Fundamental analysis

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Main analysis of assets

- ## Three different approaches:
  - Fundamental analysis (USA: 85 %; GB: 75 %)
    - analysis of date (accounting, economic, global, etc.)
  - Technical analysis (USA: 13 %; GB: 13%)
    - Analysis of charts
  - Psychological analysis (least then 5 %)
    - Analysis of psychological factors

Main analysis of assets

- **Main objective of these three analysis**
  - Which security is
    - Underestimate
    - Overestimate
    - Correctly estimate?
  - Over- and underestimate securities their
    - intrinsic value (value determined by analysis) is different from spot market value.
  - Next objective is tried to find answers on questions
    - Why is particular security over-, under- or correctly estimate.
    - And why we can expect decline or increase of particular quantities.

Fundamental analysis

- ## Analysis base on usage of
  - Company data (expected and historical profits, dividend, etc.) and
  - basic economic, political, social, geographic etc. factors.
- ## Three levels
  - Economy (market) fundamental analysis
  - Industry fundamental analysis
  - Company fundamental analysis (analysis of particular securities)
- ## Main objective the most exact answer to question:
  - Which stock is over-, under- or correctly estimate.

Fundamental analysis

- Fundamental analysis is basic tool for investment strategy called Stock-Picking:
  - Looking for underestimate stocks, purchase of them because of expected rise of their prices in the future.
- Sources of fundamental analysis
  - Accounting and statistic date
  - Prognoses of further development of particular
    - company
    - industry
    - economy
  - Key question: efficiency of the market
    - Weak efficiency market – fundamental analysis is applicable if it is base on current data
    - Medium and full efficiency market – fundamental analysis is not successful to find over or underestimated securities because exchange rate in medium and full efficiency market reflects all new unexpected information and mirrors them in exchange rate change.

Economy (market) fundamental analysis

- **The objective:**
  - Identify, investigate and evaluate of whole economy and market influence to value of particular security.
  - For description of situation and development in particular market are used
    - Macroeconomics aggregates
      - Interest rate, inflation rate, GDP, movements of capital, monetary aggregates, etc.
- **Historical analysis of particular global aggregates and capital market were founded out relations that can be used as a initial point for prognosis of future development.**

Main relations between aggregates

- Negative relation between development of interest rate and stock exchange rate.
  - Correlation rate about -0,85
  - If interest rates rise up the exchange rates decline and vice versa.
  - Several explication:
    - Competitive relations between bonds and securities
      - In phase of rising interest rate there is decline in expected revenue from securities and growth of expected revenues from bonds.
      - Investors move from security to bond market.
      - In stock market – decline of demand and subsequently decline in stock prices
      - In bond market – increase of demand and subsequently increase of prices and vice versa.
    - The highest rising of bond price is at the end of economic cycle
    - The significant decline of bond price is typical for the economic bottom.

Main relations between aggregates

- Negative relation between inflation rate and stock exchange rate.
  - The growth of inflation rate is followed by decline of stock prices.
- Positive relation between development of stock exchange rates and real economic output.
  - BUT on short and medium time-term (3 - 9 months): securities fulfill function of leading indicator in relation to real economic output. In this time period development of stock exchange rates fast development of real economic output. It means in short time period can be data from development of economy apply in prognosis of stock exchange rate development.

Main relations between aggregates

- **Why Leading Indicator?**
  - Investors make decision a deal on the basis of principle of expectation.
  - All indicators that are observed by investors have an expected character and also fulfill function of Leading Indicator to economic output (expected profit and expected profit margin).

- In long-time period (decades) there is continues growth of economic output and subsequent growth of stock prices. This is motivated by growing level of living and economic level.

Main relations between aggregates

- Relation between money supply and stock exchange rate.
  - Also leading indicator the growth of the money supply is followed by growth of stock exchange rate.
- Relation between state budget and stock markets
  - Government support of income part of budget (higher taxation) and negative impact in stock markets (limited resources for dividends, reinvesting, etc.)
- Relations between stock exchange rate and
  - Movements of capital
  - Currency exchange rate
  - Political or economical shocks
    - Political shocks
      - Unexpected demissions of government
      - Scandals related with political members (demission of Nixon in 1974)
      - Terroristical attacs
      - Wars, etc

Main group of factors

- **All factors that are used in fundamental analysis can be divided into three main groups**
  - Leading factors – to prognoses of economic development, move in advance to economic development.
  - Lagging factors
    - Give an evidence about running of economic cycle. They confirm particular development trend or change.
  - Coincident factors
    - With delay confirm past development of economic cycle.
    - Can be used for analysis of mutual relations

Leading factors	Lagging factors	Coincident factors
Monetary supply	Total value of wage for employees and non-agriculture workers	Average duration of unemployment
Exchange rates	Income-transfer payments	Wage to unit of output
Changes of material prices	Total value of industry production	Change in consumer price index
New buildings permissions	Sales for goods	
Order of new machinery and equipment		
Order of resources		
Averrage number of worker hours per week		
Chnages in number of credits		
Development of cash-flow		

Industry fundamental analysis (FA)

- **Main objective**
  - Identification of sector characteristic factors, lines or specifics in that particular company makes a business.
  - The object is
    - explored, analyzed and predicted development of these specific sector factors and
    - find out the impact of these factors in instinctive value of company stock.
- **Important sectors factor are the following**
  - Life cycle of industry
  - Market structure of sector (monopoly, oligopoly, etc.)
  - Role of regulatory body

Life Cycle of Industry

- It is a cycle of particular evolutionary phases from rise to expire of industry.

- In particular phases are different developments of
  - Profits
  - Revenues or
  - Security exchange rates

Life Cycle of Industry

- Three main phases
  - Pioneer phase
  - Phase of development
  - Phase of stabilization

Life Cycle of Industry

- **Pioneer phase**
  - It starts of life cycle of industry
  - Characteristics
    - Strong rise of demand about company products
    - The demand is fueled by fact that
      - it is new or updated product attractive for consumer
    - Company is able to gets high (often above an average) profit
    - This profit is a lure for competitors
      - A lot of new companies entrance during this phase in the market but because of strong competition do not all of them survive and expire in the short time period.
    - Position of particular subject is weak, profits, revenues, instinctive value and exchange rates of stocks fluctuates very strongly.

Life Cycle of Industry

- Investment in industry in pioneer phases promise high revenue but are related with high risk.

- At the end of the 1970's pioneer phase of personal computers.

- In the 1990's pioneer phase of cell phones.

Life Cycle of Industry

- Phase of development
  - General stabilization of industry.
  - Companies that survival pioneer phases build their market position, growth and expand.
  - Declining in fluctuation of revenues, profits and exchange rate.
  - High level of competition in industry, it has impact in prices that are decreasing.
  - Level of competition can be negatively affected by government intervention.
  - Demand about production is relatively high and profits, revenues and exchange rates are still rising but slower than in the pioneer phase.
  - Risk related with investment in this companies is lower but also revenues form investments are lower.

Life Cycle of Industry

- Phase of stabilization
  - Final phases of live cycle.
  - High stability in development of prices, revenues or exchange stock rates.
  - Dominant role played by established, strong and stable companies.
  - Average profit rate in this industry is declining and some companies leave of industry.
  - Next development of particular industry by two ways:
    - Continued decline in demand, product prices, or
    - Important revolutionary innovation that bring resuscitation of industry and subsequent passing of pioneer, development and stabilization phases.
    - In order the company was able to implement resuscitation is important to have
      - Capital, new technology and capacity to produce new product with the most lowest costs, etc.

Sensitivity of industry to economy cycle

- According to sensitivity of profits, revenues and exchange rates to economic cycle can be all industries divided into 3 branches.
  - Cyclic industry
    - Development of profit, revenues and security exchange rates imitates development of economic cycle.
    - The higher profit these industries get in conjuncture the lowest in recession.
    - Typical industries with non-essential goods (luxury goods) their consumption can be postponed in the future when economic situation will be more favorable.
    - Examples: building industry, car industry, hotels, clothing industry, etc.
  - Neutral industry
    - In these industries there is no possible to identify relation between their profits and economic development.
    - Neutral industries produce essential goods.
    - Examples: food industry, beverage industry, newspapers, pharmaceutical industry, etc.
  - Anti-cycle industry
    - These industries get the higher revenues in the time of recession. Typical examples are industries that offer cheaper substitutes of expensive goods of cyclical industry.
    - Examples in the in the 1970's
      - Cable television as a alternative of expensive travelling
      - In the half of the 1990's video-tape library alternative to cinema

Sensitivity of stocks to economy cycle

- Also stocks can be divided according to their exchange rate movements in particular part of economic cycle.
    - Cycling stocks
        - The most volatile
        - The higher revenue at the beginning or in the first half of conjuncture
        - The higher decline at the beginning or in the middle of recession.
            - Aggressive stocks that rise up or decrease more then the market as a whole.
        - Examples
            - Stocks of
                - companies producing goods of long-term consumptions
                - mining companies
                - energetic companies, etc

Sensitivity of industry to economy cycle

- **Defensive stocks**
  - For these stocks it typical that the higher revenues get in last phase of conjuncture.
  - But reaction of these stocks is much less intensive than in cyclical stocks
    - The changes in stock prices are in lower range than changes of whole economy
  - Examples, companies produce
    - Some goods of long term consumption
    - Initial goods
    - Petroleum companies

Sensitivity of industry to economy cycle

- Growth stocks
  - Stocks that get above-average profits and revenues.
  - High level of intrinsic value of these stocks
  - These securities are combination of growth and defensive characteristics
  - Above-average profits only for limited time because of
    - competitors,
    - limited demand or
    - dating of product.
  - Stock are marketed as growth stocks are only for limited time
  - Examples
    - In the history
      - Pharmaceutical industry
      - Color receiver
      - Computer industry, etc.

Company fundamental analysis

- **Analysis of particular stocks**
- **Main objective**
  - find out intrinsic value of particular stock
- **Intrinsic value is compared with spot price and stocks are categorized as a**
  - Underestimate
  - Correctly estimate
  - Or overestimate
- **According this is formulated investment recommendation – buy, sell, hold.**

Company fundamental analysis

- **Intrinsic value – key factor of fundamental analysis**
- **Intrinsic value**
  - right value for which stock should be traded in the market.
- **Intrinsic value reflects**
  - all important company characteristics (company size, its life cycle, mindedness, profitability, etc.)
  - Perspectives of company in the future
  - All industry or global factors

Company fundamental analysis

- Spot market price does not respond with intrinsic value.
  - Sometime is over and sometime is under intrinsic value. The exchange rate volatile about intrinsic value.
  - In the stock market is running continual valuation process.
  - Analytics and Investors are trying to identify over- and underestimate stocks.
  - As a result they change demand about particulate stock and help to elimination of difference between spot value and intrinsic value.
  - Decisive influence to limitation of this difference is by actions of professional investors called "smart money".

Company fundamental analysis
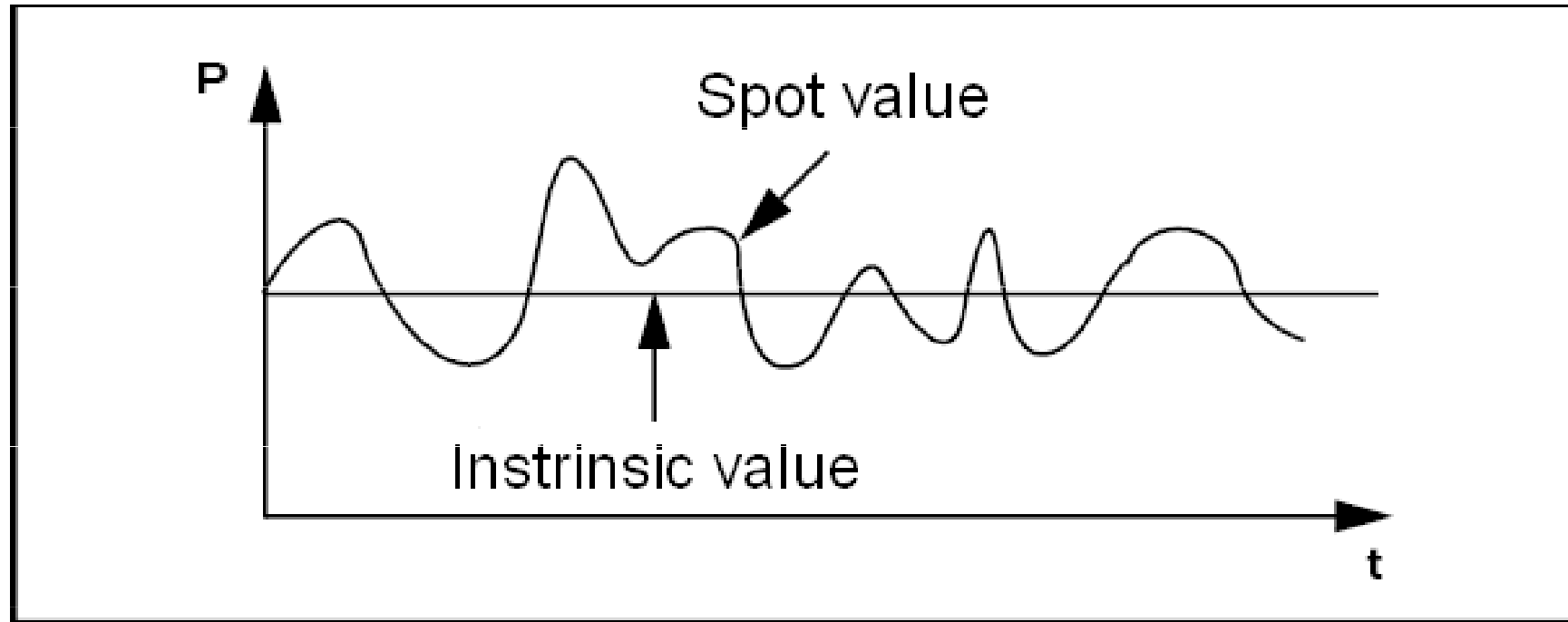
Company fundamental analysis

- **Difference between spot value and intrinsic value is determined by**
  - Psychological factors
  - Technical factors
  - Efficiency of market
    - Market with lower level of efficiency
      - Difference wider, because reaction of spot exchange rate to new information is slower.
      - With rising efficiency the difference is narrower.

Methods of setting intrinsic value

- **Models basic on future revenues that can get investors**
  - Dividend discount models
  - Profit models
  - Cash flow models
- **Models basic on information from accounting reports**
  - Book models
- **The most sophisticates and accurate models are**
  - First three above mentioned

Dividend discount model

- The most sophisticate method
- Base on presumption that intrinsic value is given by current value of all future incomes from particular stock.
- All future incomes are given by
  - dividend payments
  - And under particular conditions by sale rate of stock
- With dividends these models operate always
- With sale rate only if is expected of early sale of stock
- There are two main group of models
  - Dividend discount model with infinite time of holding
  - Dividend discount model with ultimate time of holding

Dividend discount model with infinite time of holding

- For stocks that will not sell in near future
- Reflects intrinsic value in long time period and
  - are not useful in short or medium time period.

$$V_0 = \frac{D_1}{1+k} + \frac{D_2}{(1+k)^2} + \frac{D_3}{(1+k)^3} + \cdots + \frac{D_n}{(1+k)^n}$$

- Where:
- V_0 - intrinsic value
- $D_1, D_2, D_3 \ldots$ – expected dividends payments
- k – required revenue rate by investors

Dividend discount model with ultimate time of holding

- Is uses for stocks that will be sold in the short future

- Future revenues re

  - Dividends payments till sale

  - Expected sale rate of stock

- This model is uses for short time of holding from1 to 2 years in case of stable investing environmental at most 3 years.

- If we expected holding period 1 year:

$$V_0 = \frac{D_1}{1+k} + \frac{P_1}{1+k}$$

Dividend discount model with ultimate time of holding

- General formula

$$V_0 = \sum_{n=1}^{N} \frac{D_n}{(1+k)^n} + \frac{P_n}{(1+k)^N}$$

- Time of holding (years)
- V_0 - intrinsic value
- D_1, D_2, D_3…– expected dividends payments
- k – required revenue rate
- P_n – expected exchange rate in the time of sale

Model reflects change in dividend payments

- Model focus on change of dividend during time of holding
- The basic is current dividend that by which are calculated dividends in the future by using rate of dividend growth.

- D_1 _ dividend in the future
- D_0 _ current dividend
- g – rate of dividend growth (decline)

$$D_1 = D_0(1+g)$$

Model reflects change in dividend payments

- General formula for dividend discount model with ultimate time of holding:

$$V_0 = \sum_{n=1}^{N} \frac{D_0(1+g)^n}{(1+k)^n} + \frac{P_N}{(1+k)^N}$$

- General formula for dividend discount model with infinite time of holding:

$$V_0 = \frac{D_0(1+g)}{1+k} + \frac{D_0(1+g)^2}{(1+k)^2} + \frac{D_0(1+g)^3}{(1+k)^3} + \cdots + \frac{D_0(1+g)}{}$$

Profit models

- Price/Earnings ration
- How much must investor pay for one unit of profit generated by company
- Advantages
    - Easy and quick
    - Comparison of several securities according to investor attractively
    - Definition of successful investment strategy
    - Analysis of actual attractiveness of stock and comparison with history
- Disadvantages
- Not usable if company in loss
- Depends on accounting methodology
- Problems with comparison of different industries or countries
    - P/E is influenced by global or specific factors for particular economy
        - From 1985 – 1989
        - P/E ration in Japan 37.9 to 70.9
        - P/E ration in USA 8 to 19
        - P/E ration in UK 10 to 18

Good and bad securities according to P/E ratio

Overestimate stock	**Correctly estimate stock**
Wrong estimate	*With low profit potential, with problems*
❖Low level of growth rate	
❖High value of P/E ratio	❖High level of growth rate
	❖High value of P/E ratio
Correctly estimate stock	**Underestimate stock**
With high profit potential	*Wrong estimate*
❖Low level of growth rate	❖High level of growth rate
❖Low value of P/E ratio	❖Low value of P/E ratio

Profit models

- P/BV ratio
- Price of stock/Book value
- How much must investor pay for one unit of shareholders' capital of particular company
  - ROE: return on equity

- P/S ratio
- Price of stock/Sales
- How much must investor pay for one unit of sales

Good and bad securities according to P/BV ratio

Overestimate stock *Wrong estimate* ❖Low level of ROE ❖High value of P/BV ratio	**Correctly estimate stock** *With low profit potential, with problems* ❖Low level of ROE ❖Low value of P/BV ratio
Correctly estimate stock *With high profit potential* ❖High level of ROE ❖High value of P/BV ratio	**Underestimate stock** *Wrong estimate* ❖High level of ROE ❖Low value of P/BV ratio

Good and bad securities according to P/S ratio

Overestimate stock *Wrong estimate* ❖Low profit margin ❖High value of P/S ratio	**Correctly estimate stock** *With low profit potential, with problems* ❖Low profit margin ❖Low value of P/S ratio
Correctly estimate stock *With high profit potential* ❖High profit margin ❖High value of P/S ratio	**Underestimate stock** *Wrong estimate* ❖High profit margin ❖Low value of P/S ratio

Thank you for your attention