Finance (Basics)

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Structure of lectures

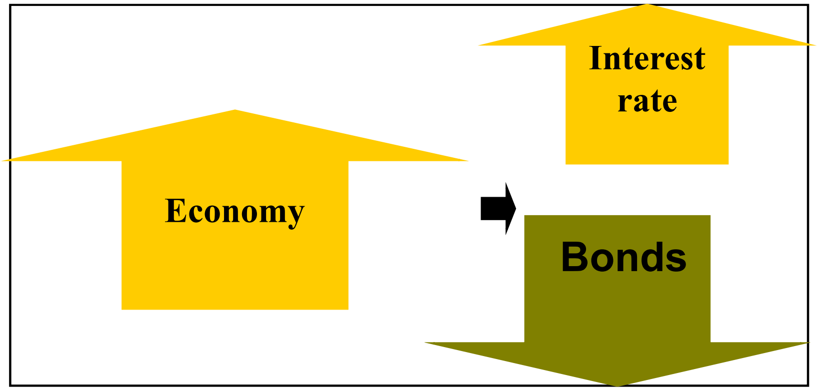
- 1.Introduction to finance - ok
- 2.Financial markets - ok
- 3.Banks and bank systems - ok
- 4.Other financial institutions - ok
- 5.Present value of money - ok
- 6.Private finance - ok;
- 7.Investments - ok;
- 8.Corporate finance - ok;
- 9.International finance - ok;
- 10.International financial system - ok;
- 11.Macroeconomic and financial indicators and information - now;
- 12.History of financial science - now;
- 13.Latest trends on financial markets - now.

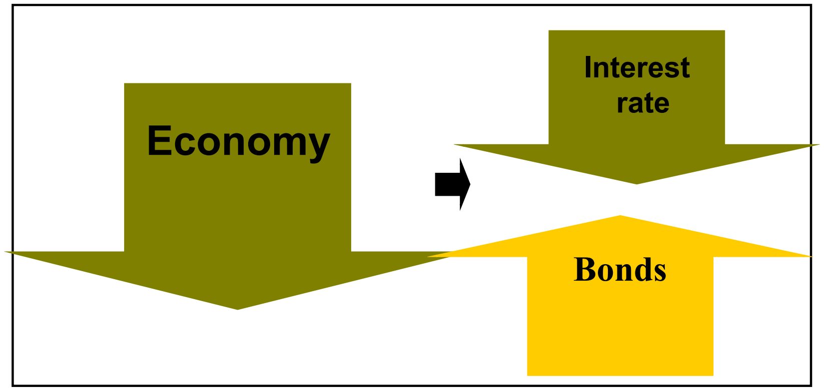
Macroeconomic and financial indicators and information

- GDP
- Inflation
- Interest rate

- Debt market
- Equity market

Dependance between Economy, Interest Rate and Price of Bonds





GDP

- GDP (**gross domestic product)** is the amount of goods and services produced in a year, in a country.
- It is the market value of all final goods and services made within the borders of a country in a year. It is often positively correlated with the standard of living, alternative measures to GDP for that purpose.
- The expenditure method:
  - *GDP = C + I + G + Nx (private consumption + gross investment + government spending + (exports − imports)*,
- Effective scale
- Economic importance

GDP

Income Approach - this method measures GDP by adding incomes that firms pay households for the factors of production they hire- wages for labor, interest for capital, rent for land and profits for entrepreneurship.

- Wages, salaries, and supplementary labour income
- Corporate profits
- Interest and miscellaneous investment income
- Farmers' income
- Income from non-farm unincorporated businesses
- These five income components sum to net domestic income at factor cost.

- Two adjustments must be made to get GDP:
    - Indirect taxes minus subsidies are added to get from factor cost to market prices.
    - Depreciation (or capital consumption) is added to get from net domestic product to gross domestic product.

Expenditure approach

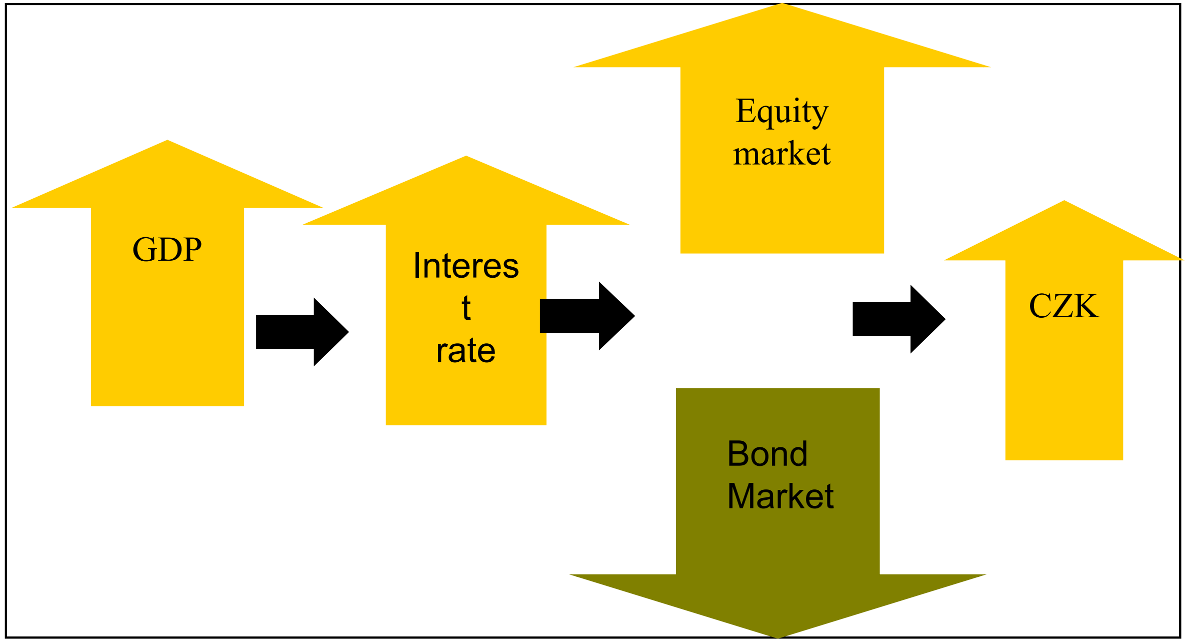
GDP

Pořadí	Country	GDP (milions USD)	GDP per capita (USD)
	World	60 917 477	
	EU	18 387 785	
	EMU	13 646 370	
1.	USA	14 441 425	47 439
2.	Japan	4 910 692	38 457
3.	China	4 327 448	3 259
4.	Germany	3 673 105	44 728
5.	France	2 866 951	46 037
6.	Great Britain	2 680 000	43 733
7.	Italy	2 313 893	38 996
8.	Russia	1 676 584	11 806
9.	Spain	1 601964	35116
10.	Brazil	1 572 839	8 295
40.	Czech Republic	246 354	20 759
58.	Slovak Republic	95 404	17 646

Source : http://www.imf.org/external/pubs/ft/weo/2009/02/weodata/weoselgr.aspx

GDP and π

- Nominal value of GDP (GDP current prices)
- Real value of GDP (GDP constant prices)
- GDP and financial market



Inflation

- Inflation is …
- Inflation measurement
- Price index
  - Consumer Price Index (CPI),
  - GDP Deflator,
  - Producer Price Index (PPI).

$$\pi_1 = \frac{P_t - P_{t-1}}{P_{t-1}} \cdot 100$$

Inflation

- In economics, **inflation** is a rise in the general level of prices of goods and services in an economy over a period of time
- Inflation is usually estimated by calculating the inflation rate of a price index, usually the Consumer Price Index.
- The Consumer Price Index measures prices of a selection of goods and services purchased by a "typical consumer".
- The inflation rate is the percentage rate of change of a price index over time

The Consumer Price Index, PPI, GDP Deflator

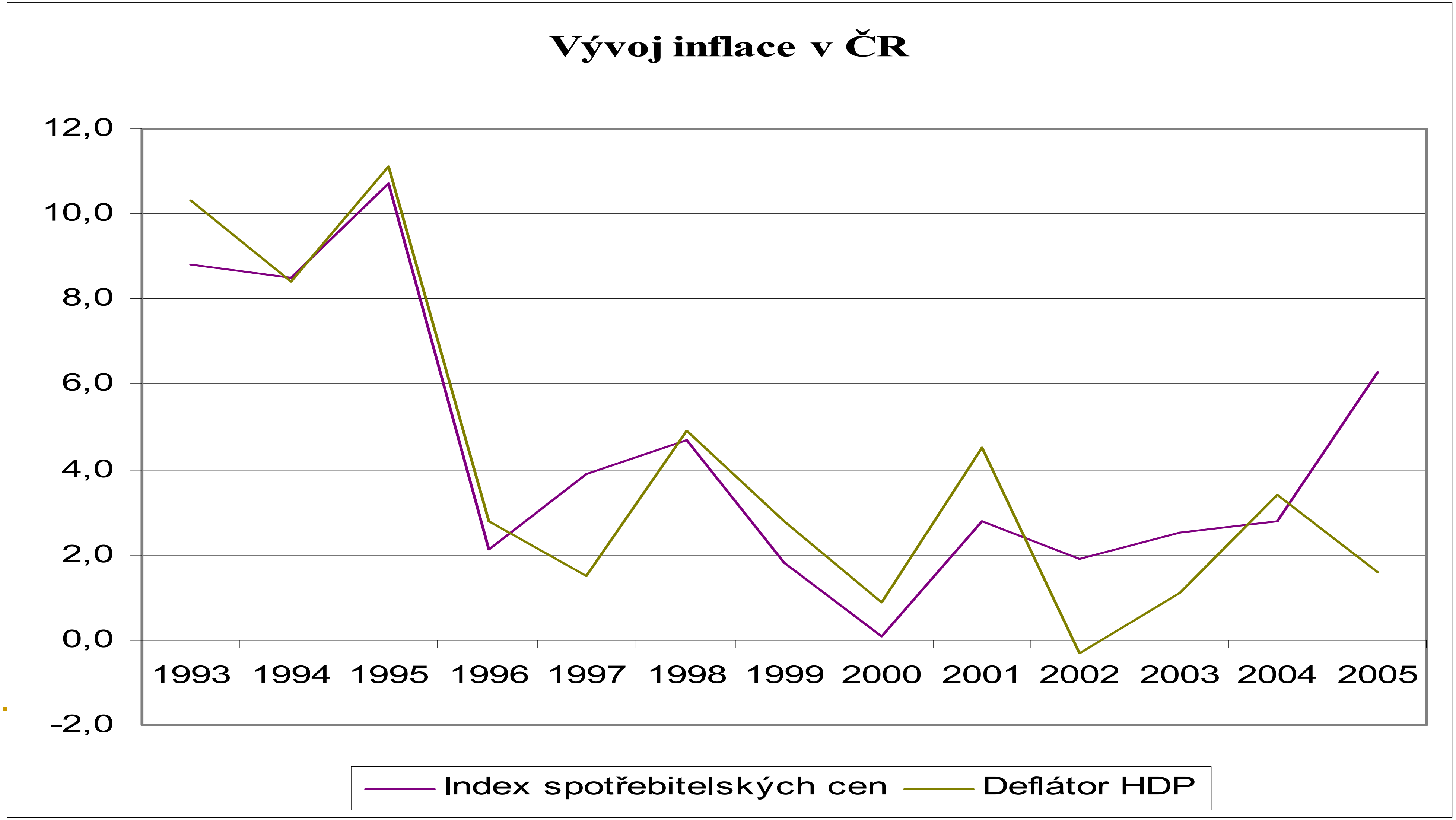
- http://www.czso.cz/eng/redakce.nsf/i/consumer_basket_2010/$File/c_basket2010.pdf
- **Producer price indices** (PPIs) which measures average changes in prices received by domestic producers for their output. *This differs from the CPI in that price subsidization, profits, and taxes may cause the amount received by the producer to differ from what the consumer paid.*
  - There is also typically a delay between an increase in the PPI and any eventual increase in the CPI. Producer price index measures the pressure being put on producers by the costs of their raw materials.
- **GDP deflator** is a measure of the price of all the goods and services included in Gross Domestic Product (GDP). It is defined as its nominal GDP measure divided by its real GDP measure.

CPI, IPD

$$CPI_t = \frac{\sum \frac{p_t}{p_0} \cdot p_0 q_0}{\sum p_0 q_0} \cdot 100$$

$$\pi_t = \frac{CPI_t - CPI_{t-1}}{CPI_{t-1}} \cdot 100$$

$$IPD = \frac{GDP_N}{GDP_R} \cdot 100$$



Producer Price Index

- The **price index of agricultural producers** is calculated every month from prices collected among approximately 650 selected producers in agriculture (private, cooperative and state-owned companies) and does not include VAT.
- Collected are prices (excluding those of output for own consumption) designed for and obtained in internal market.
  - Since 1 January 2001, prices of agricultural producers are measured on 95 fundamental agricultural products (price representatives): 63 plant products (including fruits and vegetables) and 32 livestock products.

- Average prices of the products are calculated as a simple arithmetic mean of prices of individual producers. Price indices of the individual products (representatives) are obtained through weighing the calculated average prices with particular, individually determined weight proportions of individual products in a given month.
  - The weight proportions are determined for both products and their aggregates.

Producer Price Index

- The **industrial producer price index** are surveyed monthly on the basis of data provided by the selected organizations (about 1200) for the selected representatives (about 4700).
  - The reported prices are those agreed upon between the supplier and the customer inland. They exclude VAT, excise tax, costs of transport to the customer and costs incidental to the transport, and are invoiced for the more important trade cases.
- **Price indices of construction work** are calculated from prices measured in the specialized quarterly reporting.
  - Therefore monthly indices are estimated with the help of another monthly statistical survey at CZSO.
- The aggregate **price index of market services** includes the following price indices in the business sphere (i.e. between businesses):
  - price indices of internal goods transport, postal and communications services, financial intermediation, and the other business services and sewerage.

Kinds of inflation

- Hoarding
  - People buy durable and/or non-perishable commodities and other goods as stores of wealth, to avoid the losses expected from the declining purchasing power of money, creating shortages of the hoarded goods.
- Hyperinflation
  - If inflation gets totally out of control (in the upward direction), it can grossly interfere with the normal workings of the economy, hurting its ability to supply goods. Hyperinflation can lead to the abandonment of the use of the country's currency, leading to the inefficiencies of barter.

History of Financial Science

- ***Nobel Prize***
  - ***J. Tobin*** (1981)
  - ***F. Modigliani*** (1985)
  - ***H. Markowitz, W. Sharpe a M. Miller*** (1990)
  - ***M. Scholes a R. Merton*** (1997)

J. Tobin

- **James Tobin** (March 5, 1918 – March 11, 2002) was an American economist who, in his lifetime, served on the Council of Economic Advisors and the Board of Governors of the Federal Reserve System, and taught at Harvard and Yale Universities.
  - He developed the ideas of Keynesian economics, and <u>advocated government intervention to stabilize output</u> and avoid recessions.
  - His academic work included pioneering contributions to the study of investment, monetary and fiscal policy and financial markets.
  - He also proposed an econometric model for censored endogenous variables, the well known "Tobit model". Tobin received the Nobel Memorial Prize in Economic Sciences in 1981.
- Tobin was widely known for his suggestion of a tax on foreign exchange transactions, now known as the "Tobin tax".
  - This was designed to reduce speculation in the international currency markets, which he saw as dangerous and unproductive. He suggested that the proceeds of the tax could be used to fund projects for the benefit of Third World countries, or to support the United Nations.

F. Modigliani

- The **Modigliani–Miller theorem** (of Franco Modigliani, Merton Miller) forms the basis for modern thinking on capital structure.
- The basic theorem states that, under a certain market price process (the classical random walk), in the absence of taxes, bankruptcy costs, and asymmetric information, and in an efficient market, <u>the value of a firm is unaffected by how that firm is financed.</u>
- It does not matter if the firm's capital is raised by issuing stock or selling debt. It does not matter what the firm's dividend policy is.
- Therefore, the Modigliani-Miller theorem is also often called the **capital structure irrelevance principle**.
  - Modigliani was awarded the 1985 Nobel Prize in Economics for this and other contributions.

H. Markowitz, W. Sharpe a M. Miller

- **Harry Max Markowitz** (born August 24, 1927) is an American economist and a recipient of the John von Neumann Theory Prize and the Nobel Memorial Prize in Economic Sciences.
- He is best known for his pioneering work in Modern Portfolio Theory, studying the effects of asset risk, return, correlation and diversification on probable investment portfolio returns.
- A *Markowitz Efficient Portfolio* is one where no added diversification can lower the portfolio's risk for a given return expectation (alternately, no additional expected return can be gained without increasing the risk of the portfolio).
- The Markowitz Efficient Frontier is the set of all portfolios that will give the highest expected return for each given level of risk. These concepts of efficiency were essential to the development of the Capital Asset Pricing Model.

W. Sharpe

- CAPM
  - Systematic risk
  - Nonsystematic risk

M. Scholes a R. Merton

- The **Black–Scholes** model is a mathematical description of financial markets and derivative investment instruments.
  - The model develops partial differential equations whose solution, the **Black–Scholes formula**, is widely used in the pricing of European-style options.
- The model was first articulated by Fischer Black and Myron Scholes in their 1973 paper, "*The Pricing of Options and Corporate Liabilities*."
- The fundamental insight of Black-Scholes is that the option is implicitly priced if the stock is traded. Robert C. Merton was the first to publish a paper expanding the mathematical understanding of the options pricing model and coined the term Black–Scholes options pricing model.

Latest trends on financial markets

- Global megatrends
  - Globalization
  - Energy
  - Climate changes
  - Demographic development (growth)

Globalization

- **Globalization** describes the process by which regional economies, societies, and cultures have become integrated through a global network of political ideas through communication, transportation, and trade.
- The term is most closely associated with the term economic globalization: the integration of national economies into the international economy through trade, foreign direct investment, capital flows, migration, the spread of technology, and military presence.
- However, globalization is usually recognized as being driven by a combination of economic, technological, sociocultural, political, and biological factors.
- The term can also refer to the transnational circulation of ideas, languages, or popular culture through acculturation. An aspect of the world which has gone through the process can be said to be **globalized**.

Energy

- Oil
    - Supply
- Alternative sources

Climate Changes

- 1 century = 6 degrees of Celsius
- Nicholas Stern calculating the cost of climate change (20% GDP)
- Natural risk – new financial instruments (flood bonds)

Demographic growth

- Maltus –
  - World population … 1805 – 2050
    - Europe and 2015
- Growth and structure of population
    - Natality and mortality
- Average age of population
    - Migration
    - Retirement age

Financial Trends

- Cross selling
- Liberalization
- Securitization
- E-Banking

Financial Crisis

- The **financial crisis of 2007 to the present** was triggered by a liquidity shortfall in the United States banking system.
  - It has resulted in the collapse of large financial institutions, the bailout of banks by national governments, and downturns in stock markets around the world.
  - In many areas, the housing market has also suffered, resulting in numerous evictions, foreclosures and prolonged vacancies.
- It is considered by many economists to be the worst financial crisis since the Great Depression of the 1930s.

Financial Crisis

- It contributed to the failure of key businesses, declines in consumer wealth estimated in the hundreds of billions of U.S. dollars, substantial financial commitments incurred by governments, and a significant decline in economic activity.
- The collapse of the housing bubble, which peaked in the U.S. in 2006, caused the values of securities tied to real estate pricing to plummet thereafter, damaging financial institutions globally. Questions regarding bank solvency, declines in credit availability, and damaged investor confidence had an impact on global stock markets, where securities suffered large losses during late 2008 and early 2009.
- Economies worldwide slowed during this period as credit tightened and international trade declined.
- Critics argued that credit rating agencies and investors failed to accurately price the risk involved with mortgage-related financial products, and that governments did not adjust their regulatory practices to address 21st century financial markets.
- Governments and central banks responded with unprecedented fiscal stimulus, monetary policy expansion, and institutional bailouts.

Financial Crisis

- The Crisis of Credit Visualized
- http://www.youtube.com/watch?v=Q0zEXdDO5JU

- Thank you for your attention