1st Workshop – April 15th
- “Overview of the Financial System”, Almir Mirica, executive director SASE
- “The Role of Privatization in the development of the capital market”, Dr. Matej Živković, Securities Commission FBiH

2nd Workshop – May 13th
- “Sarajevo Stock Exchange – An Overview”, Dr. Tarik Kurbegović, CEO SASE
- “Trading on the Sarajevo Stock Exchange”, Almir Mirica, executive director SASE
- “Introduction to Valuation”, Feđa Krivošić, SASE

3rd Workshop – May 27th
- “Regulation of the Financial System”, Dr. Matej Živković, Securities Commission of FBiH
- “Corporate Governance, Reporting & Disclosure”, Almir Mirica, executive director SASE
- “Municipal Bonds”, Feđa Krivošić, SASE
Introduction to Valuation
Types and reasons for valuation
Discounted Cash Flow method
Relative Value
Technical Analysis
Fundamental Analysis
In Finance, valuation is the process of estimating what is something worth

Valuations can be done on Assets (such as stocks, options, warrants, business enterprises) or on liabilities (bonds issued by a company)

Market forces determine the price of an asset or a liability (supply and demand of a specific stock, option, warrant)

Various Tools for Valuation (Price/Earning Ratios, Comparable Company Analysis (CCA))
Valuations are used for various reasons:

- Investment Analysis
- Mergers and Acquisitions
- Capital Budgeting
- Financial Reporting
- Taxable Events
- Litigation
Types of Valuations

- **Absolute Value Models** – Discounted Cash Flow model relies on mathematics rather than the price observation to predict multi-period cash flow.

- **Relative Value Models** – determine value based on the observation of market prices based on similar assets.

- **Technical Analysis** – forecasting method using past market data, primarily looking at price and volume.

- **Fundamental Analysis** – involves analyzing its financial statements and health, its management and competitive advantages, and its competitors and markets.

- **Option Pricing Models** – used for certain types of financial assets (warrants, options, callable bonds or any type of instrument with an embedded options). The most common option pricing model is Black-Scholes-Merton.
Discounted Cash Flow (DCF) analysis is a method of valuing a project, company, or asset using the concepts of the time value of money. All future cash flows are estimated and discounted to give their present values (PVs)—the sum of all future cash flows, both incoming and outgoing, is the net present value (NPV), which is taken as the value or price of the cash flows in question.

Discounted cash flow calculations have been used in some form since money was first lent at interest in ancient times. As a method of asset valuation it has often been opposed to accounting book value, which is based on the amount paid for the asset. Following the stock market crash of 1929, discounted cash flow analysis gained popularity as a valuation method for stocks. Irving Fisher in his 1930 book *The Theory of Interest* and John Burr Williams's 1938 text *The Theory of Investment Value* first formally expressed the DCF method in modern economic terms.

Discounted cash flow analysis is widely used in investment finance, real estate development, and corporate financial management.
Discounted Cash Flow Formula

The discounted cash flow formula is derived from the future value formula for calculating the time value of money and compounding returns.

\[ DCF = \frac{CF_1}{(1 + r)^1} + \frac{CF_2}{(1 + r)^2} + \cdots + \frac{CF_n}{(1 + r)^n} \]

\[ FV = DCF \cdot (1 + i)^n \]

Thus the discounted present value (for one cash flow in one future period) is expressed as:

\[ DPV = \frac{FV}{(1 + i)^n} = FV(1 + d)^{-n} \]

Where:
- \( DPV \) is the discounted present value of the future cash flow \((FV)\), or \( FV \) adjusted for the delay in receipt;
- \( FV \) The discounted cash flow formula is derived from the future value formula for calculating the time value of money and compounding returns.
- Thus the discounted present value (for one cash flow in one future period) is expressed as:
where
- \( DPV \) is the discounted present value of the future cash flow \((FV)\), or \( FV \) adjusted for the delay in receipt;
- \( FV \) is the nominal value of a cash flow amount in a future period;
- \( i \) is the interest rate, which reflects the cost of tying up capital and may also allow for the risk that the payment may not be received in full;
- \( d \) is the discount rate, which is \( \frac{i}{1+i} \), i.e., the interest rate expressed as a deduction at the beginning of the year instead of an addition at the end of the year;
- \( n \) is the time in years before the future cash flow occurs.

Where multiple cash flows in multiple time periods are discounted, it is necessary to sum them as follows:
for each future cash flow \((FV)\) at any time period \((t)\) in years from the present time, summed over all time periods. The sum can then be used as a net present value figure. If the amount to be paid at time 0 (now) for all the future cash flows is known, then that amount can be substituted for \( DPV \) and the equation can be solved for \( i \), that is the internal rate of return.

All the above assumes that the interest rate remains constant throughout the whole period.
Discounted Cash Flow Example

To show how discounted cash flow analysis is performed, consider the following simplified example.

John Doe buys a house for $100,000. Three years later, he expects to be able to sell this house for $150,000. Simple subtraction suggests that the value of his profit on such a transaction would be $150,000 − $100,000 = $50,000, or 50%. If that $50,000 is amortized over the three years, his implied annual return (known as the internal rate of return) would be about 14.5%. Looking at those figures, he might be justified in thinking that the purchase looked like a good idea.

\[1.145^3 \times 100000 = 150000\] approximately.

However, since three years have passed between the purchase and the sale, any cash flow from the sale must be discounted accordingly. At the time John Doe buys the house, the 3-year US Treasury Note rate is 5% per annum. Treasury Notes are generally considered to be inherently less risky than real estate, since the value of the Note is guaranteed by the US Government and there is a liquid market for the purchase and sale of T-Notes. If he hadn't put his money into buying the house, he could have invested it in the relatively safe T-Notes instead. This 5% per annum can therefore be regarded as the risk-free interest rate for the relevant period (3 years).

Using the DPV formula above (FV=$150,000, i=0.05, n=3), that means that the value of $150,000 received in three years actually has a present value of $129,576 (rounded off). In other words we would need to invest $129,576 in a T-Bond now to get $150,000 in 3 years almost risk free. This is a quantitative way of showing that money in the future is not as valuable as money in the present ($150,000 in 3 years isn't worth the same as $150,000 now; it is worth $129,576 now).

Subtracting the purchase price of the house ($100,000) from the present value results in the net present value of the whole transaction, which would be $29,576 or a little more than 29% of the purchase price.

Another way of looking at the deal as the excess return achieved (over the risk-free rate) is (114.5 - 105)/(100 + 5) or approximately 9.0% (still very respectable).

But what about risk?

We assume that the $150,000 is John's best estimate of the sale price that he will be able to achieve in 3 years time (after deducting all expenses, of course). There is of course a lot of uncertainty about house prices, and the outcome may end up higher or lower than this estimate. (The house John is buying is in a "good neighborhood," but market values have been rising quite a lot lately and the real estate market analysts in the media are talking about a slow-down and higher interest rates. There is a probability that John might not be able to get the full $150,000 he is expecting in three years due to a slowing of price appreciation, or that loss of liquidity in the real estate market might make it very hard for him to sell at all.)
Hedge funds engage principally in arbitrage strategies in the global equity and corporate debt markets by taking advantage of mispricings between two related and often correlated securities. Typical arbitrage strategies include: fixed income arbitrage, convertible bond arbitrage, statistical arbitrage, and derivative arbitrage.

In Mergers and Acquisitions traders will buy the target company stock and simultaneously short the acquiring company stock. The purchase is motivated by the fact that after announcement of a pending acquisition, the target company share price typically trades at a lower price in the market compared to the price reflected by the exchange ratio that will apply at the time of closing.
Relative Value Method

Relative Price of Housing, Oil, Gold and Stocks since 1940 baseline is 6.06% (what is Value?)

- House
- Stocks
- Rents
- Gold
- Crude
- House trend
- Stocks trend
- Rents trend

International Burch University, May 27th, 2013
Technical analysis is a security analysis method for forecasting the direction through the study of past market data, primarily using price and volume.

The principles of Technical Analysis are derived from hundreds of years of financial data. They started with Japanese rice traders who created candelstick patterns.

Technicians use chart search for important patterns, such as head and shoulders or double top/bottom reversal patterns, moving averages, lines of resistance, support, channels,

A fundamental principle of technical analysis is that a market's price reflects all relevant information, so their analysis looks at the history of a security's trading pattern rather than external drivers such as economic, fundamental and news events. Therefore, price action would also tend to repeat itself due many investors collectively tend toward patterned behavior – hence technicians' focus on identifiable trends and conditions.
Example of Technical Analysis

L2 = 113.50
L1 = 109.00
Fundamental Analysis

- Fundamental analysis of a business involves analyzing its financial statements and health, its management and competitive advantages, and its competitors and markets. When applied to futures and forex, it focuses on the overall state of the economy, interest rates, production, earnings, and management. When analyzing a stock, futures contract, or currency using fundamental analysis there are two basic approaches one can use; bottom up analysis and top down analysis.

- Fundamental analysis maintains that markets may misprice a security in the short run but that the "correct" price will eventually be reached. Profits can be made by purchasing the mispriced security and then waiting for the market to recognize its "mistake" and reprice the security.

Fundamental analysis includes:

- Economic analysis
- Industry analysis
- Company analysis

On the basis of these three analyses the intrinsic value of the shares are determined. This is considered as the true value of the share. If the intrinsic value is higher than the market price it is recommended to buy the share. If it is equal to market price hold the share and if it is less than the market price sell the shares.
- The analysis of a business’ health starts with financial statement analysis that includes ratios. It looks at dividends paid, operating cash flow, new equity issues and capital financing. The earnings estimates and growth rate projections published widely by market data vendors and others can be considered either 'fundamental' (they are facts) or 'technical' (they are investor sentiment) based on your perception of their validity.

- The determined growth rates (of income and cash) and risk levels (to determine the discount rate) are used in various valuation models. The foremost is the discounted cash flow model, which calculates the present value of the future dividends received by the investor, along with the eventual sale price. The amount of debt is also a major consideration in determining a company’s health. It can be quickly assessed using the debt-to-equity ratio and the *current ratio* (current assets/current liabilities).

- The simple model commonly used is the Price/Earnings ratio. Implicit in this model of a perpetual annuity (Time value of money) is that the 'flip' of the P/E is the discount rate appropriate to the risk of the business.

- Computer modelling of stock prices has now replaced much of the subjective interpretation of fundamental data (along with technical data) in the industry. Since about year 2000, with the power of computers to crunch vast quantities of data, a new career has been invented. At some funds (called Quant Funds) the manager’s decisions have been replaced by proprietary mathematical models.
Long-Term Capital Management L.P. (LTCM) was a hedge fund management firm based in Greenwich, Connecticut that utilized absolute-return trading strategies combined with high financial leverage. The firm’s master hedge fund, Long-Term Capital Portfolio L.P., collapsed in the late 1990s, leading to an agreement on September 23, 1998 among 14 financial institutions for a $3.6 billion recapitalization (bailout) under the supervision of the Federal Reserve.

LTCM was founded in 1994 by John W. Meriwether, the former vice-chairman and head of bond trading at Salomon Brothers. Members of LTCM’s board of directors included Myron S. Scholes and Robert C. Merton, who shared the 1997 Nobel Memorial Prize in Economic Sciences for a "new method to determine the value of derivatives". Initially successful with annualized returns of over 40% (after fees) in its first years, in 1998 it lost $4.6 billion in less than four months following the Russian financial crisis requiring financial intervention by the Federal Reserve, with the fund liquidating and dissolving in early 2000.
THANK YOU FOR YOUR ATTENTION!