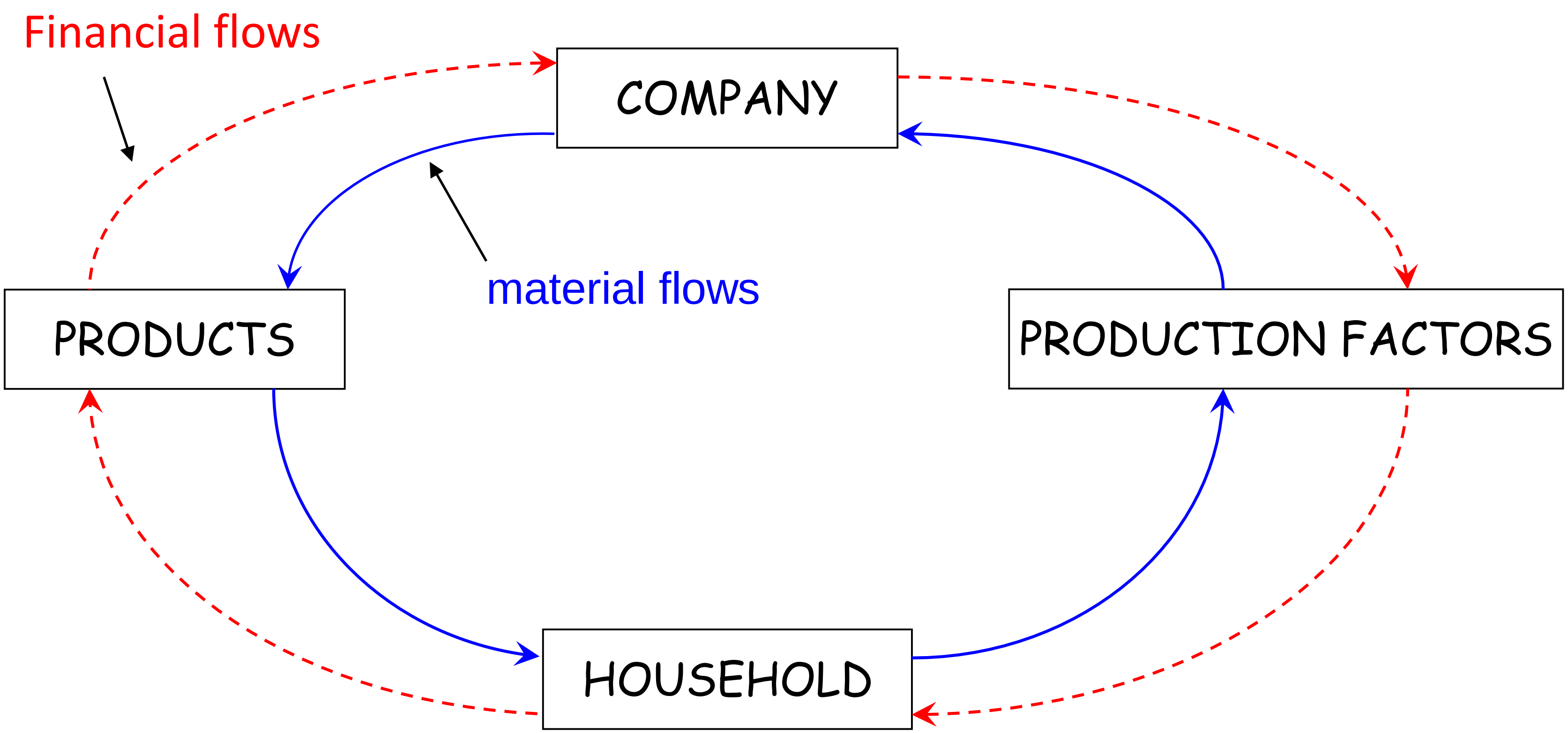
Microeconomics

- deals with the behavior of individual entities such as markets, businesses and households
- prices, profits, market efficiency
- Founder: Smith (1776)

Macroeconomics

- deals with the behavior of the entire economy
- economic cycles, unemployment, inflation, GDP
- Founder: Keynes (1936)

Economic cycle



What is missing here? BANKS AND STATE

Production factors

- primary
  - earth
  - work
- secondary
  - capital
- additional (special forms of capital)
  - technology
  - entrepreneurial skills

Earth - Soil

- It is the product of a part of nature – (not free goods!)
- It is rare and irreproducible, quantitative restrictions
- Natural resources - minerals, precious metals etc. (limited quantity)
- Land rent income is derived from earth

Work

- Human activity that converts natural resources into useful goods (somewhat imprecise definition)
- Any human activity for which somebody pays
- The result of the use of labor is salaries.

Capital

- Capital is unlike labor and land result of previous production
- Storable
- May be tangible or intangible nature

Capital - Technology

- Technology is a particular form of capital, which can greatly multiply the benefits of production factors
- It is a special form of capital and has no form of material possessions

Capital - business skills

- They are a special form of capital
  - courage
  - ability to take risks
  - team-work
  - improvisation
  - creativity

Capital - division

- **Own:** This is the amount of money invested in the business in cash or in tangible form. (House, car, equipment, ...)

- **Foreign:** These are assets which we had to borrow - eg. Loans to banks, liabilities to suppliers

- the result of the use of capital is either a gain or an interest

MARKET ECONOMICS

- **The market** economy is a space where there is the exchange of goods and money.
- Originally, the market was a reserved place where the people gather regularly to exchange with each other (marketplace).
- Special market for a commodity or a service (grain market, the oil market, electronics, etc.), these goods (commodities or services) are usually exchanged for money.

MARKETS IN ECONOMICS

Market goods and services

Market goods and services are offered by companies and demanded by customers. In essence, it is a normal everyday business.

Job market

In the market of production factors , it is constituted by the demand of companies searching for workforce and by people offering it. Then, the people become the forcework.

MARKETS IN ECONOMICS

Financial market

- Money market
- Capital market.

Money market: maturity up to one year (instrument transactions are checks, bills, certificates of deposit, but also of the short-term loans and other short-term securities).
This market does not have an exact location, but it consists of a network of banks, brokers, buyers, sellers, etc. The most important players of in this market are banks which have plenty of money. Overall, players in the money market have low risk arising and then small interests, but their liquidity is relatively high.

MARKETS IN ECONOMICS

Financial market

- Money market
- Capital market.

Capital market: Capital market instruments have longer lifespan. These include stocks or bonds and traded exclusively on the stock exchange. This may involve and mortgages (mortgage bonds / CDS).

Status of individuals and groups ("Company"):

- in a democracy, the rights of individuals underlie the functioning of the economy
- in a totalitarian society the interest of the individual is subordinated to the interest of the whole

$\Rightarrow$ a) inefficiency manufacturer

b) allocation inefficiencies cause

b1) the lack of market prices

b2) chronic scarcity

$\Rightarrow$ corrupted environment

Relationship with politics:

- a democratic environment establishes an effective market arrangement
- Democracy is a necessary condition for establishing the market principle.

- a non-democratic environment establish ineffective markets or commanded scheduling arrangement

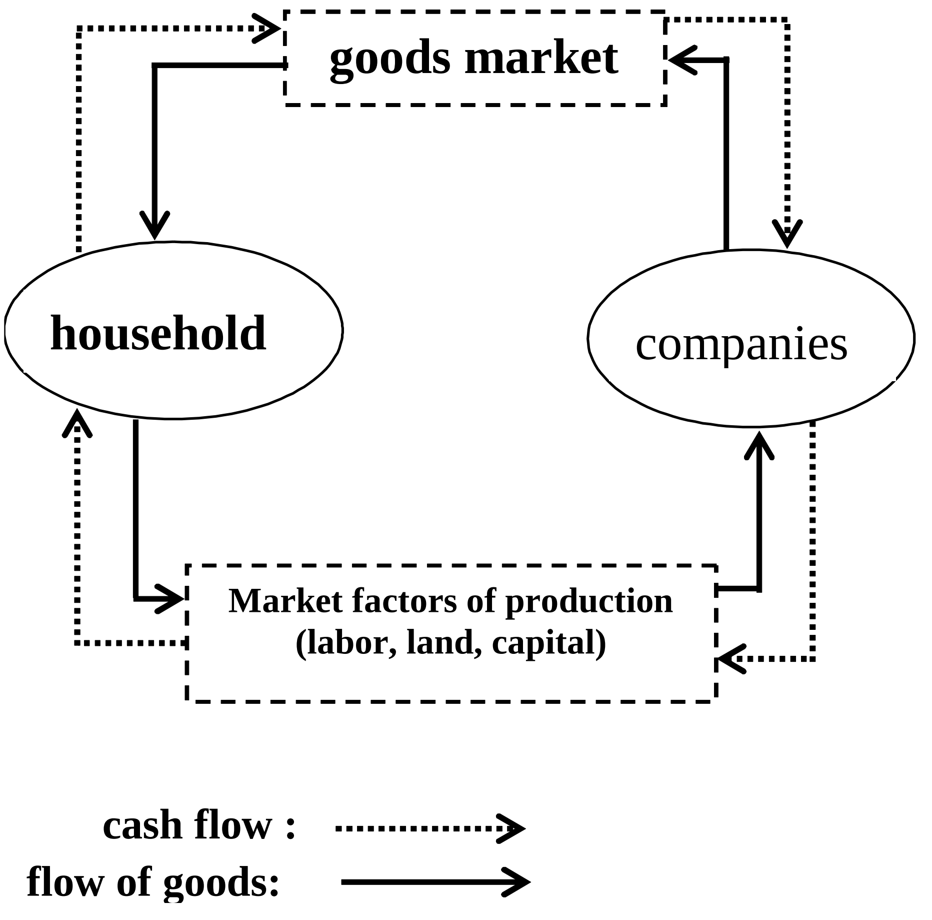
Prosperity non-democratic market economies of South Asia and China

- Temporary: undemocratic environment leads to gross market failure
- Prosperity is rather imported from capital surpluses abroad
- difficulties come during a downturn or slowdown in growth (corruption and nepotism while eliminating inefficiencies$\Rightarrow$companies)
- if you want a non-democratic country open to the world economically, it must accept the standards (prohibition of child labor, the right of trade unions) and losing “benefits”

Market environment

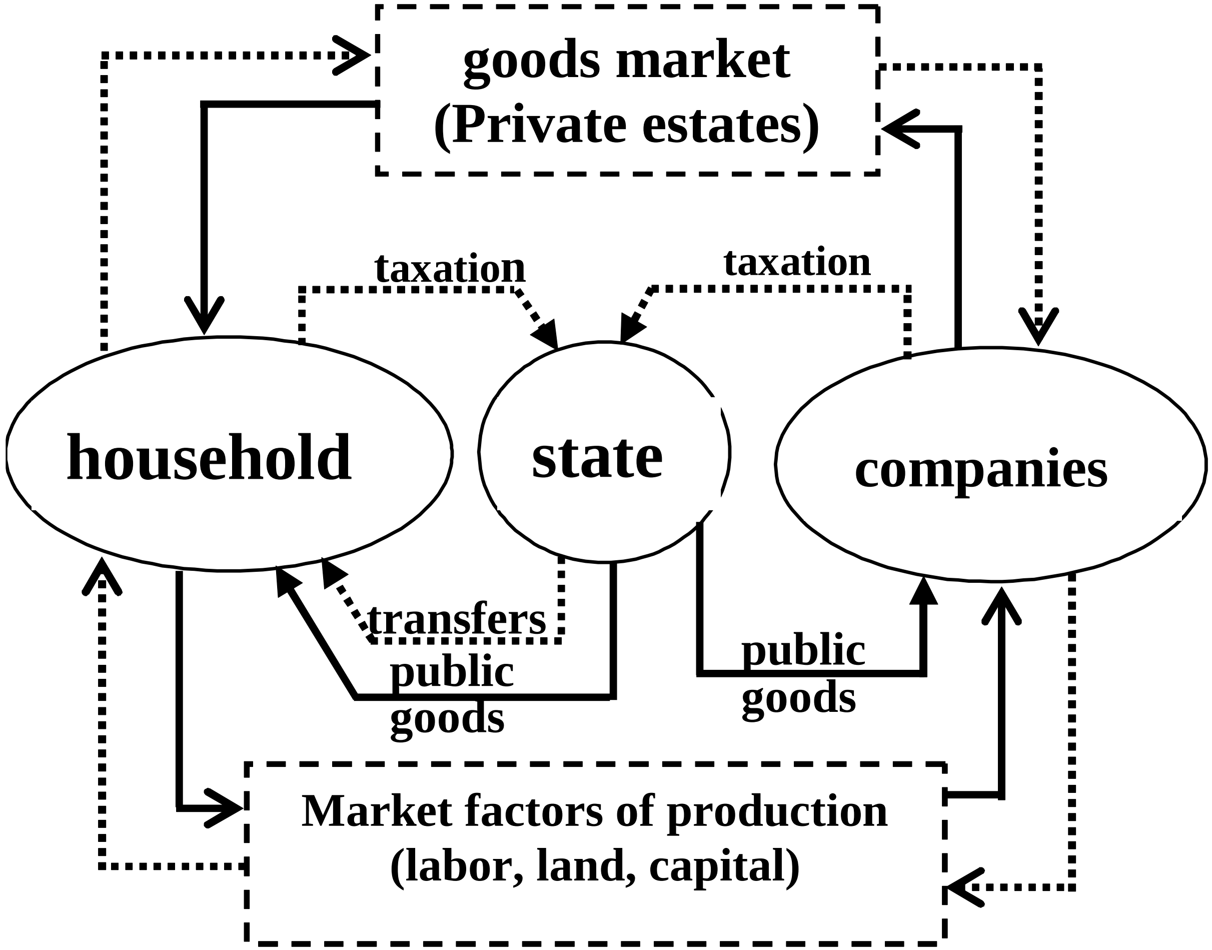
- No market originated and developed "Darwinianly“, but it is a legislatively and culturally determined environment. Hence its viability and its surprising stability (considering the complexity of the economy).
- But the legislative environment evolves according to market needs.

Diagram (purely) market economy



Work = human activity (human time spent in production)
Earth = natural resources (agricultural land, mineral resources, construction sites)
Capital = goods long used to produce other goods (manufacturing facilities, buildings)

Diagram (mixed) market economy



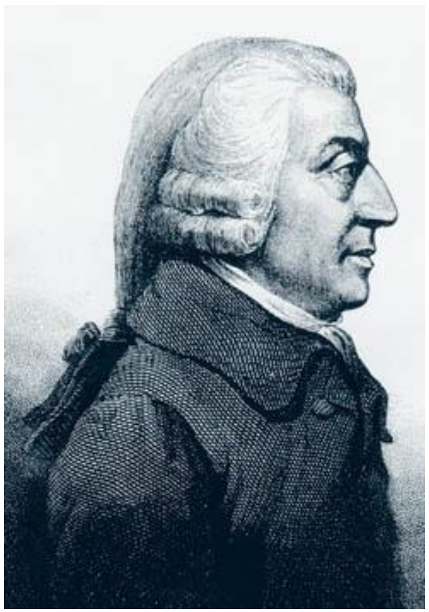
cash flow :

flow of goods:

Indispensability and significance of the market appeared Adam Smith, the founder of economic science, in his "Wealth of Nations" of 1776:

- *"by directing that industry in such a manner as its produce may be of the greatest value, each individual intends only his own gain, and he is in this, as in many other cases, led by an* ***invisible hand*** *to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it.* ***By pursuing his own interest he frequently promotes that of the society*** *more effectually than when he really intends to promote it."*

Other opinions A. Smith (1723-1790)



- He wrote scientific papers on the topic of altruism.
- “The application of natural liberty of a few individuals, which might endanger the security of the whole society, must be restricted by law from all governments.”
- The theory of “absolute advantage”: the division of labor (between workers and between countries). States should focus on the production of what are better than others.

The role of the state in the economy

a) ensuring climate:

- protection of individual rights (agreements must be respected), including the protection and inviolability of property rights
- protection money
- protection against misleading advertising e.g. in the stock market
- protection against unfair competition e.g. import of goods produced by slaves
- reduction of security risks (police, army, courts)

b) restrictions inefficiency of allocation (correction of market failures)

- antitrust
- regulation of negative externalities (environmental)
- increasing employment policy
- support for exports

The role of the state in the economy

- ensuring social cohesion
- redistribution in favor of the underprivileged (pensioners, the sick, mothers with children ...)
- limit instability
- anti-inflation measures (restriction of the money supply, interest rate increases)
- pro-growth measures in a recession (foreign investment promotion, tax breaks)
- limit government spending at a time of high inflation
- provision of public goods and services
- positive externalities (the lighthouse, education, infrastructure)
- Support for science and research (including basic)

There are different views on the degree of state intervention in the economy, e.g.:

- % Of private schools
- % Of private health facilities
- support for farmers (recognition landscaping positive externalities)
- Number of intervenes in the market of production factors (labor market, money market, capital market)
- State interventions are expensive, but they are undesirable: the problem is the type of trade-off, and the problem arises how to decide. Possible threatens
    - tyranny of the majority
    - tyranny of the minority
    - tyranny of the powerful
    - living at the expense of future

QUESTIONS

Views of the economy in different political or religious groupings

CHRISTIANITY: You have two cows.
You give one to neighbor.

ISLAM: You have two cows.
One can leave: trade it for a second wife.

SOCIALISM: You have two cows.
The state takes both and gives you some milk.

COMMUNISM: You have two cows.
The state takes both and put you in prison.

NAZISM: You have two cows.
The state takes both and shoots you.

EUROPEAN UNION: You have two cows.
The state takes both, shoots one, milks the other, and milk is poured into the river.

Views of the economy in different political or religious groupings

TRADITIONAL CAPITALISM: You have two cows.

You sell one and buy a bull. Herd increases and the economy grows. Finally, you sell everything and go into retirement.

CZECH CAPITALISM: You have two cows.

You give the two cows as guarantee for a bank loan in the amount of CZK 1.6 billion and move out to the Bahamas. The bank later discover that they were not cows made of gold, as evidenced by a forensic expert.

AMERICAN: You have two cows.

You sell one and force the other to produce the milk of four. Later, you hire a consultant to find out why a cow broke down and had to be euthanized.

Views of the economy in different political or religious groupings

FRENCH: You have two cows.
You go on strike because you want three.

JAPANESE: You have two cows.
You miniaturize them to be ten times smaller and then you evolve them to give twenty times the milk. Then you create a start-up and you sell them worldwide.

CHINESE: You have two cows.
You employ 300 people to milk the cows. So you have full employment, high productivity cattle and you imprison every journalists who publish these numbers.

BRITISH: You have two cows.
Both are crazy.

Views of the economy in different political or religious groupings

RUSSIAN: You have two cows.

You count them again and learn you have five of them. You count them again and learn that they're 42. You count them again and learn that there are only two. You stop counting and open another bottle of vodka.

ITALIAN: You have two cows.

But you do not know where they are, and so you go to have dinner.

Let’s go!