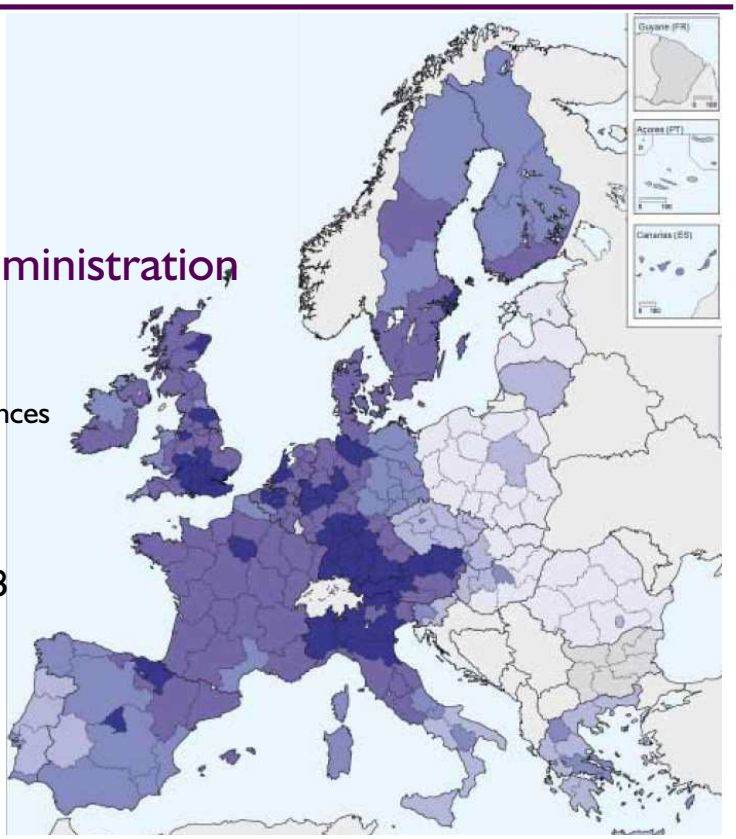
General Economics
Master of Business Administration

PD Dr. Hagen Bobzin

Fontys – University of Applied Sciences

Winter Term 2018/2019
Version: September 18, 2018



Preface

- dates
  Fr. 21.09.2018 16:30–21:30 / Fr. 19.10.2018 16:30–21:30 /
  Sa. 27.10.2018 08:30–12:30 / Sa. 10.11.2018 13:00–17:00 /
  Fr. 07.12.2018 16:30–21:30 / Sa. 15.12.2018 08:30–12:30 /
  Fr. 11.01.2019 16:30–21:30 / Sa. 02.02.2019 13:00–17:00
- two assignments
  (one single assignment, one group assignment (3 or 4 persons))

  you need for the assignments:
  - individual ITM-check-lists (360° analysis)
  - summary of no more than one sheet (A4) to be distributed among your colleagues (individual assignment only)
  - one stapled hard copy for me, a digital copy for Fontys
- grade: 40% per assignment, 20% oral collaboration
- `hagen.bobzin@gmx.de`
- `www.hagen-bobzin.de/vorlesungen/index_en.html`

Preface

- Time limit first assignment:
  21. Sep. – 2. Nov. (a period of 6 weeks)
  about 2500 words (excluding front page, table of contents . . .)
- Time limit second assignment:
  15. Dec. – 26. Jan. (a period of 6+1 weeks) about 6000 words
- Find and use (!) some guideline for scientific working (structure, citation, spell checker, etc.)
- Be extremely careful with internet sources! Many sources such as wikipedia and investopedia are unreliable.
  No web addresses in the text or footnotes!
  Those who simply copy text will fail (→ plagiarism).

Outline

The lecture notes are more of a reader than a pure script!
I will pick out the most important topics.

Literature

Baumol, W. J., Blinder, A. S., *Economics: Principles and Policy*, 8. ed., Peking : Peking University, 2002.

Jovanovic, M. N., *The Economics of European Integration, Limits and Prospects*, Cheltenham : Edward Elgar, 2005.

Krol, G.-J., Schmid, A., *Volkswirtschaftslehre, Eine problemorientierte Einführung*, 21. ed., Tübingen : Mohr Siebeck, 2002.

Lipsey, R. G., Chrystal, K. A., *Principles of Economics*, 9. ed., Oxford : Oxford University, 1999.

Mankiw, N. G., *Principles of Economics*, 3. ed., Mason (Ohio) : Thomson, 2004.

Pelkmans, J., *European Integration, Methods and Economic Analysis*, 2. ed., Harlow (England) : Prentice Hall, 2001.

Sachs, J. D., Larrain, F., *Macroeconomics in the Global Economy*, New York : Harvester Wheatsheaf, 1993.

Samuelson, P. A., Nordhaus, W. D., *Economics*, 19. ed., Boston : McGraw-Hill, 2010.

Wagener, H.-J., Eger, T., Fritz, H., *Europäische Integration, Recht und Ökonomie, Geschichte und Politik*, München : Vahlen, 2006.

Williamson, S. D., *Macroeconomics*, 5. ed., Boston : Pearson, 2014.

Literature

Further readings (some relevant internet sources)

- European Union (EU) (current Treaties (TEU, TFEU), European System of Accounts, etc.)
- European Central Bank (ECB) and national central banks (annual reports, monetary policy and instruments)
- further links (Federal Bank of Germany, Council of Economic Experts (Sachverständigenrat), EU, etc.)
- Legal texts (German Constitution, Act against Restraints of Competition (GWB), Act against Unfair Competition (UWG), competition law in other countries, agreements of GATT, WTO, IMF etc.)
- Eurostat, DeStatis (50 Years of Figures on Europe, yearbooks, etc.)

Abbreviations

APEC Asian Pacific Economic Cooperation
ASEAN Association of South and East Asian Nations
BOP Balance of (International) Payments
CEES Central and East European States
CEFTA Central European Free Trade Agreement
c.i.f. Cost including insurance and freight
CMEA Council of Mutual Economic Assistance (resigned)
CPI Consumer Price Index
COFOG Classification of Functions of Government
EAEC European Atomic Energy Community (Euratom)
EC European Community
ECSC European Coal and Steel Community
ECB European Central Bank
ECOFIN European Council of Economics and Finance Ministers
ECU European Currency Unit
EEA European Economic Area
EEC European Economic Community
EFTA European Free Trade Association (Agreement or Area)
EMI European Monetary Institute (liquidated)
EMS European Monetary System
EMU Economic and Monetary Union
EPU European Payments Union
ERDF European Regional Development Fund
ERM Exchange Rate Mechanism
ERP European Recovery Program (The Marshall Plan)
ESA European System of National and Regional Accounts in the Community (ESA 2010)
ESCB European System of Central Banks
ESF European Social Fund
EAGGF European Agricultural Guidance and Guarantee Fund
EU European Union
EU-17 EMU Member States (euro area)
EU-27 plus Bulgaria and Rumania
FDI Foreign Direct Investment
FTAA Free Trade Area of the Americas
f.o.b. free on board
GATT General Agreement on Tariffs and Trade
GATS General Agreement on Trade in Services
GDP Gross Domestic Product
GNI Gross National Income
GNP Gross National Product
GWB German Act against Restraints of Competition
HICP Harmonized Index of Consumer Prices
IBRD International Bank for Reconstruction and Development (world bank)
ILO International Labor Organization
IMF International Monetary Fund
ISPA Instrument for Structural Policies for Pre-accession
Mercosur Mercado Comùn del Sur
NAFTA North American Free Trade Agreement (or Association)
NCB National Central Bank
OECD Organization for Economic Co-operation and Development
PPP Purchasing Power Parity
PPS Purchasing Power Standard
SDR Special Drawing Rights
SEA Single European Act
StabG German Act on Safeguarding Economic Stability and Growth
TEC Treaty Establishing the European Community
TEU Treaty on European Union
TFEU Treaty on the Functioning of the European Union
TRIPS Trade-Related Aspects of Intellectual Property Rights
UWG German Act against Unfair Competition
VAT Value Added Tax
WTO World Trade Organization

1 Fundamentals of Economics
Contents

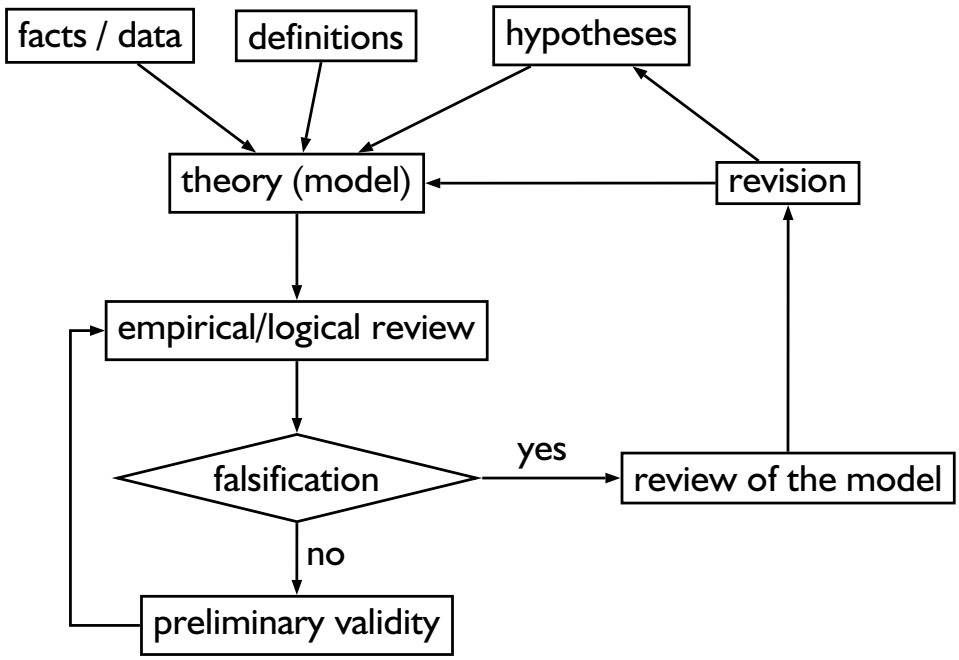
1.1 Economic Theory

- what is economics
- theory / falsification / empirical facts
- microeconomics / macroeconomics
- money / prices

Economics

Paul A. Samuelson (1915–2009)

Economics is the study of how men and society end up choosing with or without the use of money, to employ scarce productive resources which could have alternative uses, to produce various commodities and distribute them for consumption, now or in the future, among various people and groups in society.



Microeconomics

concentrates on the economic behavior of **individuals** such as households, firms or public authorities and on the results of their interactions (price formation, factor allocation, use of market power, forming of contracts, regulation . . .).

Macroeconomics

analyzes overall economic relationships between **aggregate variables**. Some of the relevant aggregates regarding an economy are income, employment, consumption, saving, investment, growth, money stock, price level . . .

In microeconomics the exchange of goods ($\rightarrow$ trade) is of major interest. *A servant receives 5 liters of milk per working day at the farm.* As a conseqence there is no immediate need of money.

Why is it useful to have money? It simplifies life greatly!

- Without money we have to bear in mind for every pair of goods the corresponding exchange realtionship – the **relative price**.

$$p\left[\text{liter of milk/labor units}\right]$$

- Problem: The number of relative prices increases progessively with number of goods. For 2,3,4,. . . ,n goods we need 1,3,6,. . . , $n(n-1)/2$ relative prices. (100 goods $\rightarrow$ 4950 relative prices)
- Now introduce money as an additional good. Using **money prices** p_j for good j reduces information to n data.

$$p_j\left[\text{EUR/unit of good } j\right]$$

(100 goods $\rightarrow$ 100 money prices)

Advantages of money

- less data without loss of information needed

$$\frac{p_1}{p_2}\left[\frac{\frac{€}{\text{labor unit}}}{\frac{€}{\text{liter of milk}}}\right] = p\left[\frac{\text{liters of milk}}{\text{labor unit}}\right]$$

- No need to find a matching trading partner for barter if money is generally accepted.

Functions of money (jeopardized by high inflation)

- medium of exchange
- unit of account (money as numéraire)
- store value

See Sec. 3 on the terms exchange rate (= price of a foreign currency), price index, inflation, nominal and real values.

1.2 The Economic Problem

- scarcity / opportunity cost
- decision makers / economic plans
- market economy / market price mechanism / consumer sovereignty
- circular flow of income
- rationality (homo oeconomicus)

Scarcity

The core problem in economics is a quantitative conflict.
The limited availability of productive recources implies limited quantities of consumer goods (→ commodities and services) facing at the same time unlimited needs of people and societies (→ trade-off).

This scarcity requires to make decisions on how to use scarce recources and goods regarding alternative uses (→ economic behavior). *Economic goods are always scarce. Free goods by contrast are available to such a quantity that anybody's needs can be satisfied (of no interest for economists.)*

Choosing one alternative means at the same to give up all other alternatives. This abandonment of alternatives is referred to as opportunity cost.

Economic Principle

The economic principle addresses a fundamental rule of rational behavior with regard to the options of using scarce resources.

(a) Maximum principle
Gain the maximum result (e.g., utility, profit) from given resources (e.g., income or resources).

(b) Minimum principle
Realize a given result (e.g., utility level, output) at a minimum usage of resources (e.g., consumption expenditures, production cost)!

Either (a) or (b), never both.

Determinants of Welfare

Determinants of welfare (= economic prosperity, not social care)

- quantity and quality of resources
- division of labor (A. Smith, moral philosopher, 1723–1790)
  - organizational aspects of production
  - specialization
  - economies of scale

  classification
  - personal division of labor (e.g., in families or between students)
  - division of labor internal to firms (→ governance structure)
  - national and international division of labor

  With the division of labor one dispenses with the approach to produce solely for one's own needs. This requires trade (= exchange of goods). Be aware that trading partners agree *voluntarily* in the exchange of goods only if both parties profit (→ gains from trade).

Economic Plans

Microeconomic point of view (see Sec. 2 for more details)

	economic agents / decision makers		
	households consumer	firms producer	state, government, society
economic plans	▶ demand for goods ▶ saving ▶ supply of productive recources (labor, capital)	▶ demand for recources ▶ investment ▶ supply of goods	▶ material infrastructure ▶ set, control, and enforce rules ▶ supply of money
objectives	utility maximization	profit maximization	▶ serving collective needs ▶ income distribution ▶ operational money

Market Economy

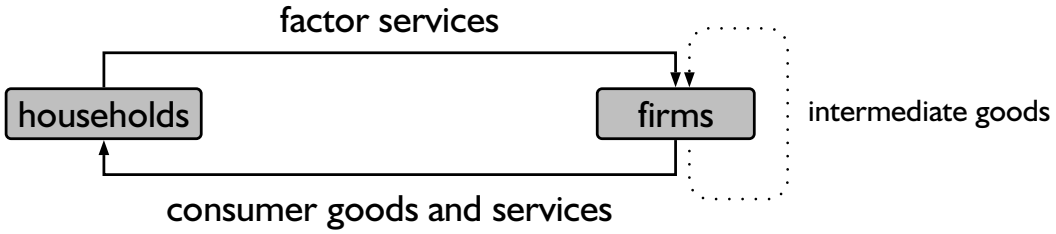
In a market economy each actor (→ households, firms) decides individually on its economic plan. In doing so they follow primarily selfish interests, but satisfying their needs – in an economy based on the division labor (→ specialization) – requires all agents to interact and to cooperate on markets.

The coordination of independent economic plans is done by the markets (→ factor markets and goods markets) using the market price mechanism (to be explained in Sec. 2).

Ludwig von Mises: In a free market economy the consumers forming the society dictate what is to be produced by the firms (→ consumer sovereignty). In this sense firms are reduced to agents satisfying the needs of people as their principals.

macroeconomic point of view

- factor markets and goods markets (exchange of services)
- commodity flows vs. (reverse) monetary flows



Remarks

(1) The circular flow of income refers to flows, i.e., quantities per unit of time: production per year, labor services per year ...
Stocks such as the physical capital stock are not depicted.
The capital stock K is depleted (depreciation D per period) and it is updated by gross investment I^g.

stock at the end of a year $K_{t+1} = K_t + I_t^g - D_t$

change during the year $\Delta K_t = K_{t+1} - K_t = I_t^g - D_t = I_t^n$

to be continued

. . . continued

(2) The circular flow of income requires for every sector that service (outflow) and service in return (inflow) equal each other.
Problem: When are quantities of goods and labor services equal?
Answer: The equivalence is computed on the basis of monetary flows.

$$\text{labor income} = \text{consumption expenditure}$$

$$wL = p_1 x_1 + p_2 x_2$$

$$\left[\frac{€}{h}\ \frac{h}{a}\right] = \left[\frac{€}{\text{unit } x_1}\ \frac{\text{unit } x_1}{a}\right] + \left[\frac{€}{\text{unit } x_2}\ \frac{\text{unit } x_2}{a}\right]$$

to be continued

. . . continued

(3) The circular flow of income focuses on *net flows*.
Regarding the sector of firms the gross value added (GVA) is computed by the sum of all production values (PV) net of the consumption of intermediate goods (IG).

$$\text{GVA} = \sum_j \text{PV}_j - \sum_j \text{IG}_j$$

For a closed economy without taxes we have GVA=GDP=GNI, where GDP is the gross domestic product and GNI is the gross national income.

to be continued

. . . continued

(4) How much money ($\rightarrow$ money stock M) is needed to cope with all monetary flows or transactions?

- all payments at the end of the year $M = Y^n = wL = p_1x_1 + p_2x_2$
  $M =$ money stock
  $Y^n =$ nominal income (per year)
- payments at the end of every month $M = Y^n/12$ or $M \cdot 12 = Y^n$
- If each euro coin is use V times then $M \cdot V = Y^n$.
  $V =$ velocity of money
  $M \cdot V = Y^n$ is referred to as Fisher identity ($\rightarrow$ Irving Fisher)
- Caveat. This is not a theory, but simply a variation of definitions.

  Afterwards (p. 108) we add some behavioral assumptions and gain the *quantity* ***theory*** *of money*

Behavior and motives of economic individuals

- Usual assumption in neoclassical theory.
  Individuals are selfish (but honest) and they behave **rationally** (homo oeconomicus). They balance advantages against disadvantages of all alternatives and choose the alternative with the highest net benefit.
- Modified assumption, e.g., in new institutional economics.
  Individuals are opportunistic (selfish and insidious) and they follow a **bounded rationality**. They do the same as before but on the basis of incomplete information and they have a limited capability to handle data. Moreover, they are willing to cheat.
- In many cases – such as car driving – human behavior is directed by mere instincts or customs. A behavior **without reasoning** is of limited interest when analyzing economic decision making.

1.3 Basic Concepts of Economic Policy

- economic systems / economic orderings
- economic constitution
- conception of the German Social Market Economy

Theory of Economic Policy

The basic question in the theory of economic policy is as to how it is determined, who produces what, how, where and for whom.

The answers (cf. competition) have to follow some basic principles.

Coordination principle: How do individuals of equal ranking coordinate their individual economic plans?

Subordination principle: How should a society (or economy) be organized hierarchically? (relationship between state and individuals)

Constitution of property rights: How and whom are property rights of productive resources assigned to?

A comprehensive approach yields two economic systems as ideal reference types: market economy and centrally planned economy. Both types were hardly ever realized. The real forms instead are called economic orderings.

Economic Systems

	economic systems	
	market economy	centrally planned economy
constitution of property	private property of productive resources	collective property of productive resources
coordination	– individ' economic plans market price mechanism – prices as indicators of scarcity – incentives by profits and income	– central planning of needs and assignment to productive units – excess demand expresses scarcity – altruism
subordination	constitutional state setting, controlling, enforcing legal norms and other skeleton conditions	command economy planning and controlling the total economy by orders

Caveat: In a market economy private firms are usually organized hierarchically in the sense of centrally planned economies.
(→ *governance structures* in the new institutional economics).

Economic Orderings

While economic systems as ideal reference types are more of a theoretical nature, economic orderings are realized as mixed forms.

A distinct economic ordering is associated with

- a market economy, the more it emphasizes the **individual principle** (→ competition, many individual economic plans)
- a centrally planned economy, the more it emphasizes the **collective principle** (→ one central plan with a centrally organized realization and governmental steering)

This gives a wide range of economic orderings with economic systems as extreme points.

- Germany: «social» market economy (similar to France, UK . . .)
- EU: market economy (common market) with many elements of a centrally planned economy (harmonization, industrial policy, . . .)
- world: WTO with the objective of worldwide free trade (principles of a market economy applied globally)

German Social Market Economy (History)

Conception of the German Social Market Economy (evolution)

Classical Economic Liberalism (invisible hand of A. Smith)
The state has only functions of ordering (night-watchman state) and it has to safeguard economic freedoms (freedom of trade, free competition, international free trade).
→ *postulate of a constitutional state*

Neo-liberalism Markets are not able to design a competition ordering by themselves. As a consequence, the state has to set, to control, and to enforce such a skeleton of rules (evolution of power, cartels, abuse of market power, . . .). → *. . . regulating state*

Social Market Economy Reaction to (1) the disoriented interventionism of western industrialized countries between the World Wars, (2) compulsion economy of national socialism, (3) bureaucratic administration of the economy after WW II.
Idea: Combine the principle of the freedom on markets with social equalization. → *. . . social state (supplementary)*

German Social Market Economy (Principles/Objectives)

Founding principles of the German Social Market Economy

(a) Constituent principles → *efficiency*
- private property, contractual freedom
- economic and competition ordering (→ performance justice)
- guarantee of open markets
- functioning market price mechanism and price stability

(b) Regulating principles → *equity*
- supplement (a) by equalizing justice and fairness at the beginning (→ social state/welfare state)
- correction of coordination deficits and disincentives in a market economy
- supervision of market power
- internalization of external effects

(c) Principles of national policy → *macroeconomic stability and growth*
- social principle (system of collective existence provision)
- avoidance of national disequilibria

Resulting tasks for the state (German Social Market Economy)

(a) Economic and competition ordering
- establishment of a legal framework ($\rightarrow$ constitutional state)
- safeguarding the functioning of market coordination (market constitution)
- stabilization of competition
- ordering of the monetary system
- correction of insufficient market results (e.g., abuse of market power, externalities, collective needs . . .)

(b) Social ordering
- redistribution of income and wealth

(c) Global steering (added afterwards)
- Steering of national demand including a rough process policy
  See p. 129 for more details.
- Industrial policy (doubtful: arrogance of knowledge, F.A. v. Hayek)

- Problem of market conformity
  Having chosen a (social) market economy all interventions «to secure the social purpose» must be market conform, i.e. the functioning of the market price mechanism must not be injured.
- One major problem remains
  trade-off between equity and efficiency (contradictory incentives)
- Consequence (F.A. v. Hayek)
  The principles of a market economy and a «social» market economy are almost surely incompatible.

The principles of coordination and subordination are also to be applied within the organization of governmental authorities (here EU).

Separation of powers and individual authorization. The powers of public authorities are to be distributed among legislative, executive, and judicative so that they control each other.
Art. 5 TEU. The limits of Union competences are governed by the principle of conferral («Einzelermächtigung»).

Subsidiarity. Formal principle of assignment of competences in a hierarchical ordering of the society (see Art. 5 TEU and Protocol No 2): a problem shall be solved on the level, where the problem is originated. Only if self-help is not possible, superior or remote authorities will be legitimated.

Economic Constitution

An economic constitution is the collection of all legal and institutional regulations concerning the economy.

1. national level (constitution, national laws)
2. European level (treaties, primary and secondary law)
3. worldwide level (WTO, IMF)

Economic Constitution of Germany

Elements of the German economic constitution

1. national level (*major aspect*)
   - German constitution (Grundgesetz) → private property
   - GWB, UWG → competition
   - StabG → global steering
   - foreign trade law → free foreign trade
2. European level (treaties, primary and secondary law)
   - TEU, TFEU including several protocols → competition
     (among of which Statute of the ESCB) → monetary policy
   - stability and growth pact → fiscal policy
3. worldwide level
   - Agreement establishing the WTO → global market economy
   - Articles of Agreement of the IMF → convertibility of currencies

2.1 Decisions of Economic Agents (go back to p. 19)

groups of actors to be distinguished

- households / consumers
- firms / producers
- government / society

Households are analyzed as functional units which

- supply factor services (owners of labor, capital, land) to obtain factor income,
- use their income to satisfy today's and future needs (demand for commodities and services, present and future ($\rightarrow$ saving) consumption)

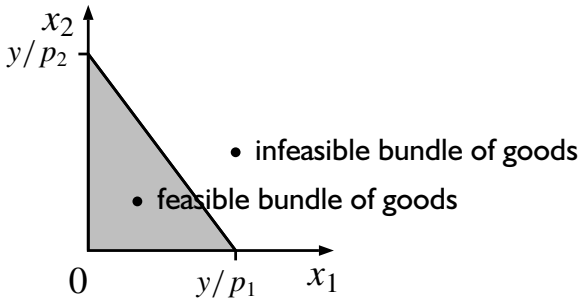
In doing so housholds are assumed at first to be selfish individuals which behave rationally ($\rightarrow$ utility maximization).
Later (not here): opportunistic (selfish and sneaky) individuals with bounded rationality, sometimes altruistic

Utility maximization means that each household chooses the «best» bundle of goods ($\rightarrow$ preferences, expectations) which is feasible according to the budget constraint ($\rightarrow$ scarcity).

$$y \geq p_1 x_1 + p_2 x_2$$

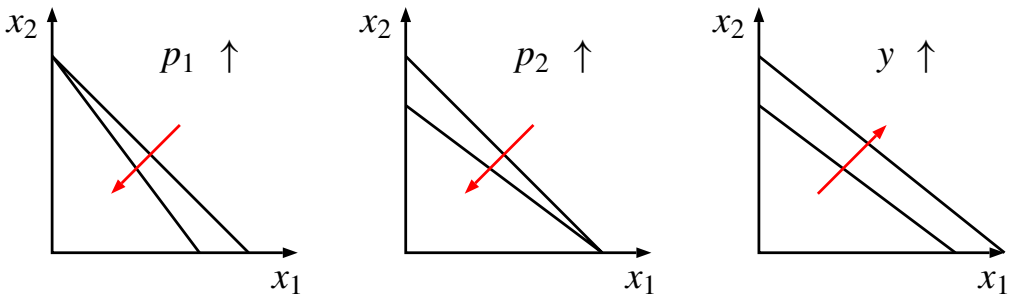
income $\geq$ consumption expenditure

dimensions:
$[y] = €$;
$[p_1] = €$ /unit of x_1;
$[p_1 x_1] = €$



Assuming monotonically increasing preferences (increasing quantities are preferred) indicates that an optimal consumption bundle lies on the budget line (not below and never beyond).

Varying one of the parameters (p_1, p_2, y) shifts the budget line and changes, therefore, the utility maximizing commodity bundle $(\hat{x}_1, \hat{x}_2)$.



Determinants of individual demand for good j $(j = 1, \ldots, n)$

- own price of the good at hand: p_j
- prices of other goods: $p_1, \ldots, p_{j-1}, p_{j+1}, \ldots, p_n$
  income: y
- tastes/preferences
  economic expectations

demand function

$$x_j^D = x_j^D(p_1, \ldots, p_j, \ldots, p_n, y)$$

Demand of a Household

The behavior of households is analyzed under the *ceteris paribus* assumption («other things equal»).

$$x_j^D = x_j^D(p_1, \ldots, p_j, \ldots, p_n, y)$$

Change of one and only one parameter

- $p_j \uparrow \rightarrow x_j^D \downarrow$ (usual case; law of demand)
- $p_j \uparrow \rightarrow x_j^D \uparrow$ (Giffen good)
- $p_1 \uparrow \xrightarrow{x_1^D \downarrow} x_j^D \uparrow$ (substitutes)
- $p_1 \uparrow \xrightarrow{x_1^D \downarrow} x_j^D \downarrow$ (complements)
- $y \uparrow \rightarrow x_j^D \uparrow$ (normal good)
- $y \uparrow \rightarrow x_j^D \downarrow$ (inferior good)

Market Demand (Aggregation)

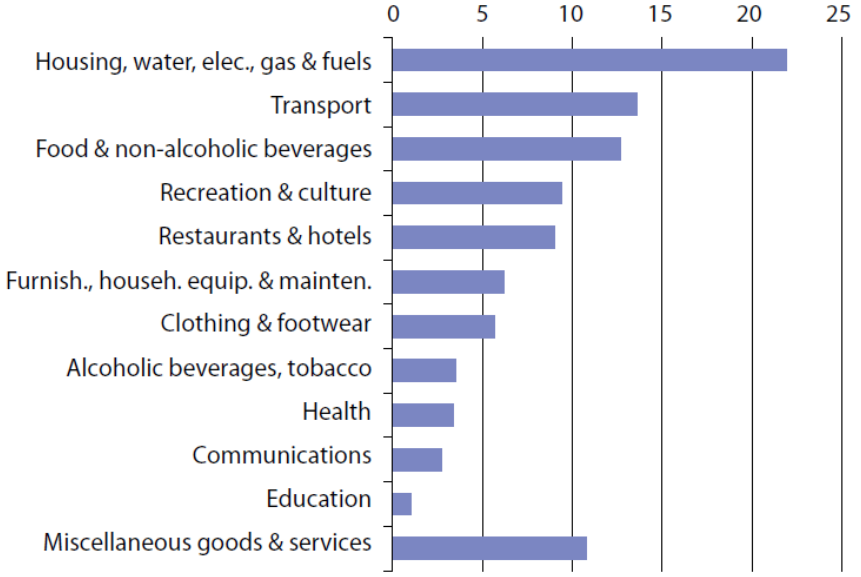
Individual demand functions for every houshold $h = 1, \ldots, H$ and every good $j = 1, \ldots, n$

$$x_{jh}^D = x_{jh}^D(p_1, \ldots, p_n, y_h)$$

Aggregation of individual demand functions (= addition of quantities demanded) yields the market demand $x_1^D, \ldots, x_n^D$.

$$\begin{array}{lll} \text{good 1:} & x_1^D = & x_{11}^D(p_1, \ldots, p_n, y_1) + \cdots + x_{1H}^D(p_1, \ldots, p_n, y_H) \\ & & \vdots \qquad\qquad\qquad\qquad \vdots \\ \text{good n:} & x_n^D = & \underbrace{x_{n1}^D(p_1, \ldots, p_n, y_1)}_{\text{household } 1} + \cdots + \underbrace{x_{nH}^D(p_1, \ldots, p_n, y_H)}_{\text{household } H} \end{array}$$

Figure 1.5: Consumption expenditure of households, EU-27, 2006 (1)
(% of total household consumption expenditure)



(1) Figures do not sum to 100 % due to rounding. *Source:* Eurostat (nama_co2_c)

Source: Eurostat, Key figures on Europe 2010, p. 28

Market demand functions are noted in the form

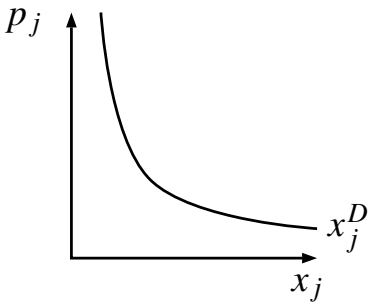
$$x_j^D = x_j^D(p_1, \ldots, p_n).$$

For the sake of simplification the income distribution $(y_1, \ldots, y_H)$ is ignored. On income distributions see p. 114.

Law of demand:

if $p_j \uparrow \rightarrow x_{jh}^D \downarrow \ \forall h$

then $p_j \uparrow \rightarrow x_j^D \downarrow$



($\rightarrow$ supply of factor services by analogy)

Firms are analyzed as functional units that transform factors of production (→ factor demand) into goods (→ supply of commodities and services (= labor acts)).

In doing so they aim at profit maximization either in the short run (→ fixed inputs) or in the long run (→ investment).

In any case the role of firms is that of agents which have to follow the needs of society as principal (→ consumer sovereignty).

Factors of production

- original: labor (human activities), land (provided by nature)
- derived via investment: capital (also human capital)

	quantity	quality
labor	▸ population ▸ labor force ▸ working time	▸ talents ▸ education ▸ training
land	▸ area / stocks ▸ reproducibility (stock of fish, ore, coal, . . .)	▸ climate, quality of soil, location ▸ lignite or hard coal
capital	▸ investment ▸ wearing, depreciation	▸ technical knowledge

multi-commodity firm as production unit

- procurement (demand)
  - factor quantities $v_1, \ldots, v_m$ (inputs)
  - factor prices $q_1, \ldots, q_m$
  - factor cost $q_1 v_1 + \cdots + q_m v_m$
- inputs $\rightarrow$ production process $\rightarrow$ outputs
- sale (supply)
  - quantities of goods $x_1, \ldots, x_n$ (outputs)
  - goods prices $p_1, \ldots, p_m$
  - revenue $p_1 x_1 + \cdots + p_n x_n$

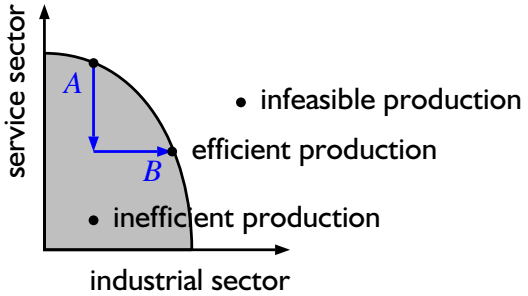
single commodity firm (for the sake of simplification)

- production function $x = f(v_1, \ldots, v_m)$
- factor cost $q_1 v_1 + \cdots + q_m v_m$
- revenue px

Similar to a multi-commodity firm, total production of an economy is represented by a transformation curve.

The transformation curve is the frontier of the set of all technically feasible output combinations given the national factor stocks ($\rightarrow$ *gray* production possibility set). Any commodity bundle on the transformation curve requires full employment of resources and the efficient use of resources available.

Any movement from A to B indicates
(a) opportunity cost
(b) reallocation of factors



Overall objective. Maximize the difference between the value of generated outputs and the value of inputs used up.

$$\text{profit} = \text{revenue} - \text{cost} \rightarrow \max$$

Be aware that inputs and outputs are technically interconnected by some production function ($\rightarrow$ restriction).

Advice for entrepreneurs by the market ($\rightarrow$ price mechanism)

- Repeat activities as long as profit > 0 (you generate some additional value, $\rightarrow$ profit as incentive)
- Stop activities as soon as profit < 0 (you destroy value)

Profit maximization excludes any waste of resources ($\rightarrow$ efficiency).

Determinants of individual supply of good j $(j = 1, \ldots, n)$

- own price of the good at hand: p_j
- prices of factors of production $q_1, \ldots, q_m$
- prices of other goods $p_1, \ldots, p_{j-1}, p_{j+1}, \ldots, p_n$
- state of technical knowledge ($\rightarrow$ production function)
  expectations on profit

supply function ($\rightarrow$ outputs)

$$x_j^S = x_j^S(p_1, \ldots, p_j, \ldots, p_n, q_1, \ldots, q_m)$$

(demand functions ($\rightarrow$ inputs) by analogy)

Aggregation (same procedure as for households)

- Factor services (inputs):
  sum up the demand for every input factor ($i = 1, \ldots, m$) with respect to all firms ($g = 1, \ldots, G$)
  Law of demand

$$\text{factor price } q_i \uparrow \rightarrow \text{ market demand } v_i^D \downarrow$$

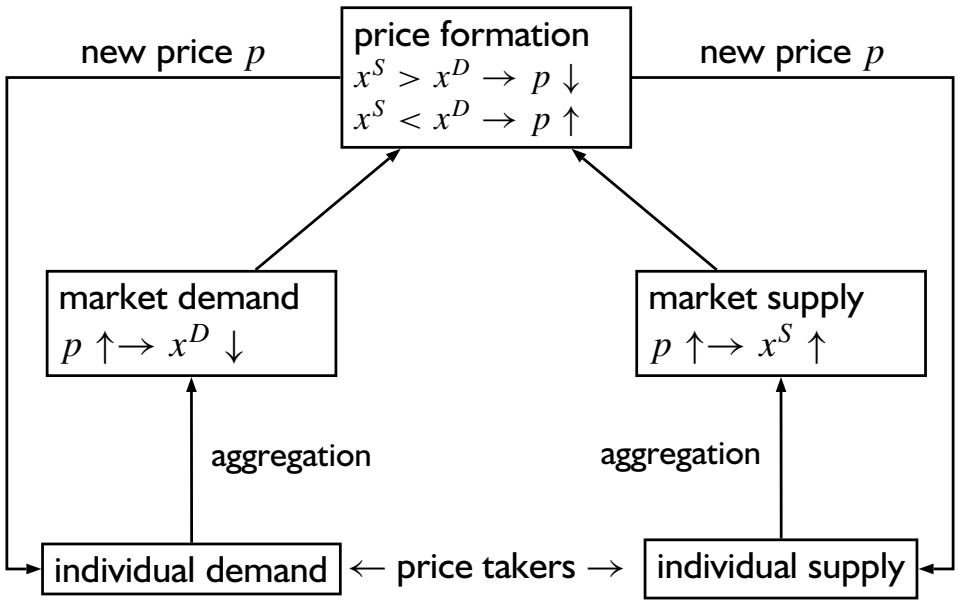
- Products (outputs):
  sum up the supply of every product ($j = 1, \ldots, n$) with respect to all firms ($g = 1, \ldots, G$)
  Law of supply

$$\text{output price } p_j \uparrow \rightarrow \text{ market supply } x_j^S \uparrow$$

2.2 Market Equilibria

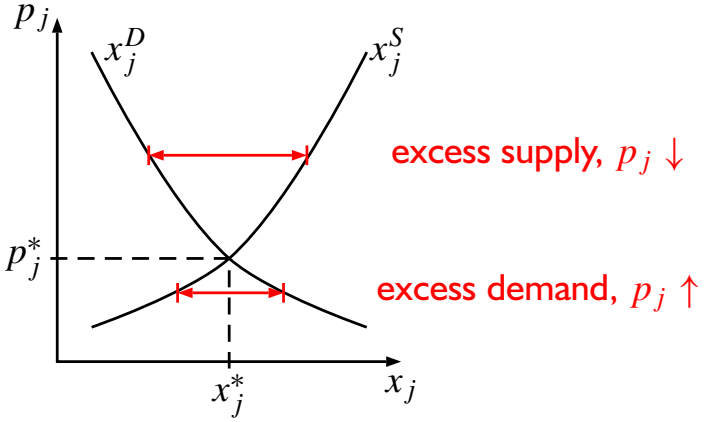
- price formation and market equilibrium
- functions of prices
- comparative statics

Price Formation



Market equilibrium: a situation where market demand and market supply match each other (coordination by the market price)

- demand $x_j^D = x_j^D(p_1, \ldots, p_j, \ldots, p_n)$
- supply $x_j^S = x_j^S(p_1, \ldots, p_j, \ldots, p_n)$
- equilibrium $x_j^D = x_j^S = x_j^*$, equilibrium price p_j^*



Functions of Market Prices

Market prices are the instruments by which the behavior of households and firms is coordinated in a market economy.

Functions of prices

- information about relative scarcity
- coordination of individual economic plans
- balance of supply and demand by exclusion of
  - non-competitive suppliers
  - consumer with low willingsness to pay or low purchasing power
- allocation and incentive function
  - direction of factor services into production units with highest productivity (highest factor payments and profits)
  - direction of income to people participating in the production process ($\rightarrow$ income distribution)

comparative statics

Pareto Efficiency

Pareto efficiency (→ Vilfredo Pareto) refers to an economic situation where nobody's individual position can be impoved without worsening somebody else's situation.

Pareto efficience requires technically efficient production (especially no waste of resources) and that the marginal rate of substitution in consumption equals the marginal rate of transformation.

The total equilibrium with perfect competition on all markets has been shown to be Pareto efficient.

Problems of Pareto inefficiency result particularly from public goods, external effects and in dynamic contexts.

Further Roles of Governments in Market Economies

Disregarding the roles of a constitutional and a social state, the government frequently acts as a household or a firm.

- household: financing public expenditures which result for instance from collective needs (e.g., material infrastructure, television, educational system, jurisdiction . . .).
- firm: in many cases public monopolies (e.g., electricity, water, telecommunications, postal services)
  idea: (1) firms are not willing or not able to produce certain goods; (2) monopolies have market power, which might be controlled best by public firms.

Further Roles of Governments in Market Economies

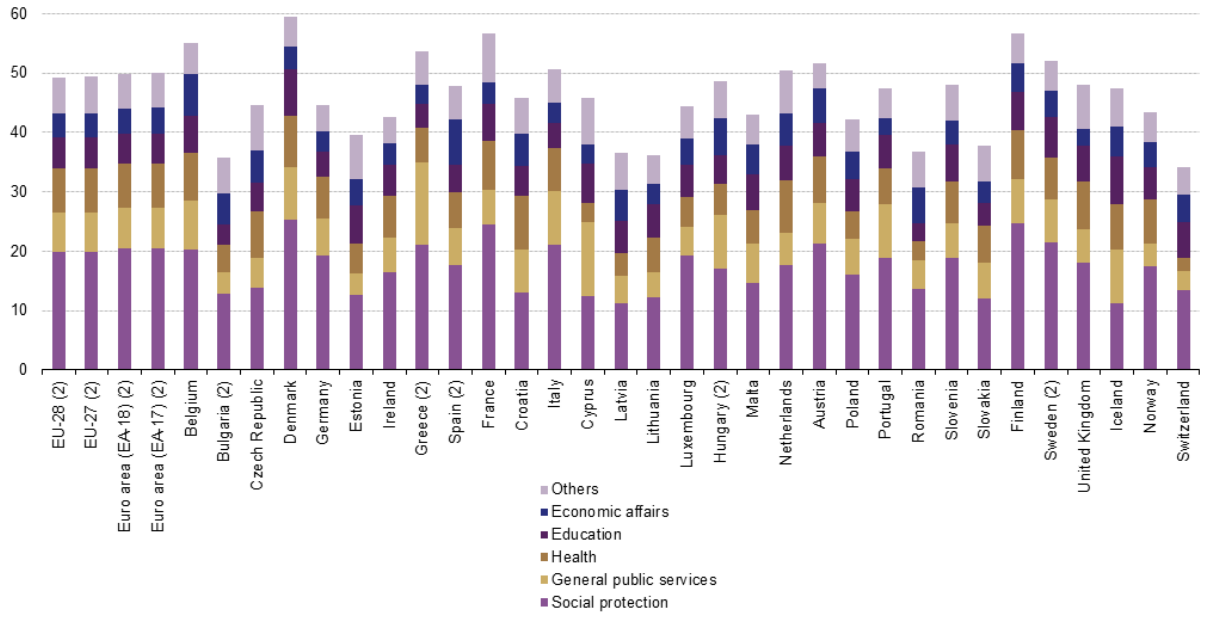
Principle. If the state is assigned certain *tasks* or *responsibilities*, it must be provided means to make corresponding *expenditures*.

- The state as a firm obtains revenue to finance cost.
- The state as a household imposes taxes (→ tax income).
  In contrast to fees or charges, taxes induce no right to obtain an immediate service in return.

Objectives. Taxes serve not only to obtain revenues for financing public expenditures (fiscal objective), but also for the

- guidance of supply and, especially, demand,
- correction of income distribution,
- realization of a high degree of employment,
- and pursuance of other targets.

Classification of Functions of Government (COFOG)



(1) COFOG: classification of the functions of government. Data extracted on 22.04.2014.
(2) Provisional.
Source: Eurostat (online data code: gov_a_exp)

Classification of taxes by OECD

1. taxes on income, profits and capital gains, Germany: solidarity duty (individuals, corporate) (→ *income of households and firms, flows*)
2. social security contributions
3. taxes on property (immovable property, net wealth, estate, inheritance, financial transaction, etc.) (→ *wealth of households and firms, stocks*)
4. taxes on goods and services (→ *business activities*)
   - taxes on production, sales, rendering services (value added tax)
   - taxes on specific goods and services (excises, customs, etc.)
   - taxes on use of goods or on permission to perform activities

Classification by ESA 2010: (1) taxes on production and imports, (2) taxes on income, wealth, . . . , (3) capital taxes, (4) social contributions

The non-affectation principle is the major principle on how to assign tax income (German constitution, Art. 110): total tax revenue is used to finance total expenditure (no special use of certain taxes).
→ different for fees or charges

Problem of consumption or excise taxes.
Consumption taxes which shall reduce consumption (→ tobacco tax) are most effective (prohibitive price) if the tax income is reduced to zero (consumption = 0).
Do not use taxes of steering demand or supply to maximize tax revenue (contradicting objectives).

Tax Revenue (Germany)

tax (1999, bn. DM)	total revenue			right of disposal			
	territory			government			EU
	old	new	total	central	state	local	
personal income tax	283.0	22.6	306.5	130.3 42.5%	130.3 42.5%	46.0 15%	
corporate income tax	64.2	1.7	65.8	32.9 50%	32.9 50%		
sales tax (VAT)	199.2	19.1	218.3	129.4	117.4	5.6	15.9
import sales tax	48.8	1.2	50.0				
trade tax	49.5	3.4	52.9	2.5	3.5	42.2	
fuel tax			71.3	59.3	12.0		
tobacco tax			22.8	22.8			
solidarity duty			22.0	22.0			

Source: Statistisches Bundesamt, Datenreport 2000.

Remark: population (old : new) $\approx$ 3 : 1, but tax revenue (old : new) $\approx$ 13 : 1

Tax Structure (OECD)

OECD in Figures OECD © 2008 Taxation (2005)	% of GDP	Tax structures % of total tax receipts						Highest rates of income taxes		Disposable income of average worker % of gross pay	
		Personal income tax	Corporate income tax	Social security contributions: Employees	Social security contributions: Employers	Taxes on goods and services	Other taxes	Personal income tax %	Corporate income tax %	Single person	Married with two children
Germany	**34.8**	**23.3**	**4.9**	**17.4**	**19.2**	**29.0**	**6.1**	**44.3**	**38.9**	**56.7**	**76.2**
France	44.1	17.3	6.2	9.2	25.0	25.3	16.9	36.5	35.0	71.1	83.1
United Kingdom	**36.5**	**28.6**	**9.3**	**7.8**	**10.4**	**30.3**	**13.1**	**40.0**	**30.0**	**73.1**	**79.7**
Italy	41.0	25.5	6.8	5.5	21.4	26.4	14.4	44.1	33.0	72.7	89.2
Greece	**27.3**	**14.8**	**10.3**	**14.1**	**16.0**	**34.6**	**10.2**	**33.6**	**32.0**	**76.2**	**74.5**
Ireland	30.6	27.3	11.2	4.6	9.3	37.8	9.9	42.0	12.5	84.7	104.4
Portugal	**34.8**	**15.7**	**8.8**	**10.2**	**20.9**	**39.3**	**5.2**	**35.6**	**27.5**	**77.6**	**89.5**
Spain	35.8	18.0	10.8	5.3	23.6	28.0	14.2	45.0	35.0	79.8	87.2
Netherlands	**39.1**	**18.0**	**9.8**	**16.5**	**10.7**	**31.7**	**13.3**	**52.0**	**31.5**	**67.7**	**78.0**
Denmark	50.3	48.7	7.6	2.1	0.1	32.2	9.3	55.0	28.0	59.2	71.2
Sweden	**50.7**	**31.6**	**7.5**	**5.5**	**21.0**	**26.1**	**8.3**	**51.6**	**28.0**	**68.8**	**76.0**
Switzerland	29.7	35.7	8.9	11.2	10.8	23.6	9.9	37.8	21.3	78.3	90.5
Turkey	**32.3**	**14.7**	**7.1**	**7.7**	**10.2**	**49.3**	**10.9**	**35.6**	**30.0**	**69.5**	**69.5**
New Zealand	37.8	41.1	16.8	0.0	0.0	32.1	10.1	39.0	33.0	79.6	85.6
Japan	**27.4**	**18.3**	**15.5**	**15.9**	**16.7**	**19.4**	**14.1**	**47.1**	**39.5**	**81.5**	**85.8**
United States	27.3	35.1	11.4	10.8	12.6	17.4	12.7	41.3	39.3	75.7	89.1

Source: OECD in Figures 2008, pp. 56–57

Tax Burden (Selected Countries)

	Tax burden and structure of taxes								General Government							
	Total taxes		Indirect taxes		Direct taxes		Social security		revenue		expenditure		deficit or surplus		debt	
	as % of GDP		as % of total tax burden				contributions		as % of GDP		as % of GDP		as % of GDP		as % of GDP	
year	2002	2003	2000	2003	2000	2003	2000	2003	2000	2003	2000	2003	2000	2003	2000	2003
EU25	41.3	41.5	33.4	33.8	33.4	31.6	33.2	34.5					0.8	-2.7	62.9	63.0
EU15	41.6	41.8	33.3	33.4	33.7	32.2	33.0	34.4	46.7		46.1		1.0	-2.6	64.0	64.0
Euro-zone	42.1	42.2	32.5	32.8	30.4	29.0	37.1	38.2	47.2	46.3	47.0	49.1	0.2	-2.7	69.7	70.4
Ger	41.7	41.7	28.9	29.7	28.7	25.9	42.4	44.4	47.1	45.0	45.7	48.9	1.3	-3.9	60.2	64.2
Fra	45.6	45.7	34.3	34.1	27.2	25.8	38.5	40.2	51.2	50.4	52.6	54.5	-1.4	-4.1	57.2	63.0
UK	37.0	37.1	37.0	36.9	43.7	42.0	19.4	21.0	40.9		39.3		3.8	-3.2	42.1	39.8
Ita	42.4	43.2	36.0	34.2	34.4	35.3	29.5	30.5	46.2	46.5	46.9	49.0	-0.6	-2.4	111.2	106.2
Por	37.4	38.1	40.4	41.9	28.1	24.6	31.6	33.5	42.3	44.9	45.2	47.7	-2.8	-2.8	53.3	59.4
Irl	29.8	31.2	41.7	41.4	41.1	39.5	17.1	19.1	36.5	35.4	32.1	35.2	4.4	0.2	38.4	32.0
Gre	39.8	38.6	38.6	37.2	27.4	23.3	34.0	39.5	47.8	44.0	49.9	47.2	-2.0	-3.2	106.2	103.0
Esp	36.3	36.5	33.7	33.7	29.9	29.6	36.4	36.7	39.1	39.9	40.0	39.5	-0.9	0.3	61.2	50.8
USA													1.4	-4.9	58.8	63.1
Jap													-7.5	-7.4	133.6	154.7

2.4 Competition Policy

- (perfect) competition / market structure
- competition policy (Germany, EU)
- imperfect markets

In general, competition is a rivalry between agents; it arises whenever two or more parties strive for something that all cannot obtain.

In a market economy (→ see economic systems), competition is a method which gives an answer to the question what, how, and for whom is to be produced.

Functions of competition

(a) static concept
- *guidance function*
  - adjustment of the production structure to the needs of the consumers (→ consumer sovereignty)
  - direction of production factors into those sectors where they are needed most urgently (→ efficient factor allocation).
- *incentive function*
  - reward of «best» firms by highest profits (includes the displacement of inefficient firms)
- *distribution function*
  - firms and households obtain income in accordance with their performance (→ income distribution)

(b) dynamic concept
- competition as a process of discovery
  - force to realize innovations as fast as possible (technical progress)
  - force to adapt changes in tastes and needs of the consumers

Market structure: classification by von Stackelberg

demand side \ supply side	one	few	many
one	bilateral monopoly	bounded demand monopoly	demand monopoly (monopsony)
few	dounded supply monopoly	bilateral oligopoly	demand oligopoly
many	supply monopoly	supply oligopoly	polypoly

- Market structure and market power are closely related
- Firms try to eliminate competition to gain market power
  Example: cartels or differentiated commodities (monopolies for some variant with close substitutes)

Perfect Competition

Idea: In the **polypoly**, buyers and sellers are so numerous that nobody has the power to influence market prices. This reference case is referred to as perfect competition provided a list of prerequisites constitutes an ideal situation:

- no barriers to entry (or exit)
- homogeneous goods (perfectly divisible, equal quality, . . .)
- complete information (about prices and quality)
- no preferences with respect to time, location, or persons
- unlimited ability to react to changes in a timely manner

Result: law of one price

If one of the conditions fails to hold true – as almost always in reality – there are starting points of market power, which can be expected to be abused.

Summary. Competition is the indispensible method to make a market economy functioning properly.

Problem. The actors in a market economy, however, tend to eliminate painful competition (either their rivals or the competition itself) in order to gain market power.

Consequence. Competition must be protected!

competition policy (Germany)

- constitution : private property, contractual freedom . . .
- law against restrictions of competition – cartell law (GWB) : existence of competition
- law against unfair competition (UWG) : quality of competition

competition policy (EU commission)

- TFEU (more details in Sec. 4)

imperfect markets

- public goods
- free rider
- asymmetric information

Contents

3.1 Circular Flow of Income

- open economy with governmental activities
- quantity theory of money
- balance of payments

Closed Economy without Governmental Activities

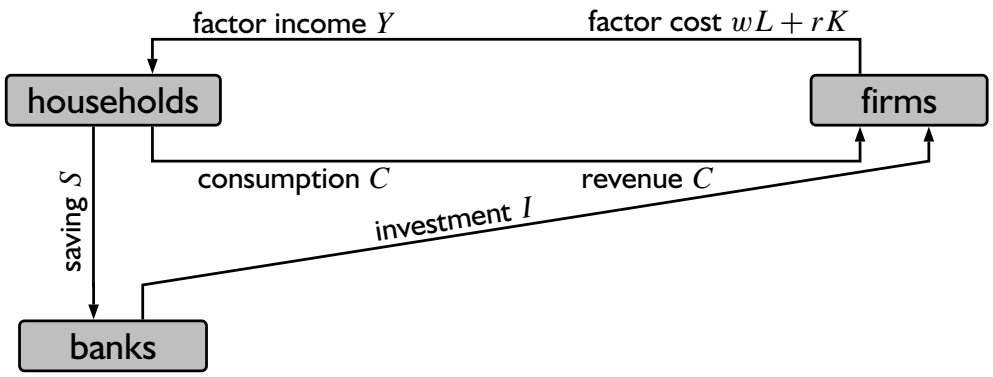
Start with the diagram on p. 21.

double entry bookkeeping system: a first extremely simple example

production account:	$Y = C$
use of income account (households):	$C = wL + rK$
generation of income account (firms):	$wL + rK = Y$
income account (private sector):	$C = Y$
finance account:	$0 = 0$

Caveat: Summarizing accounts induces a loss of information.
Cf. income account of the private sector: missing statement about $wL + rK$ ($\rightarrow$ functional income distribution)

Circular flow of income for a closed economy with capital formation but without governmental activities.



double entry bookkeeping system (detailed rules in ESA 2010)

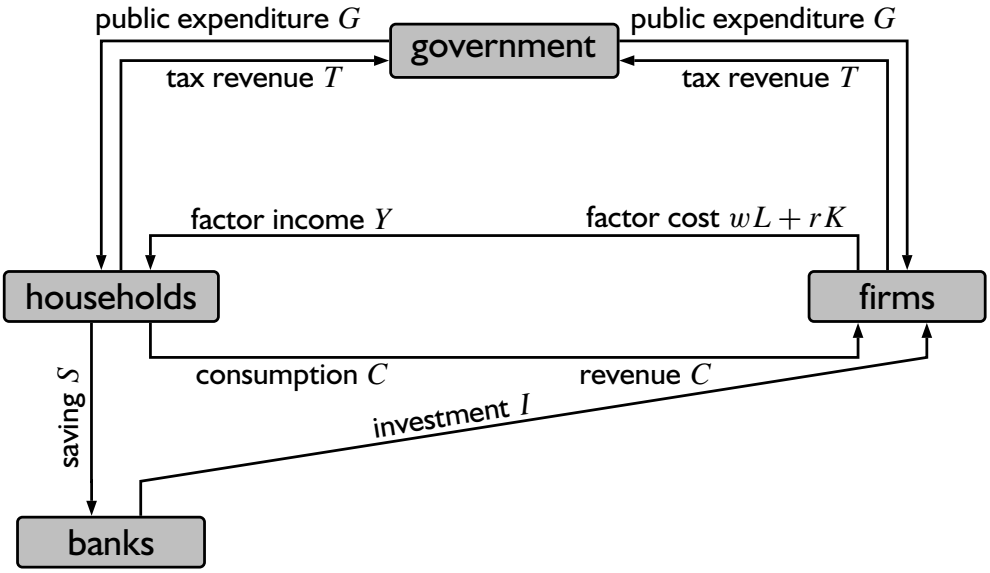
On the definition of the gross value added ($GVA \equiv Y$) see p. 24.

production account:	$Y = GDP$
goods and service account:	$GDP = C + I$
	$Y = C + I$
use of income account (households):	$C + S = wL + rK$
generation of income account (firms):	$wL + rK = Y$
income account (private sector):	$C + S = Y$
finance account:	$I = S$

The statement in the finance account – regarding a closed economy without governmental activities – is called ex post identity:

$$I = S$$

Closed Economy with Governmental Activities



Closed Economy with Governmental Activities

Allowing for a government with regard to a closed economy:

production account: $Y = C + C_{St} + I + I_{St}$

income account (priv' sector): $C + S + T = Y$

income account (publ' sector): $C_{St} + S_{St} = T$

---

income account (total): $C + C_{St} + S + S_{St} = Y$

finance account: $I + I_{St} = S + S_{St}$

ex post identity for a closed economy (use $G = C_{St} + I_{St}$)

$$\begin{aligned} & I + I_{St} = S + S_{St} \\ \iff & I + (I_{St} + C_{St}) = S + (S_{St} + C_{St}) \\ \iff & I + G = S + T \end{aligned}$$

Legal restrictions

Standard problem of a budget deficit $\Delta = G - T > 0$ (static)

- Art. 115 Grundgesetz (German constitution):
  The budget deficit Δ must not exceed public investment I_{St}, i.e. $\Delta \leq I_{St}$.
  Otherwise: $\Delta = G - T = C_{St} + I_{St} - T > I_{St} \implies C_{St} > T$
  Golden rule of public finance: Cover ongoing expenditures by ongoing revenues or: *do not finance public consumption by credits!*
- EU treaties, Protocol No 13, Art. 2 plus Art. 126 TFEU:
  The budget deficit Δ must not exceed 3.0% of GDP $(=Y)$.
  (The total public debt must not exceed 60% of GDP.)
- Art. 123 TFEU:
  Prohibition to grant credits to the public sector or to purchase directly (!) any debt instruments (bonds) by the ECB
  (is de facto bypassed in 2011)

Remarks on Germany

- Since 1961 the Federal State reduced public dept at the end of a year compared to the year before only rarely (1969, 2001, 2014–2017).
  $\rightarrow$ time series of the Deutsche Bundesbank
- At least for 2003–2009 public net investment I_{St} was **negative** in Germany (Sachverständigenrat/Council of Economic Experts).
  As a consequence, the depleted capital stock (road system, schools . . .) has only been subtituted in parts.

Remarks on the EU / euro area

Since Ge and Fr have broken the rules of the Stability and Growth Pact (deficit $\leq$ 3% of GDP, public debt $\leq$ 60% of GDP) without consequences, more and more imitators show up.

Prodi, former president of the EU-commission: «foolish rule»

In 2005 the stability pact has been «flexibilized» and it now allows for «special circumstances».

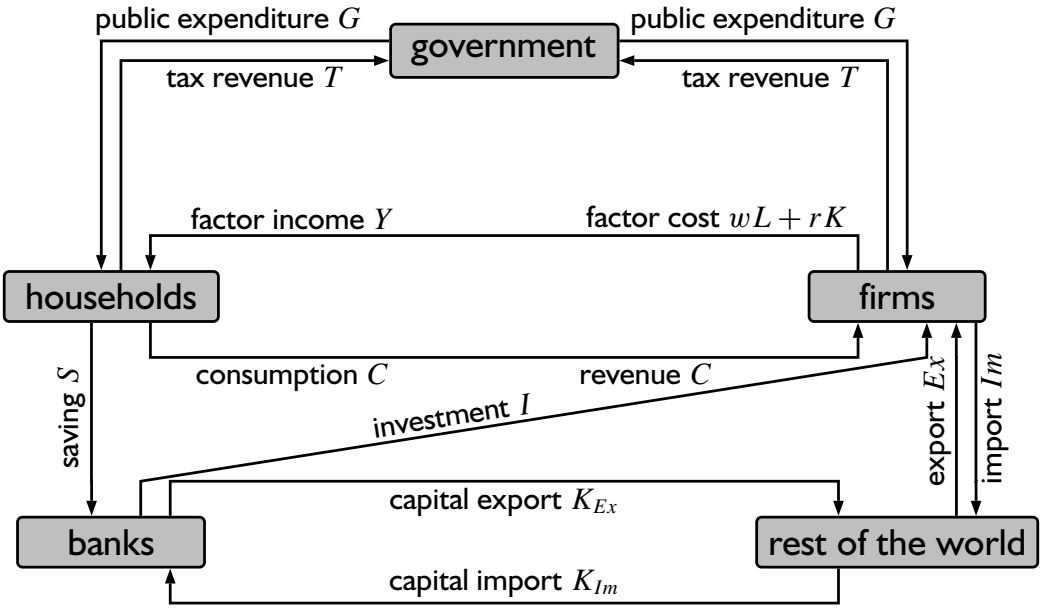
The Stability and Growth Pact is, therefore, de facto reduced to absurdity.

Financing the primary deficit $G - T$ and interest payments on total debt iB can be done by emission of interest bearing bonds $\mathrm{d}B$ or by money creation $\mathrm{d}M$:

$$G - T + iB = \mathrm{d}B + \mathrm{d}M$$

- credit facilities by the ECB (s.a.) prohibited: $\mathrm{d}M = 0$
- new debt: $(G - T + iB)/Y = \mathrm{d}B/Y = 3\%$
- long term public debt ratio $B/Y = 60\% = \text{const.}$
  Hence $\mathrm{d}B/B = \mathrm{d}Y/Y$ or $\mathrm{d}B/Y = (B/Y)\,\mathrm{d}Y/Y$ or
  $0.03 = 0.6\ \mathrm{d}Y/Y$, therefore, nominal growth rate $\mathrm{d}Y/Y = 0.05$
  On the computation with growth rates see p. 183.
- nominal GDP = price level $\times$ real GDP or $Y = PY^r$
  nominal growth rate = 5%
  = inflation rate at price stability + real growth rate
  = 2% + 3% (realistic for Germany after WW II)
  EU27 (2011): real growth 1.7% compared to the year before

Open Economy with Governmental Activities



Open Economy with Governmental Activities

Open economy with governmental activities

production account: $Y = C + C_{St} + I + I_{St} + Ex - Im$

income account (total):

$$C + C_{St} + S + S_{St} = Y$$

finance account: $I + I_{St} + K_{Ex} = S + S_{St} + K_{Im}$

account of the ROW: $Ex + K_{Im} = Im + K_{Ex}$

---

ex post identity: $I + I_{St} + Ex = S + S_{St} + Im$

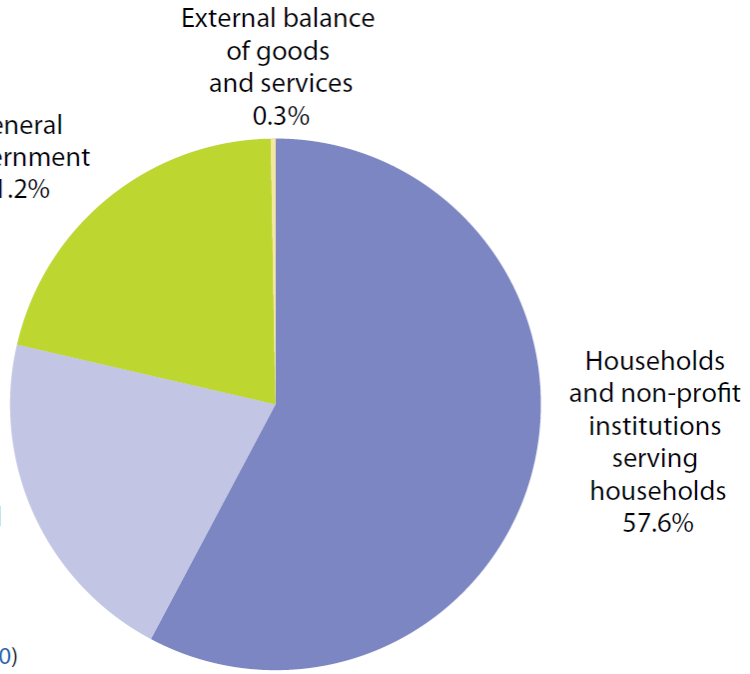
ex post identity for an open economy (use $G = C_{St} + I_{St}$)

$$\begin{aligned} & I + I_{St} + Ex = S + S_{St} + Im \\ \iff & I + (I_{St} + C_{St}) + Ex = S + (S_{St} + C_{St}) + Im \\ \iff & I + G + Ex = S + T + Im \end{aligned}$$

Expenditure Components of GDP

Expenditure components of GDP, EU-27, 2008 (% share of GDP)

$$Y = C + I + G + Ex - Im$$



Source: Eurostat (tec00009, tec00010, tec00011 and tec00110)

Source: Eurostat Pocketbooks, Key Figures on Europe, 2010, p. 24

Balance of Payments

The Balance of (International) Payments Account (BOP) is a systematic statement of all economic transactions between a country and the rest of the world (ROW). Basic components:

- current account $= Ex - Im$
  - foreign trade in goods
  - foreign trade in services
  - investment income (received/paid earnings on foreign inv')
  - unilateral transfers (e.g., direct foreign aid)
- capital account (assets abroad, foreign-owned assets at home)
  changes of liabilities minus claims of residents against ROW
  $= K_{Im} - K_{Ex}$
  - long-term capital transactions (direct and portfolio investment)
  - short-term capital transactions (financial derivatives, credits)
- «forex account» = account of foreign exchange payments $= Z$
  official reserve assets at the central bank
  changes of claims of the central bank against other central banks

See account for the rest of the world (ROW):
The BOP as a whole must show by definition a final zero balance.

$$(Ex - Im) + (K_{Im} - K_{Ex}) - Z = 0$$

A disequilibrium in the BOP is usually referred to as $Z \neq 0$.

Theory on balancing the balance of payments $(Z = 0)$

- $Z < 0$: excess demand for foreign currency requires an increasing exchange rate (i.e. a depreciation of the home currency)
- rule of thumb: regarding a system of flexible exchange rates, $Z = 0$ is adjusted by the market. *Example: euro – dollar*
- Regarding a system of fixed exchange rates, usually the central bank has to absorb disequilibria on the foreign exchange market.

Important consequence for open-economy macroeconomics using the quantity theory of money:

$$Z = \underbrace{Ex + K_{Im}}_{\text{inflow of USD}} - (\underbrace{Im + K_{Ex}}_{\text{outflow of USD}}) > 0 \implies M \uparrow \implies P \uparrow$$

3.2 Important Macroeconomic Problems of an Economy

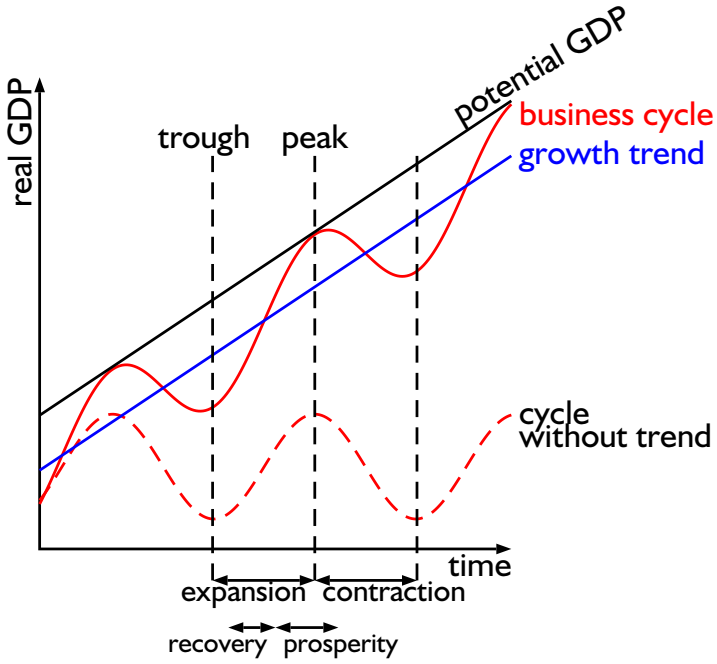
(a) problems of stability / business cycle
(b) problems of distribution
(c) problems of growth
(d) external equilibrium (see the page before: BOP with $Z = 0$)

Business cycle (stylized)

A business cycle is identified as a sequence of 4 phases:

1. Expansion or recovery (a speedup in the pace of economic activity)
2. Peak (the upper turning of a business cycle)
3. Contraction (a slowdown in the pace of economic activity)
4. Trough (the lower turning point of a business cycle, where a contraction turns into an expansion)

A recession occurs if a contraction is severe enough . . .
A deep trough is called a slump or a depression.



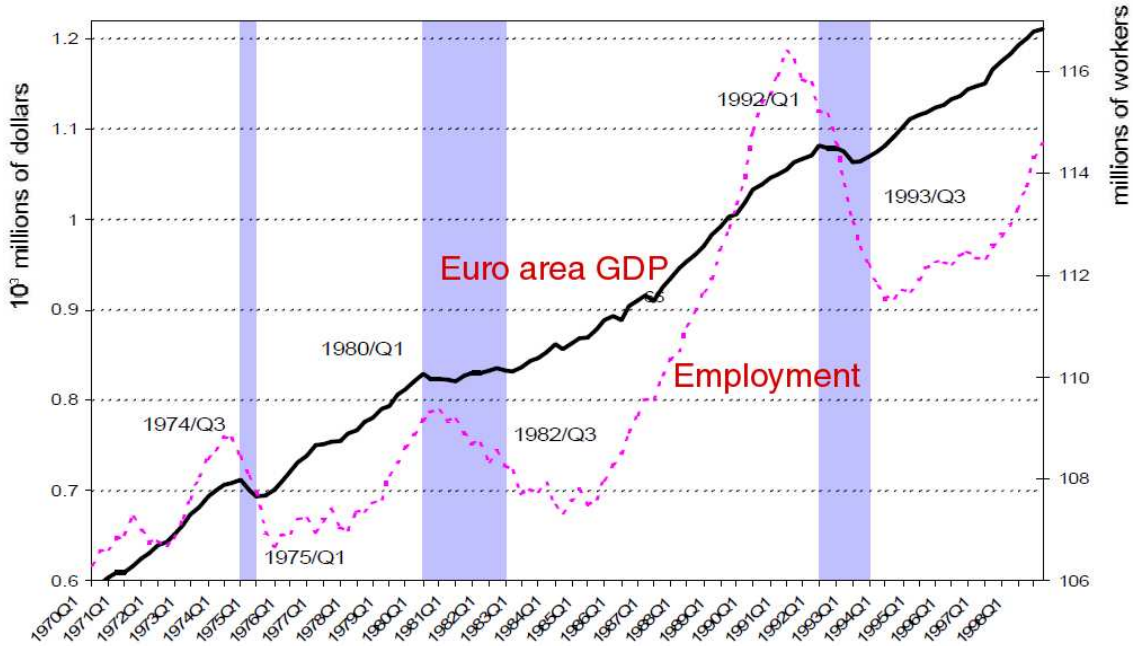
Caveat

At one time, business cycles were thought to be extremely regular, with predictable durations. But today business cycles are widely known to be irregular – varying in frequency, magnitude and duration.

Since the WW II, most business cycles have lasted three to five years from peak to peak. The average duration of an expansion is 44.8 months and the average duration of a recession is 11 months. As a comparison, the Great Depression – which saw a decline in economic activity from 1929 to 1933 – lasted 43 months from peak to trough.

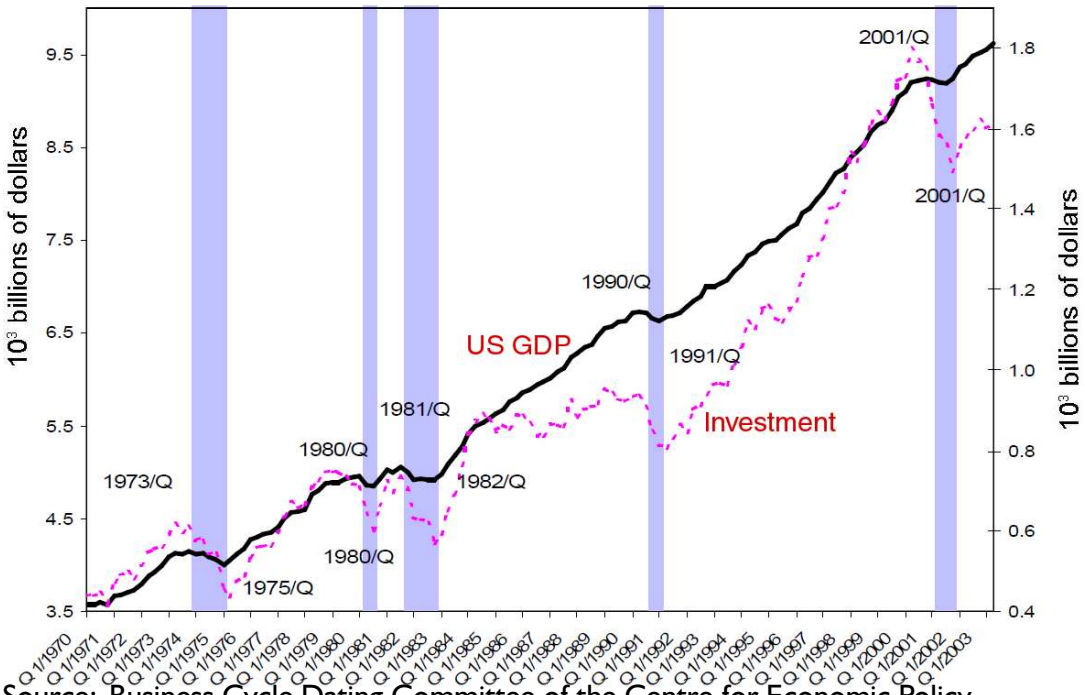
The *Business Cycle Dating Committee of the Centre for Economic Policy Research* has identified the following recessions since 1970 for the euro area: (peak/trough) (1974q3/1975q1) (1980q1/1982q3) (1992q1/1993q3)

Euro Area GDP vs. Employment, 1970–1998



Source: Business Cycle Dating Committee of the Centre for Economic Policy Research, 2003, p. 7

US GDP vs. investment, 1970–2003



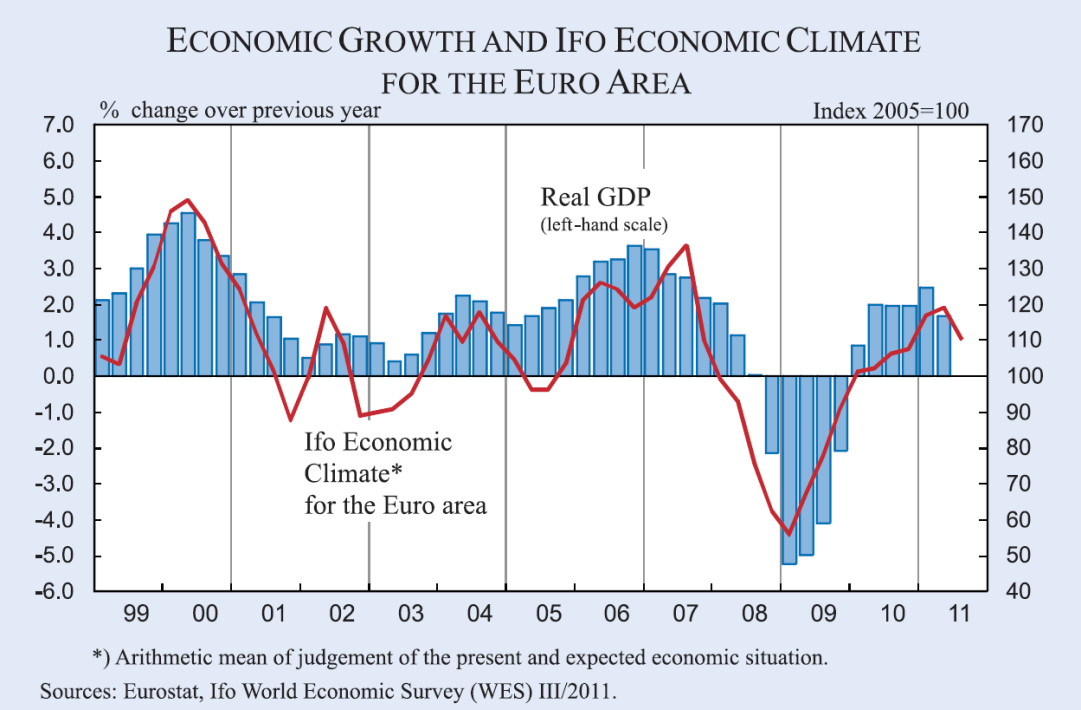
Source: Business Cycle Dating Committee of the Centre for Economic Policy Research, 2003, p. 13

Economic Indicators

major attributes of economic indicators

- Relation to the business cycle / economy
  - *Procyclic*: moves in the same direction as the economy, e.g. GDP, income tax revenue.
  - *Countercyclic*: . . . opposite direction . . . , e.g. unemployment rate.
  - *Acyclic*: has no relation to the economy (is generally of little use).
- Timing
  - *Leading*: change before the economy changes, e.g., stock markets or business climate indicator. Leading economic indicators are the most important type for investors as they help predict what the economy will be like in the future.
  - *Lagged*: . . . a few quarters after . . . , e.g. the unemployment rate.
  - *Coincident*: moves at the same time the economy does, e.g. GDP.
- Frequency of the Data. In most countries GDP figures are released *quarterly* while the unemployment rate is released *monthly*. Some economic indicators, such as the Dow Jones Index, are available immediately and change *every minute*.

Ifo Economic Climate Index for the Euro Area



Source: CESifo, World Economic Survey, Vol. 10, No. 3, 2011, p. 3

Ifo Economic Climate Index for the Euro Area

Inherent problems of business cycles

- unemployment and deflation especially in the trough
- inflation especially at the peak
- insufficient provision of the economy with goods offside the capacity limit

Causes

- planned activities (saving, investment) cannot be realized
- supply of money and demand for money do not match (credit crunch during the financial crisis)
- sentiments can change expectations on the future

Unemployment

Kinds of unemployment

- frictional: movement of people, e.g., between regions or jobs (it takes time to find a new job)
- cyclical: the overall demand for labor is low due to a low level of economic activity (business cycle; similarly seasonal unemployment)
- structural: mismatch between supply of and demand for labor
  - structural changes where some sectors grow while others decline (one of the most important problems for new member states)
  - In the EU high real wages, welfare benefits, subsidies, taxes, and so on have created high levels of structural employment.

High or even full employment is probably the most important economic- political goal. (former quantification: unemployment rate $\leq 5\% \rightarrow$ hidden unemployment as a problem in the political context) NAIRU (Non-Accelerating-Inflation Rate of Unemployment) refers to a level of unempl' below which inflation rises via increasing wage rates.

Structure Change in Composition of GVA

primary sector ($< 1\%$)
agriculture, hunting, forestry, fishing, mining, quarrying

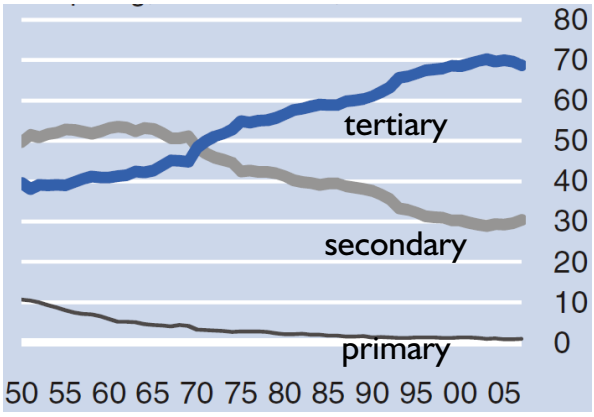
secondary sector ($\approx 25\%$)

1. industry
2. construction

tertiary sector ($\approx 75\%$)

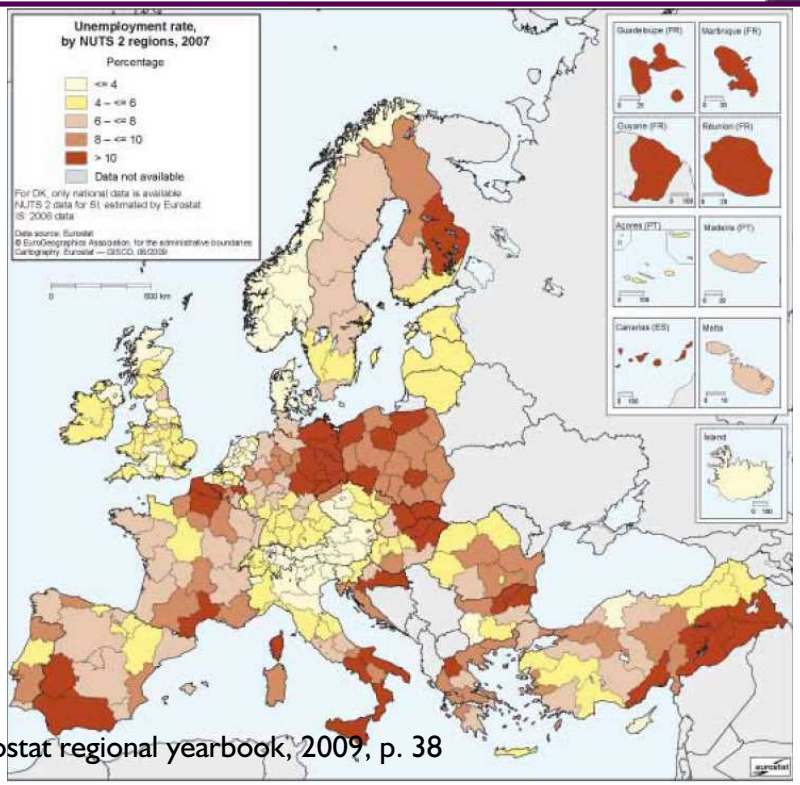
1. trade, transport, communication services
2. business activities, financial services
3. other services

Change of sector shares in GVA for Germany (1950–2005)



Source: Deutsche Bank Research, Aktuelle Themen 446, 2009, p. 3

Unemployment Rate by NUTS 2 Region, 2007



Source: Eurostat regional yearbook, 2009, p. 38

Price Stability

Price stability and inflation

predefined basket of goods	(x_1, x_2)	
Paasche index		basket of the current year t
Laspeyres index		basket of the base year 0
price level/index	$P_t = \frac{p_{1,t}x_1 + p_{2,t}x_2}{p_{1,0}x_1 + p_{2,0}x_2}$	$\left[\frac{€}{€}\right] = [-]$
price level in the base year	$P_0 = 1$	
nominal national income	$Y^n = PY^r$	P as inflator
real national income	$Y^r = Y^n / P$	P as deflator
price level	$P = Y^n / Y^r$	
inflation rate	$\pi = \frac{P_t - P_{t-1}}{P_{t-1}}$	$[-]$ (not percent!)

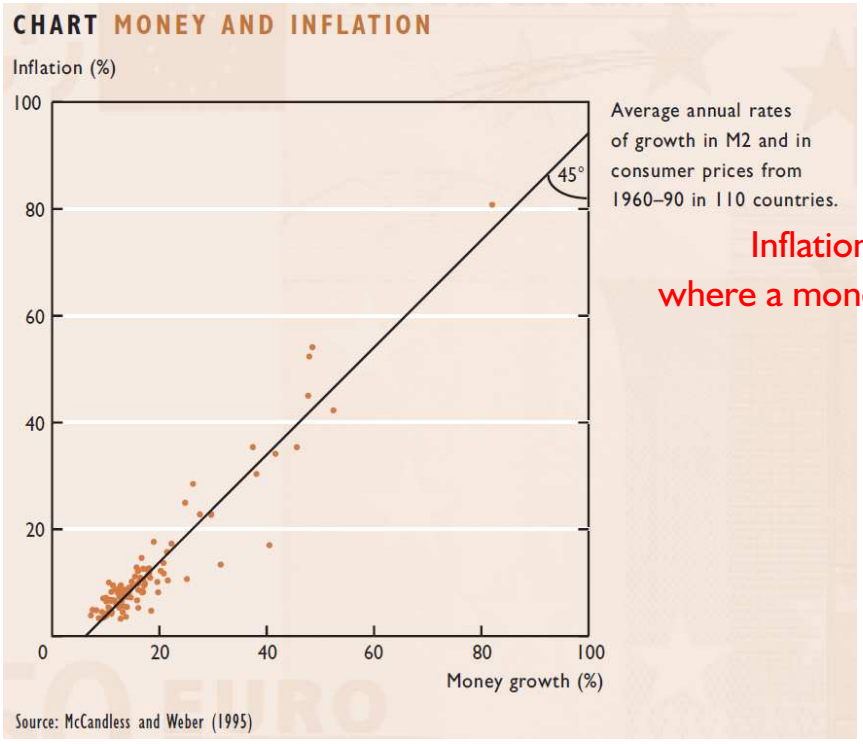
National accounting starts with nominal values at current prices. Comparing, e.g., today's GDP with some former GDP requires to take changes in prices into account. Making use of the price level P as deflator we gain (Y^n = nominal income, Y^r = real income)

$$Y^r = \frac{Y^n}{P} \quad \text{or} \quad Y^n = P\,Y^r \quad \text{or} \quad P = \frac{Y^n}{Y^r}$$

Going back to the Fisher identity (no theory) $M\,V = P\,Y$, we learn

- assumptions: V = const., Y = income at full employment
- result: $M \uparrow \Longrightarrow P \uparrow$.

This implication is referred to as quantity *theory* of money: increasing the money stock induces primarily inflation.



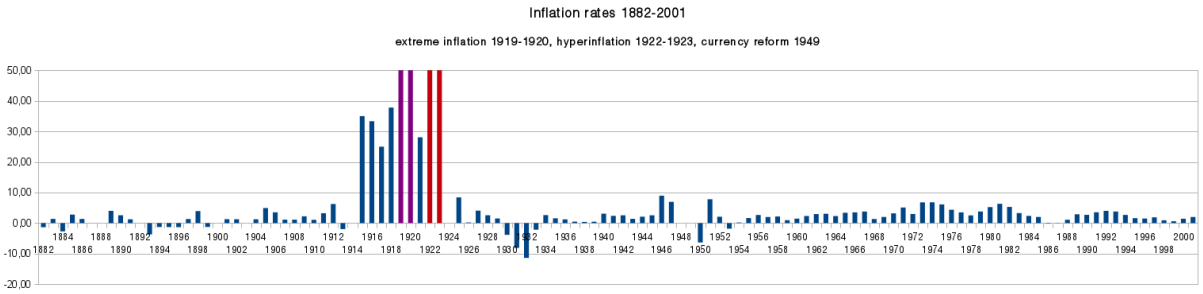
Inflation is always and anywhere a monetary phenomenon

Milton Friedman

Inflation in Germany (1882–2001)

Hyperinflation. Most economists agree that a situation where the *monthly* inflation rate exceeds 50% can be described as hyperinflation.

1922	Germany	5 000%
1985	Bolivia	more than 10 000%
1989	Argentina	3 100%
1990	Peru	7 500%
1993	Brazil	2 100%
1993	Ukraine	5 000%



Source: DeStatis

Inflation in Germany (1882–2001)

The ECB refers to price stability if the inflation rate based on the harmonised index of consumer prices (HICP) does not exceed 2%.
The ECB uses some basket of consumer goods which has been consumed on average all over the euro area some years ago (→ Laspeyres).

Laspeyres: Dax
Paasche: F.A.Z.-Index, Standard & Poor's

consumer basket (COICOP/HICP, 2007)
COICOP = classification of individual consumption by purpose

Purchasing Power Parity

- exchange rate e [euro/dollar] = price of a foreign currency
- Purchasing Power Parity PPP [euro/dollar]

$$\text{PPP} = \frac{\text{value of a basket of goods measured in euro}}{\text{value of a basket of goods measured in dollar}}$$

here: basket of goods with two commodities (x_1, x_2)

- PPP $= e$ if $p_j = ep_j^*$ on all markets (law of one price)!

$$\text{PPP} = \frac{p_1 x_1 + p_2 x_2}{p_1^* x_1 + p_2^* x_2} = \frac{ep_1^* x_1 + ep_2^* x_2}{p_1^* x_1 + p_2^* x_2} = e$$

- In general PPP$\neq e$ due to non-tradable goods, trade restrictions (customs duties, transport cost), price differentiation (cf., e.g., dumping) on separated markets etc. (then, e.g., $p_2 \neq ep_2^*$)

Purchasing Power Standard

- PPPs are conversion rates that convert economic indicators (e.g., Y) to an artificial common currency, called Puchasing Power Standard (PPS), that equalizes the purchasing power of different national currencies. (see deflator above: $Y^r = Y^n / P$)

$$\text{PPS} = \frac{Y}{\text{PPP}} \qquad \text{[dollar]}$$

- Important for regional policy of the EU, where the euro has regionally differing PPPs (here computed in euro).

The Economist: Burgernomics

Burgernomics (The Economist, 11 January 2001)
The basket of commodities includes just one good, a Big Mac, which has the same quality all over the world.

	local currency	in dollar	PPP	e	$\frac{\text{PPP} - e}{e}$	
US	$2.54	2.54	1.00	1.00	0	(reference)
Ch	Yuan 9.90	1.20	3.90	8.28	-53%	(undervalued)
Ger	DM 5.10	2.30	2.01	2.22	-9%	(undervalued)
Swi	SFr 6.30	3.65	2.48	1.73	+44%	(overvalued)

- $e >$ PPP: undervalued currency $\rightarrow$ should be appreciated ($e \downarrow$)
- $e <$ PPP: overvalued currency $\rightarrow$ should be depreciated ($e \uparrow$)

Problems of Distribution

norms of distribution (distribution of income and wealth)

- performance principle $\rightarrow$ generated by a market economy
- satisfaction principle $\rightarrow$ concession of an existence minimum
- equality principle $\rightarrow$ same income for everyone

types of distribution

- personal distribution to groups of society
- functional distribution to the factors of production (labor share and capitalshare)
- regional / international income distribution
- inter-temporal / inter-generational income distribution

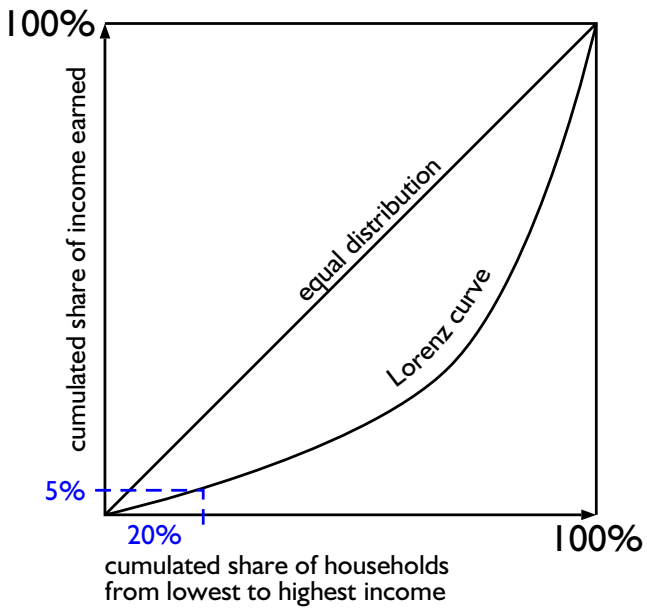
redistribution of income (and wealth) by the state

- primary distribution (market income according to the performance principle)
- secondary income distribution (income after redistribution according to principles of equality or satisfaction)

Personal income distribution

The Lorenz curve indicates the percentage of households (20%) – starting with the lowest income class – which receive x percent of total income (5%).

The Gini coefficient relates the area between the diagonal and the Lorenz curve to the total area below the diagonal. Thus, the Gini coefficient is a number between 0 (absolute equality) and 1 (absolute inequality, where one person has all the income).



Gini coefficients in Germany before and after redistribution

year	market income			net income		
	west	east	total	west	east	total
1991	0.396	0.370	0.403	0.248	0.206	0.261
1995	0.425	0.449	0.435	0.267	0.208	0.262
2000	0.428	0.478	0.441	0.265	0.214	0.260
2005	0.461	0.538	0.478	0.295	0.245	0.292
2007	0.461	0.512	0.473	0.295	0.238	0.290

Source: German Council of Economic Experts, Annual Report 2009/10, p. 313

Personal Income Distribution

Decile shares in percent and Gini coefficients for taxable income and income tax liability

	taxable income			income tax liability			
	1992	1995	1998	1992	1995	1998	
1. decile	0.03	0.03	0.00	0.00	0.00	0.00	
2. decile	1.11	1.11	0.97	0.03	0.00	0.00	
3. decile	2.75	2.74	2.74	0.86	0.43	0.12	$\approx 5\%$
4. decile	4.73	4.72	4.69	2.44	2.36	1.52	
5. decile	6.58	6.66	6.47	4.21	4.43	3.57	
6. decile	8.28	8.44	8.12	6.05	6.46	5.69	
7. decile	10.12	10.38	10.00	8.06	8.66	8.00	
8. decile	12.57	13.01	12.60	10.68	11.58	11.02	
9. decile	16.46	17.02	16.49	15.13	16.34	15.96	
10. decile	37.36	35.90	37.93	52.53	49.74	54.13	
Gini	0.527	0.519	0.534	0.676	0.664	0.705	

Source: German Council of Economic Experts, Annual Report 2003/04, p. 467

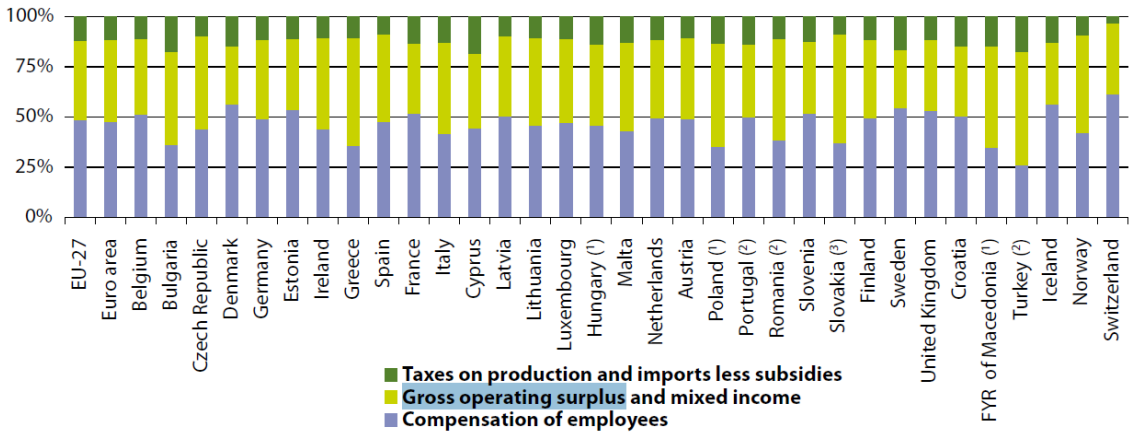
Functional Distribution

Functional distribution of national income $Y^n = PY^r = wL + rK$

- employers demand for workers (labor); they are organized in associations (e.g., BDA), which represent the interests of capital owners. $\rightarrow$ capital share rK/Y as large as possible
- employees supply of labor; the are organized in labor unions, which represent the interests of its members (however, only these!). $\rightarrow$ labor share wL/Y as large as possible
- Nominal wage rates w are fixed by collective bargaining. In the ideal case the wage rates are orientated to the (marginal) productivity of labor ($\rightarrow$ payments according to performance)
  Problem: if nominal wage rates are too high, employers are not willing to bear the entrepreneurial risk.
  Result: employment and national income decrease!
- Germany: real wages (wL/P) in 2005 are lower than in 1991.

Functional Distribution

Figure 1.11: Distribution of income, 2008
(% share of GDP)



(1) 2007.
(2) 2006.
(3) Estimates.

Source: Eurostat (tec00016, tec00015 and tec00013)

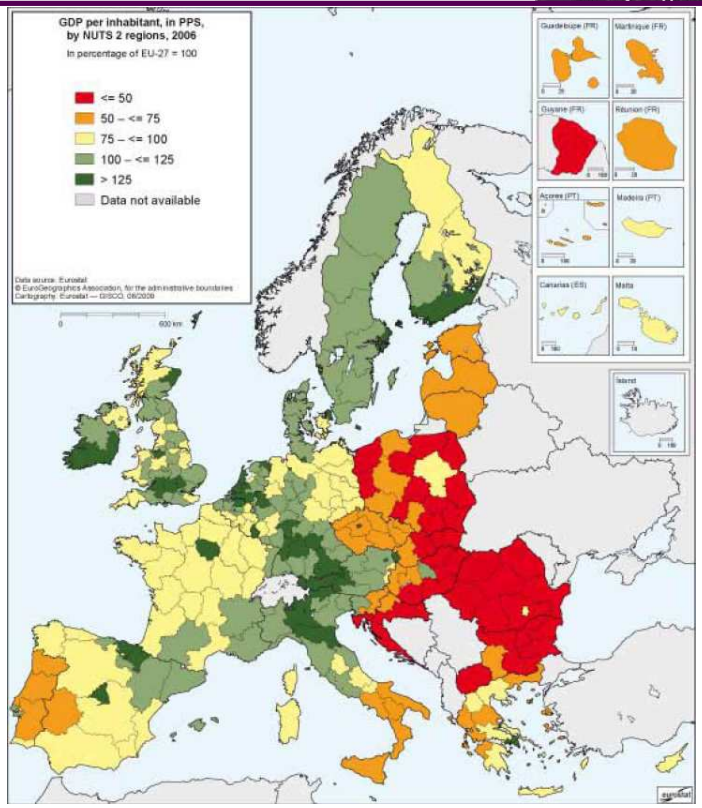
Source: Eurostat Yearbook (2010), here: $Y^n = T + rK + wL$

Remark: Shares change only slightly over time.

Regional Income Distribution

GDP per inhabitant in PPS by NUTS 2 regions, 2006

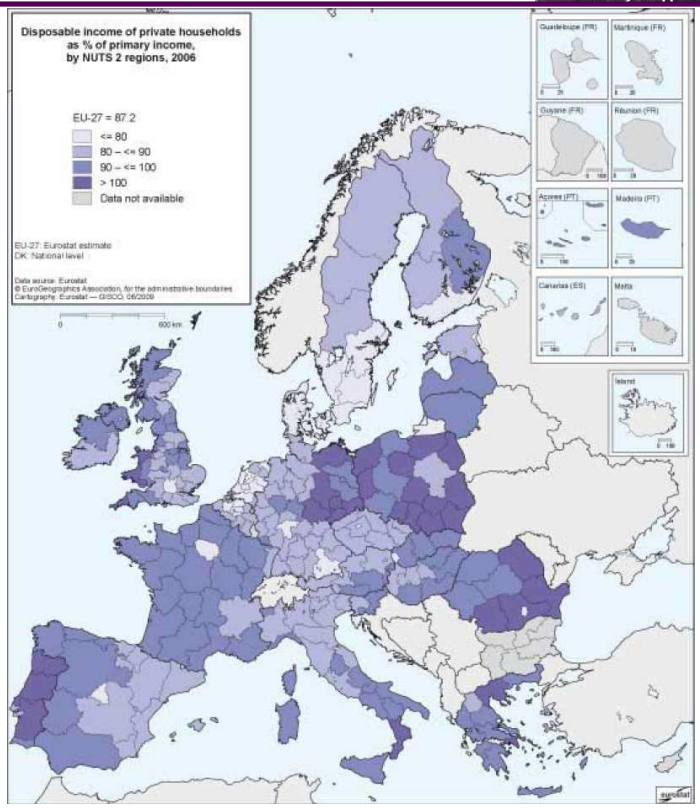
Source: Eurostat regional yearbook, 2009, p. 51



Regional Income Distribution

Redistribution: disposable income of private households as percentage of primary income, by NUTS 2 regions, 2006

Source: Eurostat regional yearbook, 2009, p. 67



Problems of Growth

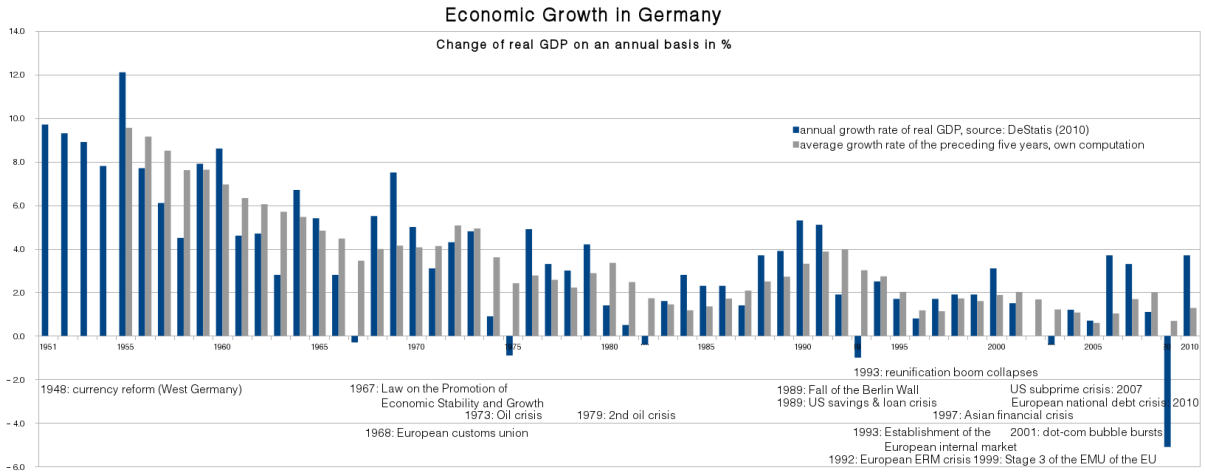
Problems of growth

- growth as a result of competition via technical progress and innovation
- growth fostered by governmental strategies (e.g. industrial policy, structural policy, regional policy, labor market policy . . .)

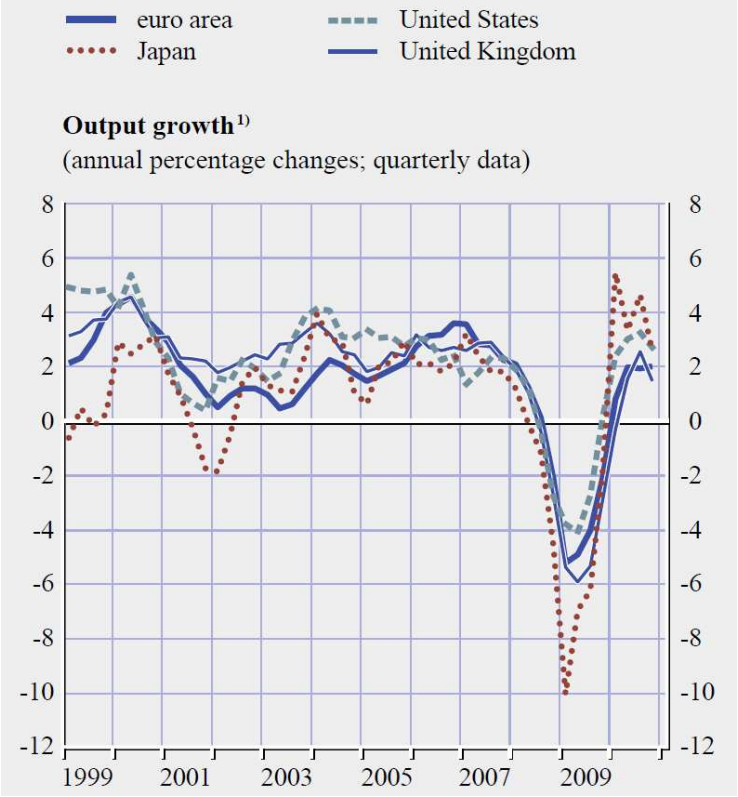
Figures below

- quantitative problem ($\rightarrow$ population, labor force)
- qualitative problem ($\rightarrow$ labor productivity)

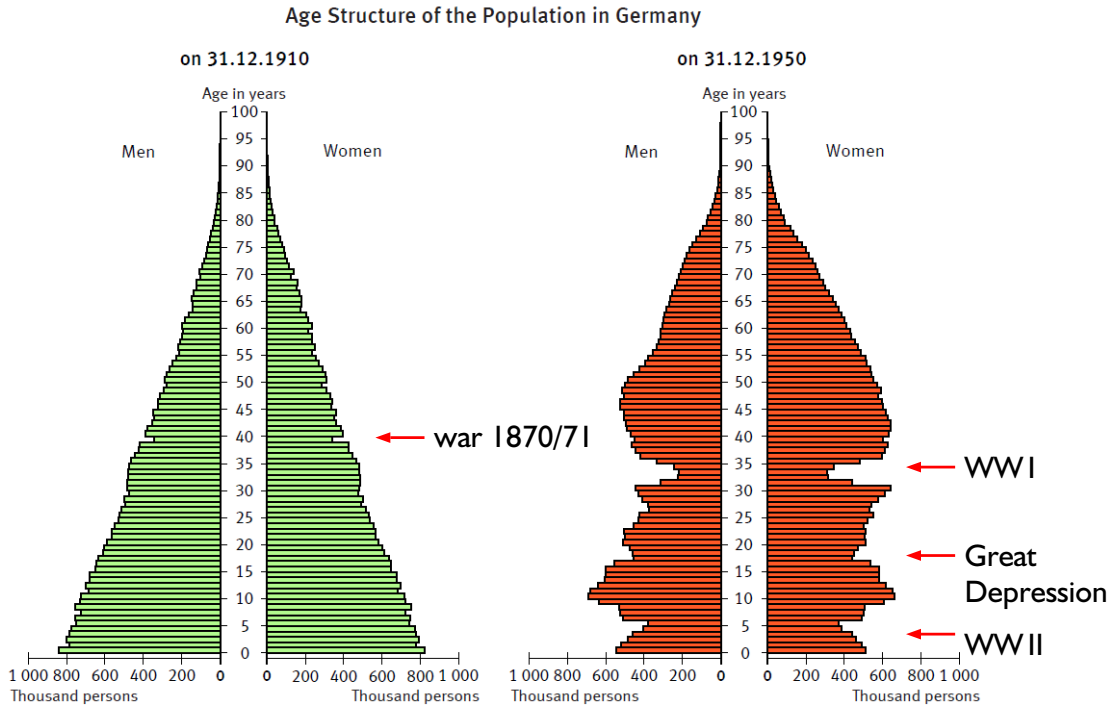
Economic Growth in Germany



Main developments in major industrialised economies, 1999–2009
Source: ECB, Annual Report, 2010, p. 24

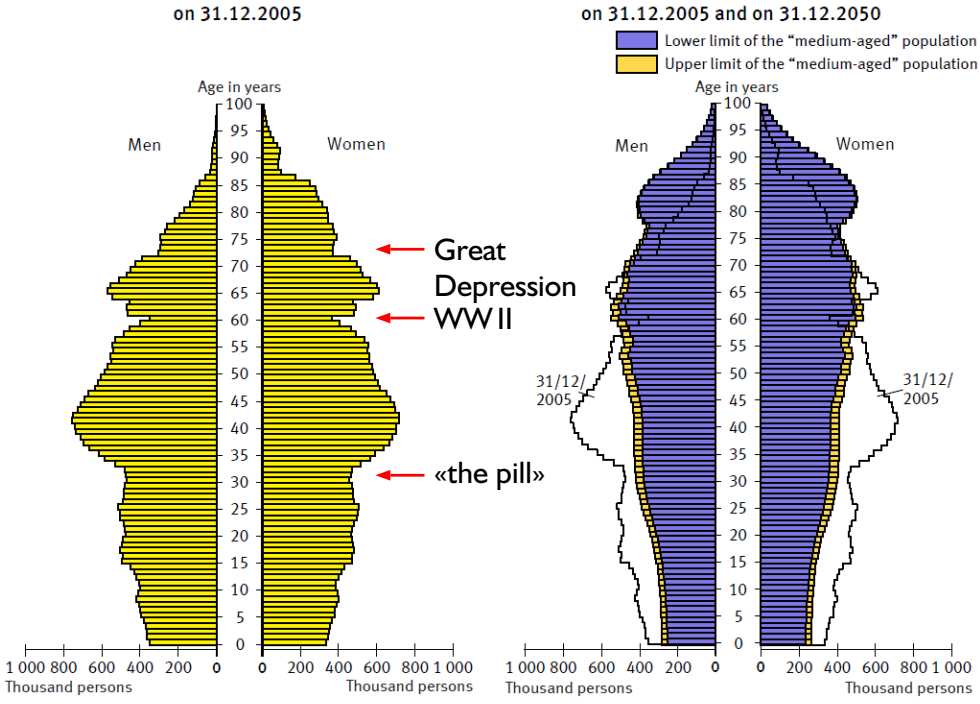


Germany's Population Pyramids



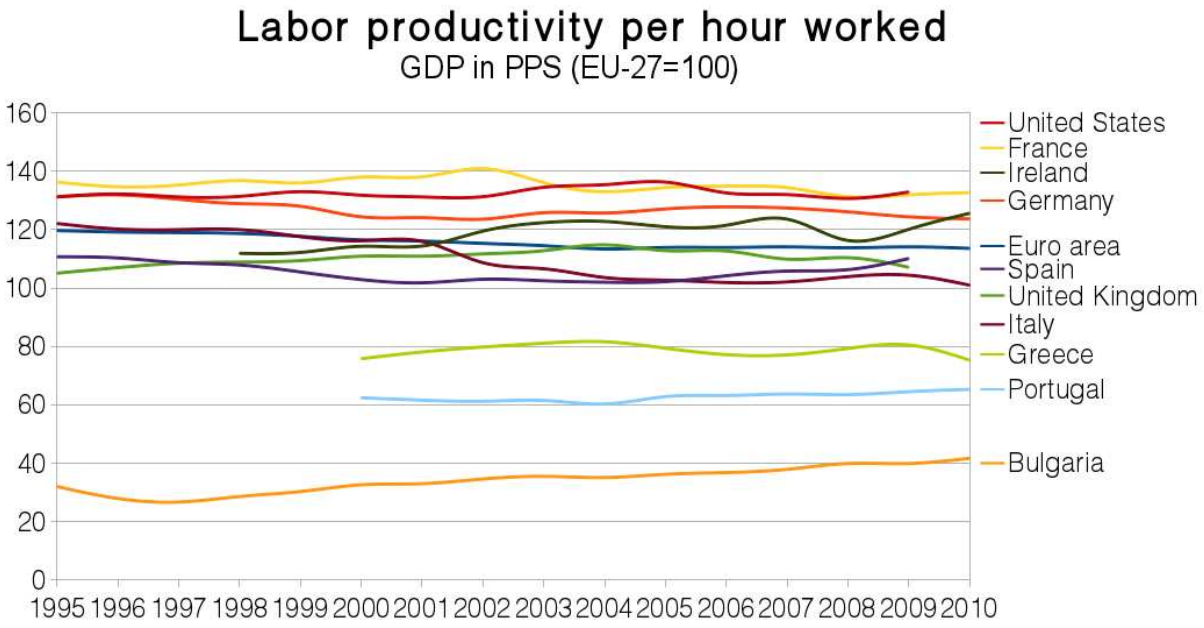
Source: Statistisches Bundesamt (2006), Germany's population by 2050

Germany's Population Pyramids



Source: Statistisches Bundesamt (2006), Germany's population by 2050

Labor Productivity



Source: Eurostat, time series code: tsieb040

Structure Change in the Components of GVA

Growth is accompanied by a change in the composition of GVA.

- a continuous decline of the primary sector since WW II ($< 2\%$)
- an initial increase of the secondary sector followed by a decline (industry and construction, $\approx 25\%$)
- a continuous increase of the tertiary sector (services, $\approx 75\%$)

Figure 2.2.7: EU gross value added by industry, % of total, 2002–09

Source: Eurostat, European economic statistics, 2010

Global steering has been added to the conception of the Social Market Economy at the end of the 1960es

Idea. Combine the principle of the freedom on markets with social equalization (self direction of micro-relations plus global steering of macro-relations such as national aggregates of demand ($C + I + G$)).

Theoretic framework. J.M. Keynes, The General Theory of Employment, Interest and Money

Legal authority. Act on the Promotion of Economic Stability and Growth (Stability Act, 1967)

§1 objective of an overall economic equilibrium:
simultaneous promotion of (1) price stability, (2) high employment, (3) external equilibrium (balance of international payments), and (4) sustained and appropriate growth

Probably most important rationale of the theory of economic policy:

Jan Tinbergen: *Regarding an interdependent economic system, each economic objective requires at least one independent instrument.*

Instruments can then be assigned to objectives ($\rightarrow$ policy mix)

- (national) fiscal policy $\rightarrow$ high or full employment
- (European) monetary policy $\rightarrow$ price stability
- currency policy $\rightarrow$ adjusted BOP
  (not needed in a system of flexible exchange rates, but jeopardizes monetary policy in a system of fixed exchange rates)
- competition policy, industrial policy, business cycle policy . . . $\rightarrow$ economic growth

Problem. Keynesian instruments are useless if the causes of a national disequilibrium refer to the supply side (e.g., overregulation) rather than demand.

Quantified values for Germany by the Federal Government (1967–1971)

- high employment: if unemployment rate $\leq 0.8\%$ (!!)
- price stability: $\pi = g_{Y^n} - g_{Y^r} \approx 1\%$
- balance of international payments: (Ex − Im)/GDP $\approx 1\%$
- sustained and appropriate growth: $g_{Y^r} \approx 4\%$

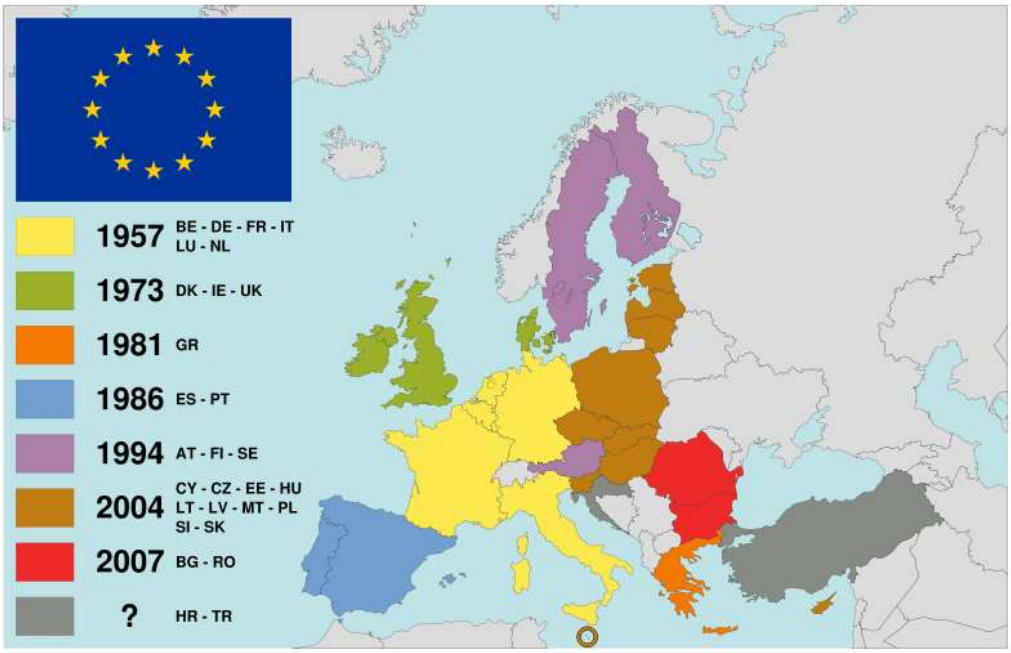
These values have never been realistic and were given up soon.

Contents

4.1 Structure of the European Union

- history: Member States / EEC, EC, EU / Treaties
- general objectives
- institutions / tasks
- internal market

Member States (EU-28 = EU-27 + Croatia, 2013)



formerly EFTA: UK, Ire, Den (1973), Aus, Fin, Swe (1995)
remaining EFTA: Ice, Lie, Nor, Swi

General Objectives

General objectives of the EU (TEU, Art. 2 and 3)

- Community based on common values (human rights, democracy, rule of law, justice . . .)
- Establishing an internal market and an EMU with the euro as currency → market economy
- Peace community (internal and external)
- Reinsurance community (economic and social solidarity)

distinguish between

(a) political integration (→ minor importance for this lecture)
(b) (real) economic integration (→ internal market)
(c) monetary integration (→ EMU)

European Communities

European communities (history)

- European Coal and Steel Community (ECSC), 1951–2002
- European Economic Community (EEC), 1957–today
- European Atomic Energy Community (EAEC or Euratom), 1957–today

Maastricht (1993)

- EEC → European Community (EC)
- European Union (EU)

since 2009 only: EU

European Free Trade Association (EFTA,1960) – competing community

European Economic Area (EEA, 1994): EFTA members (not Swi) participate in the EU's internal market.

European Treaties

Major treaties (history) (signed/in force)

- Treaty of Paris (ECSC) (1951/1952, expired 2002)
- Treaties of Rome (EAEC and EEC (TEEC)) (1957/1958)
- Merger Treaty (1965/1967)
  - common institutions and budget of the 3 European Communities (EC), creation of European Commission and Council of the EC
- amendments of the TEEC
  - Single European Act (SEA), common market (1986/1987)
  - Treaty of Maastricht (1992/1993)
    - European Economic and Monetary Union (EMU), single currency
    - EEC → EC (TEEC → TEC) plus EU (TEU)
    - TEU + TEC = Maastricht Treaties
  - Treaty of Amsterdam (+ stability and growth pact) (1997/1999)
  - Treaty of Nice (2001/2003)
  - *European constitution (2004) rejected by voters.*
  - Treaty of Lisbon (EC + EU → EU) (2007/1. Dec. 2009)
    - TEU + TFEU + Protocols + Declarations
    - Charta of Fundamental Rights

European Economic Constitution

European economic constitution

acquis communautaire (= body of common rights and obligations)

1. European Treaties (2009, primary law, Lisbon)
   (a) Treaty on European Union (TEU)
   (b) Treaty on the Functioning of the EU (TFEU)
   including annexed protocols, annexes and declarations
   (c) Charter of Fundamental Rights of the EU
2. Legislation on the basis of the treaties and jurisdiction of the European Court of Justice (ECJ)
   - Regulations: directly applicable like federal law
   - Directives: details of implementation are left to the Member States
3. Accepted opinions, resolutions, declarations and decisions, e.g., of the Commission
4. international agreements . . .

All accession states have to adopt the complete acquis, which has been grown to 80 000 pages (in each language!) during 50 years.

Institutions of the EU

Institutions of the EU (Art. 13–19, TEU)

- European Parliament (→ advisory body)
- European Council (→ general political directions and priorities)
- Council (→ legislative body)
  e.g., ECOFIN = European Council of Economics and Finance Ministers
- European Commission (→ executive body, guardian of the treaties, initiator of policies)
- Court of Justice of the EU (→ judicatice body)
- European Central Bank (ECB) (→ supranational monetary authority)
- Court of Auditors (legalized group of «lobbyists»)

Economic Integration

- 1968 completion of the customs union
- 1993 establishment of the common/internal market
- 1994 European Economic Area (EEA)
- 1999 European Economic and Monetary Union (third stage)

Economic Problems of Regional Integration

increasing degree of integration (trade related aspects)

preferential trading club: agreement between two or more countries to reduce tariffs and other restrictions on imports from one another, partners retain their individual external tariff schedules on imports from non-member countries

free trade area (or association): (EFTA, CEFTA, NAFTA)
partners abolish tariffs and other restrictions on imports from one another (free movements of goods and services), needs certificates of origin

customs union (EEC)
establish, in addition to the provision of a free trade area, common external tariffs on all imports from non-member countries.

common market (EU, 1993)
allow, in addition to the provision of a customs union, free movements of all factors of production (labor and capital)

economic union (EU)
involve additionally the unification of some economic policies

monetary union (EMU)
irrevocably fixed exchange rates, convertible currencies, free movement of capital

Central question in the political process of the EU: Integration through competition (bottom-up) or harmonization (top-down)?

FYI: German Zollverein

The German Zollverein (source: Britannica).

The best known of the early customs unions is the German Zollverein (literally, "customs union"). Even though Napoleon had reduced the number of German states from 300 to 40 at the beginning of the 19th century, those that remained were isolated from each other by their own customs systems. In addition, numerous internal customs barriers hampered trade within each state. At the same time there was no single external tariff, and the German industries that had sprung up during the Napoleonic Wars were being crushed by English competition. These difficulties were at the root of the creation of the Zollverein.

The starting point was Prussia's abolition of all internal duties and its adoption of an external tariff in 1818. In the next few years a number of other German states followed the Prussian example. Bavaria and Württemberg setup a customs union in 1828, and by 1830 four separate customs unions were inexistence. Prussia then sought to break up the local customs unions and attach them to a general customs union, the Zollverein. The coverage of the Zollverein increased until, by 1871, it included all the German states.

In its first phase, from 1834 to 1867, the Zollverein was administered by a central authority, the Customs Congress, in which each state had a single vote. A common tariff, the Prussian Tariff of 1818, shielded the member states from foreign competition, but free trade was the rule internally.

During a second phase, from 1867 to 1871 (following Prussia's victory over Austria at Sadowa), executive power was wielded by a federal council (Bundesrat) composed of governmental delegates, in which decisions were taken by an absolute majority. Prussia was entitled to 17 of the 58 votes and held the chair of the council. Legislative power lay with a customs parliament (Zollparlament) composed of deputies directly elected by popular vote, and, like the council, taking decisions by a majority vote. This arrangement transformed what had been a confederation into a federal state.

After the victory over France and the proclamation of the German empire in 1871, the customs parliament and the federal council were replaced by the parliament and the executive council of the empire. The federal state had become a nation.

The progressive destruction of a tangled maze of regulations, prohibitions, and controls set the stage for the subsequent rapid development of the German economy. Although economic integration occurred before political unification, it would not have been possible had not many difficulties been swept away by irresistible pressure from Prussia with its military victories.

FYI: Benelux Economic Union

The Benelux Economic Union (source: Britannica).

In 1921 Luxembourg, a former member of the Zollverein, signed the Convention of Brussels with Belgium, creating the Belgium-Luxembourg Economic Union. Since 1921 Belgium and Luxembourg have, then, had the same customs tariff and a single balance of payments.

The union was expanded after World War II to include The Netherlands. At the beginning of 1948 most import duties within the Benelux area were abolished, and a common external tariff was put into operation. Exceptions were made, nevertheless, for a few agricultural products, and it was also felt necessary to introduce a system of quotas.

It was rapidly perceived that a simple customs union was inadequate, and a treaty on Oct. 15, 1949, set as its target the progressive and complete liberalization of trade between the partners, systematic coordination of their international commercial and monetary policies, and the adoption of a joint bargaining position in negotiations with other countries. Though the experiment was optimistically viewed everywhere as the precursor of a wider European economic integration, it faced difficulties arising from the very different postwar situations of Belgium and The Netherlands. The two economies were competitive rather than complementary. Other problems arose in connection with the free access of Dutch agricultural products to the Belgian market. Moreover, the Belgian economic system was more liberal than the Dutch, where rigorous price control had long been a standard practice.

The development of Benelux received strong impetus from the formation of the European Economic Community in the 1950s. The Treaty of Rome in 1957 creating the EEC, or Common Market, spurred the members of Benelux to confirm and strengthen their own integration in the Benelux Treaty of Economic Union signed at The Hague on Feb. 3, 1958. The Hague treaty, however, contained little that was new, and in outline it was no more than the codification of results already achieved.

The Benelux Economic Union makes all of its decisions unanimously. The union has executive organs (the Committee of Ministers, the Council of the Economic Union, a number of commissions, and a Secretariat General); consultative organs (the Inter-Parliamentary Council and the Economic and Social Advisory Council); and legal organs (the Court of Justice). Benelux was once regarded as a promising experiment by which neighbouring countries would form customs unions that might then merge into wider economic unions. Following the ratification of the treaty establishing the European Coal and Steel Community in 1952, however, interest in such developments shifted to plans for the European Economic Community, of which Belgium, The Netherlands, and Luxembourg are members.

Internal Market of the European Union

Basic idea of the Internal Market (or «common market») (White Book on the Completion of the Internal Market, 1985) In the TFEU the Internal Market is supposed to mean four freedoms.

(1) people: Schengen Convention (1995, travel and settle) (At first, the Schengen Agreement was established 1985 outside the Community between Ger, Fra, BeNeLux.)
(2) capital: 1 Jul. 1990 complete liberalization (White Book, 1986) investments and payments
(3) goods: customs union as of 1 Jun. 1968
(4) services: directive on services in the internal market (in revision process 2005), freedom of establishment (postal, medical, legal services, e-commerce etc.)

Certain sectors such as transportation, banking (Basel III), and insurance have their own regulations.

The acquis is rife with conditionality on all four freedoms!

Competition and Industrial Policy

Competition Policy according to the TFEU
(→ passive role of the Community according to a constitutional state)

Art. 3 (1b) competition rules necessary for the (undistorted) functioning of the internal market
Art. 101 prohibition to prevent, restrict or distort competition
Art. 102 prohibition to abuse a dominant position
Art. 106 public undertakings and undertakings with special rights must not distort competition
Art. 107 prohibition of aids (i.e., subsidies) granted by States
→ plus a long list of exceptions.
Council Regulation 139/2004 EC: control of mergers and acquisitions

Industrial Policy
(→ active role according to a correcting and steering state)
Art. 173 and Art. 6 TFEU: supporting and strengthening of the competitiveness of Community industry

World Trade Organisation (WTO)

Recognizing that the *beggar-thy-neighbor tariff policies* of the 1930s had contributed to the environment that led to war . . .

General Agreement on Tariffs and Trade (GATT, 1947)

The World Trade Organization (WTO) is the successor of the GATT.

Established in 1995; 146 members in 2003; location Geneva (CH)

Agreements of the WTO

- Agreement Establishing the WTO
- Three Pillars
  - GATT (General Agreement on Tariffs and Trade)
  - GATS (General Agreement on Trade in Services)
  - TRIPS (Trade-Related Aspects of Intellectual Property Rights)
- Dispute Settlement
- Trade Policy Reviews

World Trade Organisation (WTO)

Founding principles of the GATT (in general «worldwide free trade»)

- Reciprocity. If one country offers to reduce a barrier to trade, the partner reciprocates by offering to reduce one of its own barriers.
- Nondiscrimination or equal treatment. If one GATT member offers a benefit or a tariff concession to another GATT member, it must offer the same tariff reduction to all GATT members.
  Most Favored Nation Rule. If you concede an advantage to somebody, you have to give it to everyone. The same principle shall hold true for domestic inhabitants and foreigners.
- Trade rounds (or negotiations)
  - several rounds on the reduction of tariffs (1947 at Geneva, 1949 at Annecy, 1951 at Torquay, 1956 at Geneva, 1960/61 Dillon Round)
  - 1964–1967 Kennedy Round on tariffs and anti-dumping measures
  - 1973–1979 Tokyo Round on tariffs and non-tariff measures
  - 1986–1994 Uruguay Round on tariffs, non-tariff measures, rules, intellectual property rights, dispute settlement → creation of WTO

European Revenue

Revenue (2009, total 116 bill. €)

- Own resources
  - traditional or natural own resources
    - agricultural levies (2.0 bill. €)
    - customs duties (14.9 bill. €)
  - VAT based resource (19.6 bill. €)
    1.4 % of the national VAT base since 1984
    common call rate in 2008: 0.3311%
    since 2009: 0.3% of VAT base (smaller German rate until 2013)
  - GNI based resource (73.3 bill. €)
    a set rate to total Community GNP was subsequently incorporated into the system (1988) and assumed the task, initially allotted to the VAT resource, of matching the total volume of resources to the level of expenditure. (exceptions for some countries such as UK)
- Other resources of minor importance
  (1) Financial contributions (2) surpluses available (3) community taxes . . . (4) revenue accruing from administrative operations (5) contributions to community programmes, repayment of expenditure (6) interest on late payments and fines (7) borrowing/lending operations (8) miscellaneous revenue

European Expenditure

Expenditure (2008, total: 116 bill. €)

1. Agriculture (52.6 bill. €)
   - CAP expenditure itself
   - Rural development measures (since 1992 CAP reform).
2. Structural operations (46.0 bill. €)
   - Structural Funds
   - Cohesion Fund
3. Internal policies (1.7 bill. €)
4. External action (8.3 bill. €)
5. Administration (7.7 bill. €)
6. Reserves (provides a rapid aid for non-member countries)
7. Pre-accession aid (central/eastern Europe) (0.2 bill. €)
   - Agriculture (Sapard)
   - ISPA (Instrument for Structural Policies for Pre-Accession)
   - PHARE (Poland & Hungary: Aid for Restructuring of the Economies)

4.2 Monetary Policy of the European Central Bank

- ESCB / ECB / Statute of the ESCB and of the ECB
- convergence criteria / stability and growth pact
- price stability / monetary instruments

Primary Note

Single currency
Variables

- output (GDP) → unemployment (regional/national distribution) or migration
- price level → inflation (one currency – one inflation/interest rate)
- exchange rates → irrevocably fixed

Benefits of using a single currency

- Reduction of transaction costs.
- Elimination of the exchange rate risk.
- Greater competition leading to greater efficiency.
  Deeper integration among the European financial markets and improved investment efficiency.

Costs of using a single currency

- The system of fixed exchange rates eliminates the possibility of using exchange rate adjustments as a buffer in the presence of asymmetric shocks.
- Individual countries cannot use monetary policy to face country-specific shocks.
- The euro area may not be an optimum currency area due to: likelihood of asymmetric or country-specific shocks, limited labor mobility, structural labor market rigidities.
- Limited ability to use fiscal policy as a stabilization tool without monetary independence.
- Absence of a system of fiscal redistribution (→ transfer union) to insure against regional/national shocks.

ESCB, ECB, and the Eurosystem

The Eurosystem and the European System of Central Banks (ESCB)
ESCB = ECB + NCBs of all EU member states
Eurosystem = ECB + NCBs of all euro area member states
Source: ECB, Annual Report, 2010, p. 190

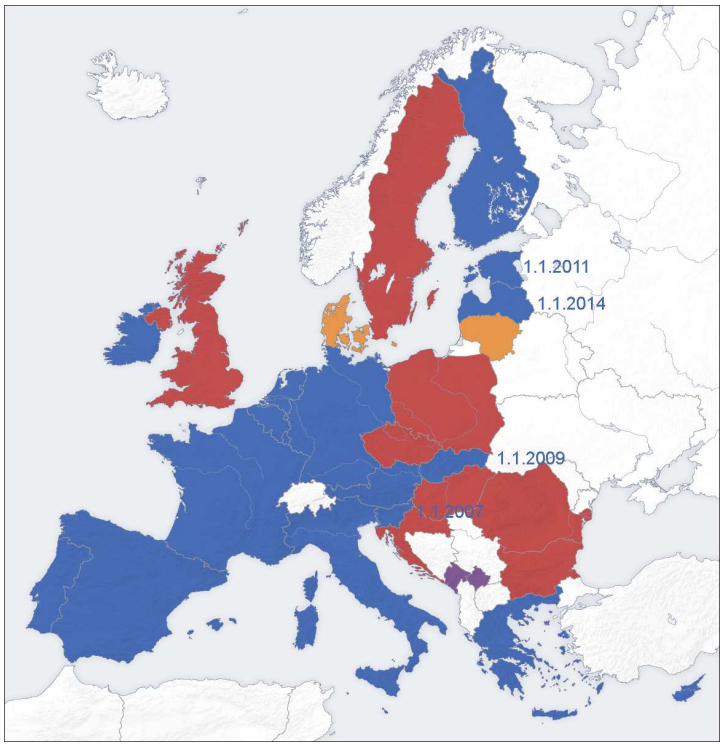
Euro Area / Economic and Monetary Union (EMU)

Euro area (18 members, 2014)
- internally fixed rates (single currency)

ERM II
- adjustable peg with a band of ± 2.25% (Den, Lit)

rest of the EU
- outside ERM II
- free floating (UK, Swe, Cze, Hun, ...)

rest of the world
- free floating



Convergence Criteria

Convergence (formerly Maastricht) criteria to access the EMU

Protocols No 12 (excessive deficits) and No 13 (convergence criteria)

- Price stability, Protocol No 13, Art 1, Art 140(1) TFEU
  For the preceding year the average inflation rate must not exceed that of the best three states by more than 1.5 percentage points.
- Convergence of interest rates (longterm governmental bonds), Protocol No 13, Art 4, Art 140(1) TFEU.
  For the preceding year the average long-term interest rate must not exceed that of the best three states (in term of inflation) by more than 2 percentage points.
- Budget discipline. Protocol No 12, Art 140(1), 126 TFEU
  - Government budget deficit must not exceed 3% of GDP.
  - Government debt must not exceed 60% of GDP.
- Exchange rate stability. Protocol No 13, Art 3, Art 140(1) TFEU
  No exchange rate realignments for the preceding two years.

Convergence Report, 1998

Economic indicators and three Maastricht convergence criteria, 1998

(a) HICP inflation (annual percentage changes)
(b) Long-term interest rate (in percentages)
(c) General government surplus (+) or deficit (−) as % of GDP
(d) General government gross debt as % of GDP

	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)	(a)	(b)	(c)	(d)
	1996				1997				1998(†)			
Belgium	1.8	6.5	-3.2	126.9	1.5	5.8	-2.1	122.2	1.4	5.7	-1.7	118.1
Denmark	2.1	7.2	0.7	70.6	1.9	6.3	0.7	65.1	1.9	6.2	1.1	59.5
Germany	1.2	6.2	-3.4	60.4	1.5	5.6	-2.7	61.3	1.4	5.6	-2.5	61.2
Greece	7.9	14.4	-7.5	111.6	5.4	9.9	-4.0	108.7	5.2	9.8	-2.2	107.7
Spain	3.6	8.7	-4.6	70.1	1.9	6.4	-2.6	68.8	1.8	6.3	-2.2	67.4
France	2.1	6.3	-4.1	55.7	1.3	5.6	-3.0	58.0	1.2	5.5	-2.9	58.1
Ireland	2.2	7.3	-0.4	72.7	1.2	6.3	0.9	66.3	1.2	6.2	1.1	59.5
Italy	4.0	9.4	-6.7	124.0	1.9	6.9	-2.7	121.6	1.8	6.7	-2.5	118.1
Luxembourg	1.2	6.3	2.5	6.6	1.4	5.6	1.7	6.7	1.4	5.6	1.0	7.1
Netherlands	1.4	6.2	2.3	77.2	1.9	5.6	-1.4	72.1	1.8	5.5	-1.6	70.0
Austria	1.8	6.3	-4.0	69.5	1.2	5.7	-2.5	66.1	1.1	5.6	-2.3	64.7
Portugal	2.9	8.6	-3.2	65.0	1.9	6.4	-2.5	62.0	1.8	6.2	-2.2	60.0
Finland	1.1	7.1	-3.3	57.6	1.2	6.0	-0.9	55.8	1.3	5.9	0.3	53.6
Sweden	0.8	8.0	-3.5	76.7	1.8	6.6	-0.8	76.6	1.9	6.5	0.5	74.1
UK	2.5	7.9	-4.8	54.7	1.8	7.1	-1.9	53.4	1.8	7.0	-0.6	52.3

Source: European Commission. blue = first second and third best performer in terms of price stability. (†) Twelve-month period ending January 1998 for HICP inflation and long-term interest rate; European Commission (spring 1998 forecasts) projections for general government surplus or deficit and general government gross debt.

Irrevocable Fixation of Exchange Rates

currency	amount in the ECU basket	currency/$ 31. Dec. 1998	equivalent in $	ECU exchange rates (currency/€)
DEM	0.6242	1.6763	0.3724	1.956
BEF	3.3010	34.5745	0.0955	40.340
LUF	0.1300	34.5745	0.0038	40.340
NLG	0.2198	1.8888	0.1164	2.204
DKK	0.1976	6.3842	0.0310	7.449
GRD	1.4400	282.5700	0.0051	329.689
ITL	151.8000	1659.5404	0.0915	1936.270
ESP	6.8850	142.6065	0.0483	166.386
PTE	1.3930	171.8291	0.0081	200.482
FRF	1.3320	5.6221	0.2369	6.560
GBP	0.0878	0.6046	0.1453	0.705
IEP	0.0086	0.6750	0.0127	0.788
EUR	:= 1.0000		1.1668	
FIM		5.0960		5.9457
ATS		11.7936		13.7603
SEK		8.1320		9.4880

DKK, GRD, and GBP were part of ECU, but not of the euro.
FIM and ATS became part of euro, but were no part of the ECU.

(European) Stability and Growth Pact

Stability and Growth Pact (SGP)

Objective Stability orientated fiscal policies of EU member states in order not to jeopardize the monetary policy of the ECB which targets at price stability – precondition for a strong and sustained growth which promotes the creation of jobs.

3 pillars

- Resolution of the European Council on the SGP when passing the Amsterdam Treaty (Regulations (EC) No 1466/97, 1467/97, and 1056/2005)
- Art. 121 TFEU: monitoring of budget policies as well as supervision and coordination of economic policies + system of early warnings (→ ECOFIN Council's report)
- Article 126 TFEU and Protocol No 12 on excessive deficits: avoidance of excessive government deficits and sound public finances (budget discipline)

Convergence programs The member states of the EU are obliged to provide annual stability and convergence programs.

Monetary Policy (TFEU)

Monetary, fiscal and exchange-rate policy according to the TFEU

Art. 3(1) exclusive competences for the Union regarding the monetary policy for the Member States whose currency is the euro.

Art. 119(2) single currency (the euro) / single monetary policy and exchange rate policy / primary objective of price stability / objective to support the general economic policy in the Union

Art 119(3) stable prices / sound public finances and monetary conditions / sustainable balance of payments

Art. 123 prohibition for the ESCB to grant credits to governments

Art. 124 prohibition for governments to establish privileged access to financial institutions

Art. 125 neither the Union nor a Member State is liable for the commitments of any other Member State (no bail-out clause)

Art. 126 Member States shall avoid excessive government deficits

Art. 127(1) the primary objective of the ESCB is price stability

Art. 127–133 ESCB, ECB, Statute of the ESCB and of the ECB

Art. 219(1) . . . the Council . . . may conclude formal agreements on an exchange-rate system for the euro in relation to the currencies of third States.

to be continued . . .

Monetary Policy (TFEU)

. . . continued

Protocol No. 4 on the statute of the European System of Central Banks (ESCB) and of the European Central Bank (ECB)

Objectives and tasks of the ESCB

Article 2: In accordance with Art. 127(1) and Art. 282(2) of the TFEU, the primary objective of the ESCB shall be to maintain price stability. Without prejudice to the objective of price stability, it shall → *support the general economic policies in the Community* with a view to contributing to the achievement of the objectives of the Community as laid down in Article 3 of the TEU. The ESCB shall act in accordance with the → *principle of an open market economy with free competition*, favouring an → *efficient allocation of resources*, and in compliance with the principles set out in Article 119 of the TFEU.

Instruments of Monetary Policy

The primary objective of monetary policy is to promote price stability.
ECB criterion for price stability: inflation rate of HICP $\leq 2\%$

Instruments of monetary policy (eurozone, ECB, ESCB-Statute)

- open market operations, discount window, foreign exchange operations
- minimum reserves,
- overnight interest facilities

Secondary targets

- steering of money supply M
- steering of liquidity of the private banking sector
- steering of interest rate i

Results: (indirect) effects on real terms (Y, C, I) only in the short run; in the long run monetary policy affects almost only P.

The Fed (USA) puts more emphasis on indirect effects than the ECB (EU).

Basic ideas how instruments work

(1) Open market operations, discount window, foreign-exchange operations → *monetary base*
(2) Minimum reserves → *money creation by private banks*
(3) Standing facilities → *steering of interest rates*

The monetary base B (= high powered money = currency units CU + bank reserves R) is used by private banks to create the money stock M_1 (= currency CU + overnight deposits D).

$$M_1 = mB$$

M_1 = money supply, m = money multiplier, M_2 = broad money (= M_1 + short-term savings deposits and similar assets).

(1) Open market operations (Art. 18 ESCB-Statute), discount window, foreign-exchange operations
Idea: the central bank controls the volume of bank reserves R by buying and selling financial assets.
- reverse transactions
  - main refinancing operations (maturity: 1 week)
  - longer-term refinancing operations (maturity: 1 month)
  - fine-tuning operations (maturity not standardized)
- outright transactions (the Eurosystem buys or sells eligible assets)
- issuance of ECB dept certificates (ECB bonds)

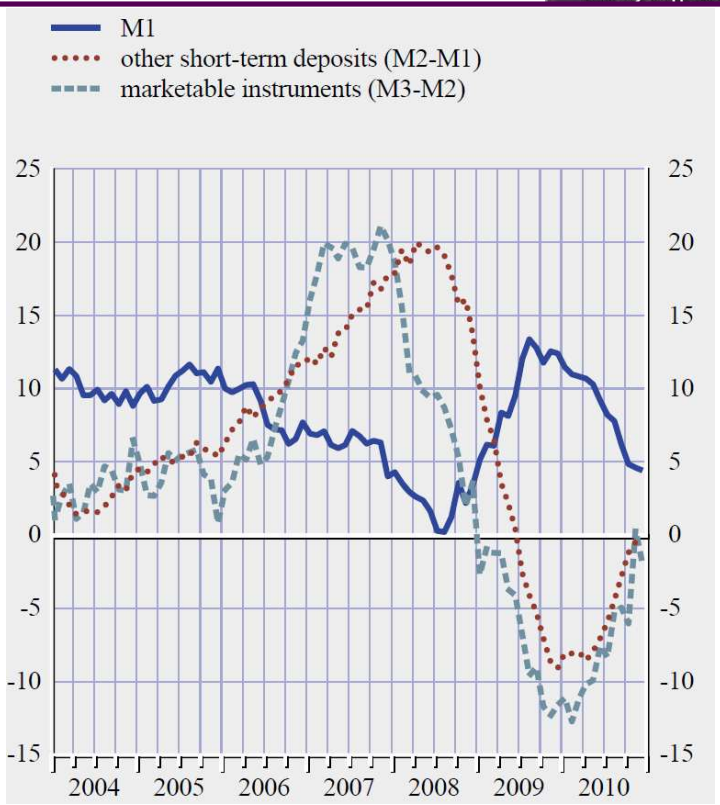
The ECB is «in principle» not allowed to buy government bonds.

For a list of eligible marketable assets see ECB internet site.

(2) Minimum reserves
(3) Standing facilities

Main Components of M3

Main components of M3
(annual percentage changes; adjusted for seasonal and calendar effects)
Source: ECB, Annual Report, 2010, p. 30



Instruments of Monetary Policy

(1) Open market operations, discount window, foreign-exchange operations
Idea: The central bank lends money to the private sector (usually private banks only) at an interest rate called marginal lending rate.
In the USA the marginal lending rate is called discount rate.
For a list of eligible marketable assets see again ECB internet site.
(2) Minimum reserves
(3) Standing facilities

(1) Open market operations, discount window, foreign exchange operations
Idea: the central bank buys or sells assets dominated in foreign currencies, e.g., the ECB buys US dollars.
(2) Minimum reserves
(3) Standing facilities

(1) Open market operations, discount window, foreign-exchange operations
(2) Minimum reserves (Art. 19 ESCB-Statute)
Idea: retard the process of money creation by loans of the private banking sector. The required reserve ratio μ is fixed by the ECB and it is used to compute the minimum reserve base R of an institution to be held at the ECB on the basis of its overnight deposits D. That is $R = \mu D$.
The ECB pays the deposit rate on reserves; -0.2% in Sep. 2014.
(3) Standing facilities

Effect of minimum (required) reserves on the money creation process

round	ΔB	ΔCU $= 0.2\Delta M_1$	ΔD $= 0.8\Delta M_1$	ΔR $= \mu\Delta D$	ΔLoan $= \Delta D - \Delta R$	ΔM_1 $= \Delta CU + \Delta D$
0.	100.0	–	–	–	100.0	–
1.	–	20.0	80.0	8.0	72.0	100.0
2.	–	14.4	57.6	5.8	51.8	72.0
3.	–	10.4	41.4	4.1	37.3	51.8
⋮	–	⋮	⋮	⋮	⋮	⋮
accumulated at 10. round	–	68.0	274.7	27.5	347.1	343.5
∞ rounds	–	71.4	285.7	28.6	357.1	357.1

- monetary base (high powered money) $B = CU + R$
- money supply $M_1 = CU + D$
- $R = \mu D$, reserve ratio $\mu = 10\%$
- consequence: $\mu \uparrow \Longrightarrow R \uparrow \Longrightarrow$ loan $\downarrow \Longrightarrow M_1 \downarrow$

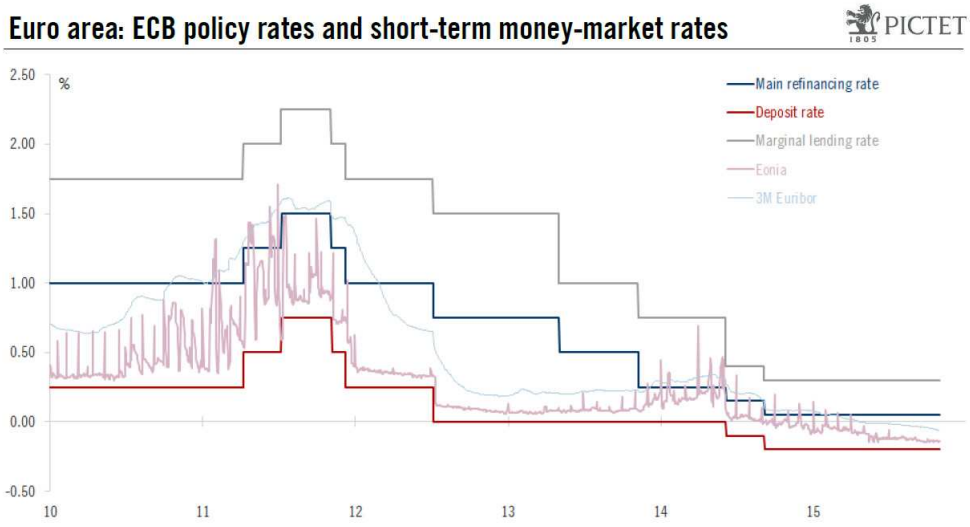
(1) Open market operations, discount window, foreign-exchange operations

(2) Minimum reserves

(3) Standing facilities (overnight interest facilities)
Purpose to provide and absorb overnight liquidity and to bound overnight market interest rates

- marginal lending facility to obtain overnight liquidity
(marginal lending rate; $\approx 2\%$ in 2009, 0.3% in Sep. 2014)
$\rightarrow$ ceiling for the overnight market interest rate
In the USA the marginal lending rate is called discount rate.
- deposit facility to make overnight deposits
(deposit rate; $\approx 0.5\%$ in 2009, -0.2% in Sep. 2014)
$\rightarrow$ floor for the overnight market interest rate

refinancing rate in Sep. 2014: 0.05%



Source: ECB, Bloomberg, Pictet WM - AA&MR

EONIA (euro overnight index average): a measure of the effective interest rate prevailing in the euro interbank overnight market.
EURIBOR (euro interbank offered rate): the rate at which a prime bank is willing to lend funds in euro to another prime bank.

International Monetary Fund

International Monetary Fund (IMF), Art. I of the IMF Statute:

The purposes of the International Monetary Fund are:
(i) To promote international monetary cooperation through a permanent institution which provides the machinery for *consultation and collaboration on international monetary problems*.
(ii) To facilitate the expansion and balanced growth of international trade, and to contribute thereby to the promotion and maintenance of *high levels of employment and real income* and to the development of the productive resources of all members as primary objectives of economic policy.
(iii) To promote *exchange stability*, to maintain orderly exchange arrangements among members, and to *avoid competitive exchange depreciation*.
(iv) To assist in he establishment of a *multilateral system of payments* in respect of current transactions between members and in the elimination of foreign exchange restrictions which hamper the growth of world trade.
(v) To give confidence to members by making the general resources of the Fund temporarily available to them under adequate safeguards, thus providing them with opportunity to *correct maladjustments in their balance of payments* without resorting to measures destructive of national or international prosperity.
(vi) In accordance with the above, to *shorten the duration and lessen the degree of disequilibrium in the international balances of payments* of members. The Fund shall be guided in all its policies and decisions by the purposes set forth in this Article.

FYI: International Monetary Systems

1870–1914: gold standard: fixed price relationship between domestic money and gold; revised gold standard in the 1920s and early 1930s, until it collapsed during the Great Depression.
1944 Bretton Woods Arrangement fixed exchange-rate system among the members of the IMF (1945, gold-dollar standard), values of currencies in terms of USD and the dollar in turn was convertible into gold.
1950–1958 European Payments Union: an international arrangement for settling payments among member countries in Europe during a period in which many of the countries' currencies were not convertible.
1958–1972 European Monetary Agreement (EMA): currencies of European member states were allowed to fluctuate by $\pm 0.75\%$ with respect to the dollar. The EMA was administered by the OECD and facilitated settlement of balance of payments accounts between member states. The EMA provided for the convertibility of the currencies of member states. In view of the facilities available for balance of payments assistance in the IMF, the OECD announced that the EMA would be terminated in 1972.
1959–1971 Bretton Woods Agreement: Currencies were allowed to fluctuate by $\pm 1\%$ with respect to the USD. (IMF system of adjustable pegs)
1968 First Amendment to the IMF Charter – creation of Special Drawing Rights
1970 Werner plan: three stage timetable for an EMU; plan stopped during recession 1973/74 (oil crisis)
1971 The Bretton Woods Arrangement collapsed, when Nixon suspended the convertibility of dollars into gold. The currencies of the western European countries began to float, as did most other currencies.
December 1971 Smithsonian Agreement: The band of the Bretton Woods Agreement was enlarged to $\pm 2.25\%$.
1972 European Currency System: the members of the EEC wanted an fixed exchange-rate agreement to complement their customs union. An early step was taken in this direction when the nations instituted the so-called «snake in a tunnel» (Basel Agreement 1972).
6 April 1973 Exchange-rate fluctuations between EEC members were limited ($\pm 2.25\%$), and the currencies moved in a narrow, undulating, snakelike pattern against the U.S. dollar (also $\pm 2.25\%$) and other outside currencies.
Jan. 1976: Second Amendment to the IMF Charter, the result is in fact an international laissez-faire system (free choice of exchange rate system)
13 March 1979: Most of the members of the EEC (with the important exception of the UK) entered a more formal agreement, the European Monetary System (EMS), which had some characteristics of the old IMF system. Exchange rates were to be pegged to a European Currency Unit (ECU), made up of a basket of European currencies (Exchange Rate Mechanism, ERM). However, there were three important differences from the old IMF system: (1) the flexibility around the official rate was as much as 2.25% (6% for the Italian lira), substantially wider than the 1% under the IMF system; (2) official rates were to be adjusted more quickly and frequently than the IMF par rates; and (3) the USD was not included in the EMS system; thus, the EMS currencies fluctuated as a group against the USD. The European Monetary Cooperation Fund (the predecessor of the EMI) was established to perform the intervention system.
Sep. 1992: Pound crisis initiated by George Soros, UK had to leave the EMS.
Aug. 1993: de facto break down of the EMS (spreading the flexibility around official rates to $\pm 15\%$)
1990–1999: Three stage timetable for EMU towards a single currency – say euro (Delors' Report).

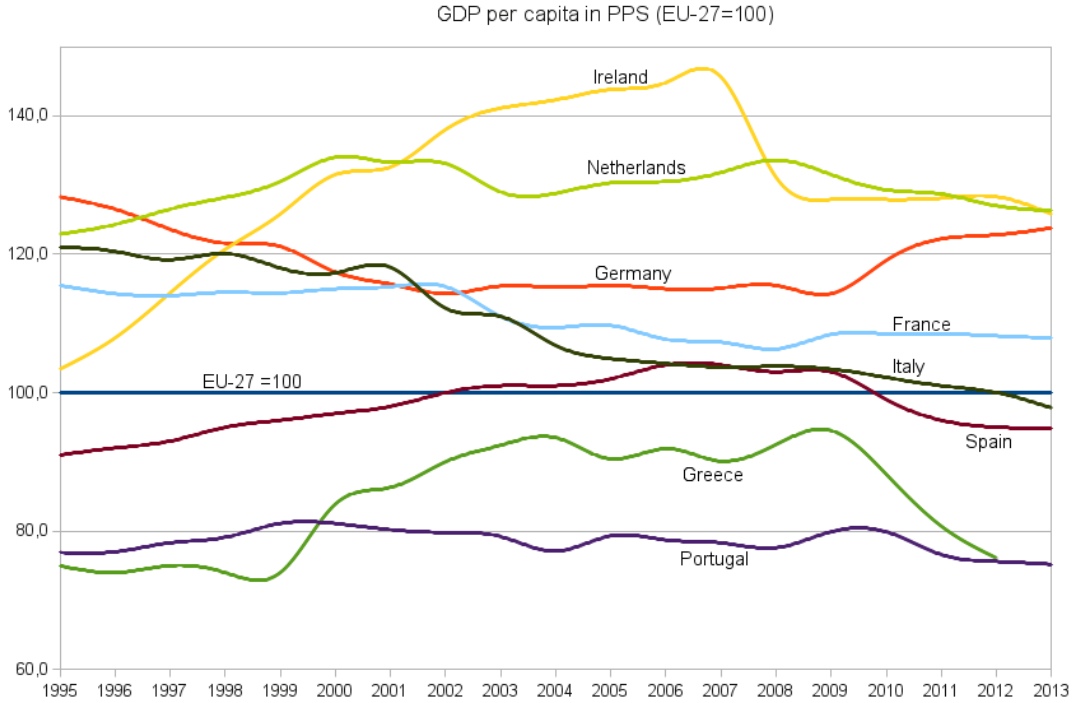
4.3 Economic Problems of Selected Members of the European Union

- national fiscal policies vs. a common monetary policy
- Germany
- PIIGS (European national debt crisis since 2010)

PIIGS – Portugal Ireland Italy Greece Spain

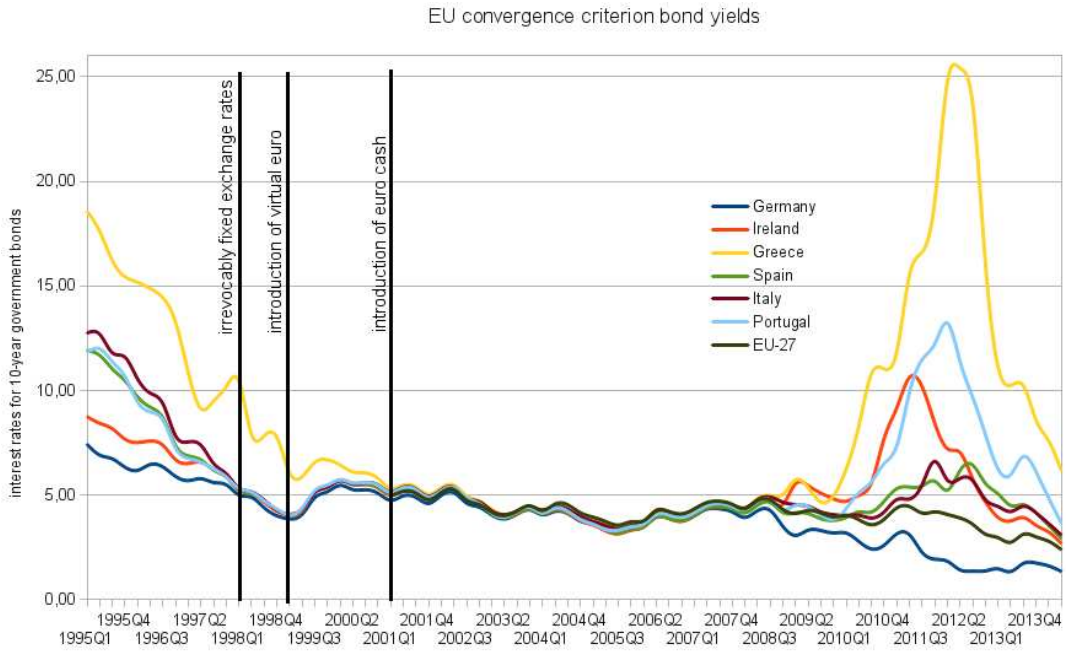
- GDP (GDP per capita in PPS)
- interest rates (10-year government bonds)
- inflation rates (price development 1995–2009)
- deficits (general government deficit 2000–2010)
- debt (general government debt 1999–2010)

GDP per capita in PPS 1995–2013



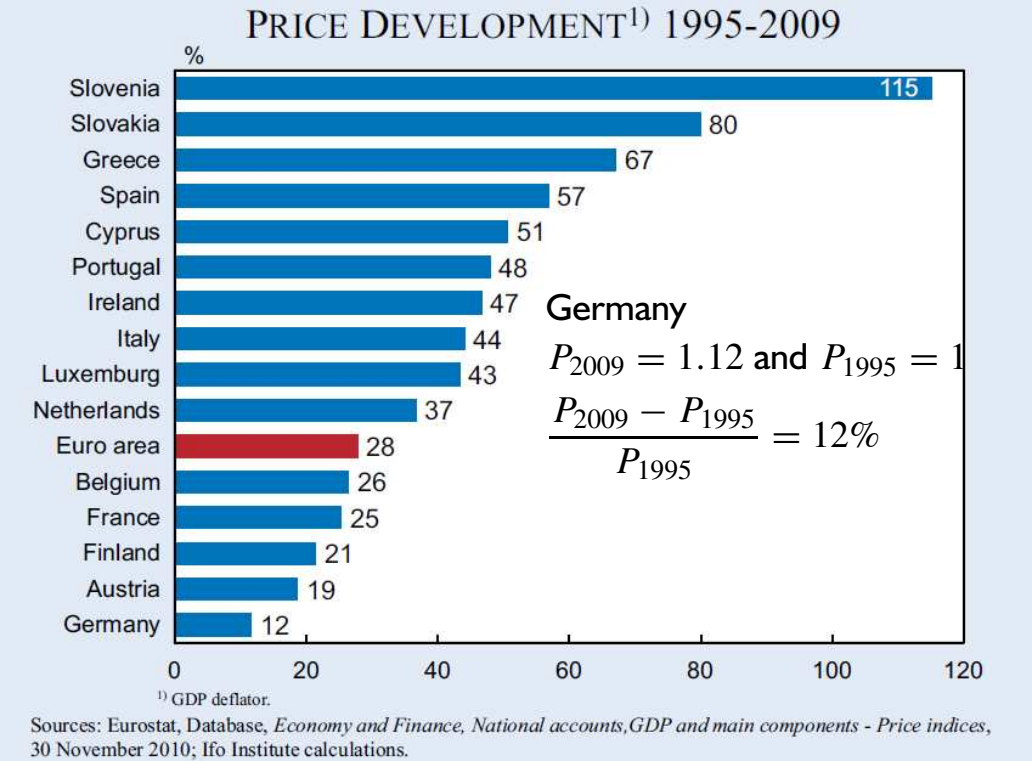
Source of data: Eurostat (2014, code: name_gdp_c)

PIIGS – Long-Term Interest Rates



Source of data: Eurostat (2014, code: irt_lt_mcby_q)

Price Development 1995–2009

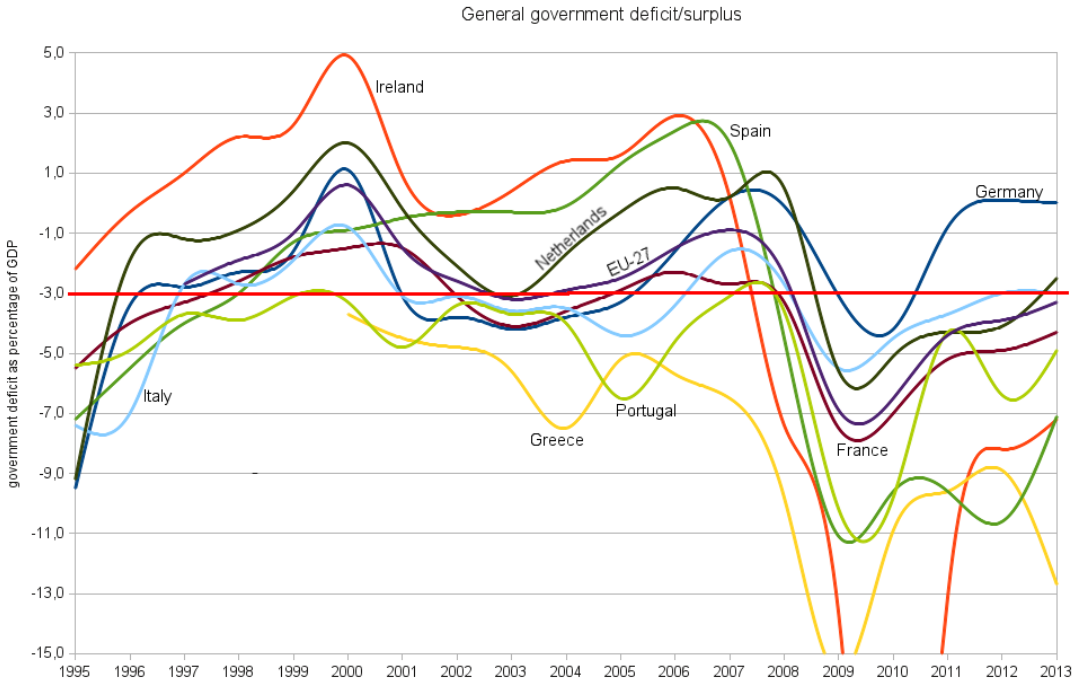


Germany

$P_{2009} = 1.12$ and $P_{1995} = 1$

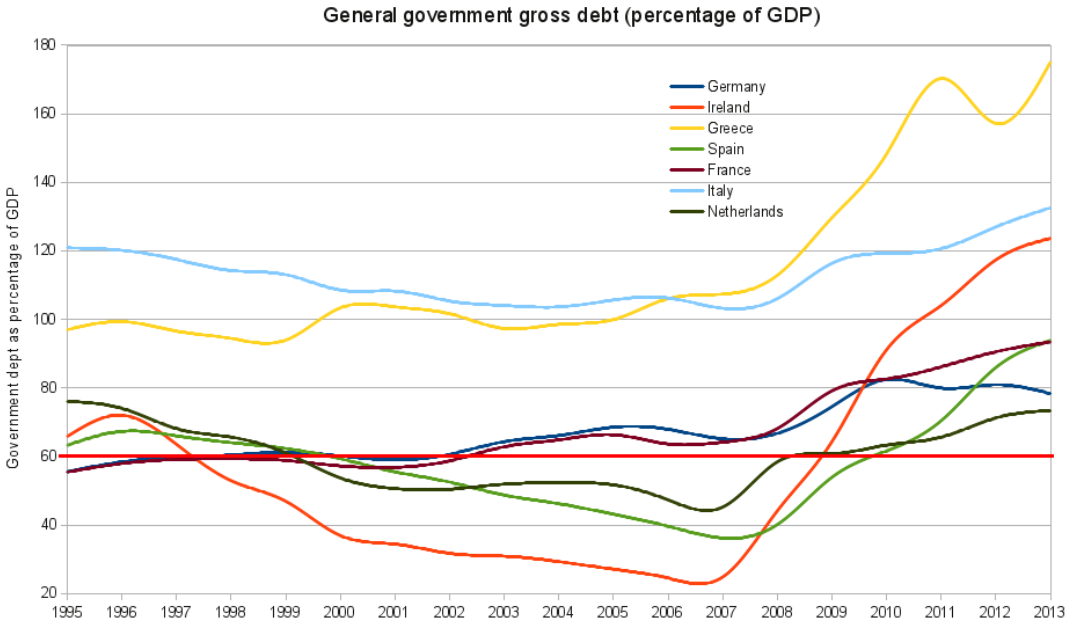
$$\frac{P_{2009} - P_{1995}}{P_{1995}} = 12\%$$

General Government Deficit



Source of data: Eurostat (2014, code: gov_dd_edpt1)

General Government Debt



Source of data: Eurostat (2014, code: tsdde410)

Greece

- highest regulation index in Europe (Institut der deutschen Wirtschaft Köln)
- labor market mainly organized like guilds (powerful trade unions)
- privileges of workers in (partly) publicly owned companies (telecommunications, railway, electricity supply, harbor . . .)
- 17% of employed in official jobs
- high labor cost per unit of output ($\rightarrow$ competitiveness)
- tax evasion
- budget deficit $\rightarrow G \downarrow, T \uparrow \Longrightarrow Y \downarrow$
- decline in Y ($\rightarrow$ debt$/Y \uparrow$)
- $i \uparrow$, refinancing old credits with lower interest rates
- poor climate for investments

The growth rate g of a variable x

discrete $\quad g_x = \dfrac{x_t - x_{t-1}}{x_{t-1}} \quad$ time path $\; x_t = (1 + g_x)^t x_0$

continuous $\quad g_x = \dfrac{1}{x}\dfrac{\mathrm{d}x}{\mathrm{d}t} = \dfrac{\mathrm{d}(\ln x)}{\mathrm{d}t} \quad$ time path $\; x(t) = x(0)\,\mathrm{e}^{g_x\, t}$

computation with growth rates (examples)

$$z = x \cdot y \implies g_z = g_x + g_y$$
$$z = x/y \implies g_z = g_x - g_y$$

Caveat: more difficult rules for addition or subtraction

$$z = x + y \implies g_z = \frac{x}{x+y}\, g_x + \frac{y}{x+y}\, g_y$$