

## Course: Company Valuation Methods

**Field of study:** Finance and Accounting

**Form of classes and number of hours:** lecture and project 75 h

**Number of ECTS credits:** 5

### Learning outcomes:

#### Knowledge:

- Student knows and understands the concept of the enterprise value as well as knows about the objectives and functions of the company's valuation.
- Student knows different valuation methods and understands their meaning as well as recognises their differences.
- Student knows the concept of a real option.
- Student knows about the internal and external value drivers.

#### Skills:

- Student is able to estimate the value of a company using various methods.
- Student can develop a fundamental and strategic analysis of a company.
- Student can use the results of the fundamental analysis to forecast business operations and prepare pro forma financial statements.
- Student is able to assess whether the value of a company is increasing or deteriorating by using the EVA.

#### Social competences:

- Student understands the objectives of the business activity in a market economy and the need to reconcile the interests of various groups of stakeholders.
- Student understands the meaning of cooperation in a group.
- Student recognises the need to use the IT tools.
- Student understands the sense and need to manage the value of a company.

### Evaluation methods of learning outcomes:

Observation, conversation, exam, presentation of the valuation of a selected company, assessment of the case study prepared by a student.

### List of course topics:

#### Lecture:

1. Introduction – objectives of company management.
2. Concept of value.
3. Concept of enterprise value: market, economic, asset value.
4. Objectives and functions of the valuation. Determination of the minimum and maximum price.
5. Classification of valuation methods.
6. Book value methods.
7. Income methods of valuation – estimating cash flows, the discount rate, the residual value.
8. Methods of company valuation – mixed.

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9. Market methods – relative valuation.
10. Estimating the value added – EVA, MVA.
11. Value drivers.
12. Impact of capital structure on value – capital structure models.
13. Company value management.

### **Project:**

Preparation of the project: valuation of a selected company.

1. Company valuation objectives.
2. Presentation of selected companies for valuation via the DCF method.
3. Fundamental analysis of selected companies.
4. Strategic analysis of selected companies.
5. Financial analysis of selected companies for the purpose of valuation.
6. Development of a plan for the future operation of selected companies.
7. Preparation and analysis of pro forma financial statements.
8. Forecasting the cash flow for selected companies, analysing scenarios.
9. Analysis of assumptions for calculating residual value.
10. Cost of capital forecasting.
11. Calculation of the value of selected companies using the DCF method.
12. Company valuation using the balance sheet method.
13. Comparative analysis of results.

### **Sources**

- [1] Bennet Stewart G., *The Quest for Value*. Stern Stewart & Co, 1991.
- [2] Copeland T., Koller T., Murrier J., *Valuation. Measuring and Managing the Value of Companies*. Mc Kinsey and Company, 1995.

### **Internet sources**

- [3] *Business Valuation: Using Financial Analysis to Measure a Company's Value*; Guy Parmentier and Bart Cuyper.
- [4] Schmidlin N., *The Art of Company Valuation and Financial Statement Analysis: A Value Investor's Guide with Real-life Case Studies*.
- [5] *Valuation Workbook: Step-by-Step Exercises and Tests to Help You Master Valuation*, McKinsey & Company Inc.

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## **1. Introduction**

The concept of value is characterised by ambiguity – it has many meanings resulting from various, often extensive, theories. In free economy, a company is a kind of good and for this reason has to be subordinate to all rules and mechanisms of markets regulations. For this reason, there are useful and exchanging values that need to be considered. The basic economic parameter of which is the price of a good, that is, the monetary expression of its value.

The value of an enterprise is determined on the basis of the subjective (financial and non-financial) benefits that its owner will achieve. Its value is determined to a large extent by subjective factors. The subjectivism of values results from the ideals, preferences and aspirations of people.

The main objective of a company is to increase its value. To achieve this, it needs to conduct its business activity in a manner that creates opportunities for its long-term functioning and development. As a result of fulfilling the objective, the investors view it in a better light, thus making it easier for a company to obtain funds.

There are many definitions of the value of a company and several ways to valuate an enterprise under consideration in terms of its economic value, market value, asset value, etc. The meaning of value of an enterprise depends on the subject of consideration.

The most common subjects of the company valuation are:

- related to changes in the ownership structure,
- other – resulting from conducting business activity.

The provided scenario presents the basic theoretical information concerning the methods of company valuation and examples illustrating them.

## **2. Methods of company valuation**

In economic theory, the following concepts of value exist:

- utility value,
- exchange value,
- price of a good,
- natural value.

The basic economic parameter is the price of a good, that is, the monetary expression of its value.

The central value is a distinctive, natural value for every good towards which the prices of all goods shift in an effective market.

The traditional enterprise valuation methods seek the value of ‘objective’ benefits, regardless of who owns an enterprise.

These are based on the income or value of the property. Hence, the following are considered:

- economic value
- market value,
- asset value
- book value,
- reproduction value,
- replacement value,
- liquidation value,
- market capitalisation value,
- real option value.

### 3. DCF Method

The economic value of a company is evaluated through the use of the DCF method, which is considered as the most comprehensive and complex method of enterprise valuation. It is basically a separate, coherent theory – the philosophy of understanding values along with the formulated method of their measurement. The most significant drawback is its subjective character resulting from the need to forecast most of the parameters on the basis of which the value of an enterprise is being estimated. This method requires one to take into consideration factors that will affect a company undergoing observation by conducting macroeconomic analysis, strategic analysis, financial analysis, cash flow forecasting, capital cost evaluation, equity valuation calculation, comparison of results, and finally draw conclusions regarding company business valuation.

The DCF method has its roots in the discount methods of assessing the profitability of investments, which, in contrast to traditional methods, assumes the volatility of the value of money over time, while, for example, the book value method is based on the historical costs of their acquisition.

#### 3.1. Steps of the DCF method:

- describe a company in terms of its offer, assets, the size of its capital, the number of ordinary shares, markets, etc.,
- define the objective of company valuation,
- conduct a fundamental analysis,
- conduct a strategic analysis,
- conduct a financial analysis,
- prepare a CF forecast,
- prepare a capital cost evaluation,
- calculate the EV using the DCF method,
- draw conclusions.

#### 3.2. Fundamental analysis

The fundamental analysis covers a very diverse and extensive range of issues which have a direct or indirect impact on the market situation and development prospects of a company undergoing examination.

The individual basic stages of the fundamental analysis that can be distinguished include the analysis of the following aspects of the company's operations:

1. macroeconomic environment,
2. industry environment,
3. strategic situation of a company,
4. company's financial standing, and
5. company valuation.

Macroeconomics is the study of the behaviour of the economy as a whole, the focus of which is on the general economic factors that could help an analyst to forecast economic conditions in order to aid consumers, firms, and governments in making better decisions – in which for this reason it is really beneficial to perform the valuation of a company.

The analysis of an industry covers two aspects of its characteristics:

- a strategic analysis in which the conditions for running a business by enterprises are identified, and
- market analysis – the changes of quotations of shares of companies are a part of a given industry on the stock exchange.

Enterprises meet in the area of their business activities. When analysing these conditions, it is necessary to assess the company's competitive position and its determinants, potential for development and operational risk, to which a company is exposed due to its participation in a given industry.

Strategic industry analysis should emphasise – apart from isolated elements resulting directly from the characteristics of a sector – the following basic elements:

- market size,
- competition structure,
- technologies and related market entry barriers,
- factors determining competitive advantage,
- supplier structure,
- customer structure,
- legal environment,
- political environment,
- industry environment.

The analysis of these areas is a starting point for further analysis of the individual characteristics of a selected industry, in the case of which any attempts to generalise it could unnecessarily stiffen and narrow the analytical apparatus as it is impossible to take into account in advance in a general form all the circumstances that may occur in a given sector and the significant impact on the activities of the entities operating there.

Correct identification of the general market model that we deal with in the analysed industry may be helpful in the subsequent assessment of the competitive situation and assessment of enterprises' ability to react to market phenomena.

### **3.3. Analysis of the company's strategic situation**

The fundamental issue that appears when assessing the company's strategy is to provide an answer to the question of whether the adopted company's strategy will contribute to the creation of value for its shareholders. Providing an answer to this question requires identifying the general model of competitive strategy that a company has adopted. According to Porter's theory, there are three main models that determine the company's approach to its business activity:

- Low cost strategy – a company with this strategy strives to produce at the lowest cost to become an industry leader.
- Product differentiation strategy – according to this strategy, the company's objective is to be viewed as unique by its consumers. The possibilities of product differentiation depend on the specifics of the industry.
- Market niche strategy – it consists in focusing the efforts of a company on a specific group of recipients, a specific group of products or a geographically defined market.

It is necessary to assess not only which of the strategies is appropriate, but also above all, whether it is applied correctly, what its results are and whether it will be possible to implement it further in the future. It should be assessed whether the strategy is verified over time and whether it is adapted to the changing environment – especially the industrial one.

One element that requires more in-depth consideration when analysing the company's strategy is the identification of its distinctive competence. In this sense, a selected strategy should define the areas in which a company has special competences, giving it an advantage over its competitors. Thus, it is an area of activity in which the company has exceptional skills.

There are five internal areas the action strategies of which need to be defined. Those are:

- Marketing strategy – it deals with issues such as the promotion and advertising techniques that will be applied, pricing, production structure and the overall image of a company.
- Financial strategy – it defines the organisation's capital structure, debt policy, asset management procedures, and dividend policy.
- Production strategy – it refers to such problems as the quality of manufactured products, production efficiency, applied technologies and standards.
- Human resource strategy – it deals with issues related to remuneration, personnel selection, performance appraisal, promotion policy, and shaping the work environment.
- Research and development strategy – it focuses on the problems of product development and applied technologies, technology licensing policy, and pro-innovation activities carried out by a company.

The analysis of the strategy at the level of all of the above-mentioned areas provides extensive information on the company's approach to business – both market-oriented and related to the processes taking place inside the organisation. Such analysis can also serve as the means of identifying the general philosophy of a company, the value system it is guided by, which allows for better understanding of its activities and making predictions about the company's future actions more credible.

A very synthetic, broad and flexible method of examining the strategic position of an enterprise is the SWOT analysis, which focuses on identifying its strengths and weaknesses as well as the opportunities and threats it faces (its name is an abbreviation of English words: Strengths, Weaknesses, Opportunities, Threats). The first two elements are defined as follows:

- Strengths are resources that are fully or partially controlled by an organisation that distinguish it in a positive way in its environment and among its competitors.
- Weaknesses are those aspects of the organization's functioning that limit its efficiency and may block its future development.

Both strengths and weaknesses can be material or immaterial. Two further stages of the SWOT analysis are prognostic and their analysis requires a great understanding of the nature of the organization's activities and its environment in order to be able to reliably identify emerging opportunities and threats. These are defined as follows:

- Opportunities are possible future events that an organisation can use to gain benefits.
- Threats are possible events that could have an adverse effect on the company's operations.

The classic list of opportunities and threats usually concerns five areas of the organization, which are:

- area of general political, economic, and social change,
- area of market changes,
- area of design, technological, and material changes,
- area of competitive and cooperating organisations,
- area of internal activities of an organisation.

The results of the SWOT analysis are often used for the purposes of forming and modifying corporate strategies.

In the case of the fundamental analysis, the results of SWOT analysis serve as a diagnostic tool, which then can be used for comparison with the strategy actually adopted and implemented by a

company, which will help to reveal if said company is effectively responding to signals appearing within its organisation and environment.

### **3.4. Financial analysis**

Financial reports and other information produced and provided by the accounting and finance departments of a firm are the basis of the analysis and conclusions for all stakeholders. One of the most popular financial analysis is the one that usually consists of two basic analyses:

- initial analysis,
- ratio analysis.

The initial analysis, also referred to as balance sheet analysis, covers the balance sheet analysis and preliminary income statement analysis. It provides information on the structure of assets, debt, capital, and the resulting situation.

Usually, there are four areas of the ratio analysis, corresponding to various problems of the company's operations. These include:

- financial liquidity – it shows the company's ability to meet short-term obligations, i.e. those whose payment terms do not exceed one year
- business activity – it consists in analysing the efficiency of the company's operation
- profitability of sale – it is the commercial profitability calculated on the basis of sales volume data,
- profitability of capital – it is the economic profitability regarding the entire property of an entity, the financial profitability related to the employed equity.
- indebtedness – focuses on two issues – the first is the company's debt level and the second is the company's debt service capacity.

The initial analysis and ratio analysis are two fast and effective research methods that focus on the issues of the functioning of an enterprise and its business activity. However, when using ratio analysis to evaluate a company, one needs to remember that it is based solely on economic data from the company's past and, at best, it describes the current state of a company, not its future. At the very least, it can be the basis for developing the trends of changes taking place in a company.

### **3.5. Enterprise value calculation**

In order to perform the DCF valuation of an enterprise, the following should be specified:

- time horizon covered by the valuation,
- level of future cash flows that can be achieved by an entity, which are based on the construction of the so-called free cash flow FCF, in the case of the FCF projection,
- discount rate based on the projected level of the cost of capital financing the company's operations, which reflects the expected rate of return on capital employed in the business entity, in the case of my project, the discount rate will be the cost of equity,
- final (residual) value after the detailed forecast period.

The basis for the valuation of a company using the DCF method is to prepare a cash flow forecast, which consists in making a skillful forecast of the company's basic financial statements, i.e. its balance sheet, profit and loss account, and statement of cash flows.

The enterprise value (EV; sometimes referred to as the market enterprise value – MEV) is defined as the sum of present value of the future free cash flow.

$$\begin{aligned}
EV &= \sum_{t=1}^{\infty} \frac{FCF_t}{(1+r)^t} = \frac{FCF_1}{(1+r)^1} + \frac{FCF_2}{(1+r)^2} + \dots + \frac{FCF_n}{(1+r)^n} + \sum_{t=n+1}^{\infty} \frac{FCF_t}{(1+r)^t} = \\
&= \frac{FCF_1}{(1+r)^1} + \frac{FCF_2}{(1+r)^2} + \dots + \frac{FCF_n}{(1+r)^n} + \sum_{s=1}^{\infty} \frac{FCF_{n+s}}{(1+r)^{n+s}} = \\
&= \frac{FCF_1}{(1+r)^1} + \frac{FCF_2}{(1+r)^2} + \dots + \frac{FCF_n}{(1+r)^n} + \sum_{s=1}^{\infty} \frac{FCF_{n+s}}{(1+r)^n(1+r)^s} = \\
&= \sum_{t=1}^n \frac{FCF_t}{(1+r)^t} + RV
\end{aligned}$$

Where:

$EV$  – equity value (enterprise value),

$RV$  – residual value,

$FCF_t$  – free cash flow in period  $t$ ,

$r$  – discount rate (cost of capital),

$n$  – number of years covered by the period of the detailed forecast,

$t$  – consecutive year number, from 1 to infinity.

One of the most difficult and, at the same time, the most important aspects of enterprise valuation using the cash flow approach is the correct forecasting of the basic economic values relating to an enterprise undergoing valuation. For this purpose, it is necessary to perform a macro and microeconomic analysis as well as a financial analysis of an enterprise in advance.

The forecasting process, also known as prediction, is a subject of statistics. The process of inferring about the future sizes of random variables at a specific future point in time (period) when the output quantity is unknown. A regression function can be used for this purpose. In practice, the linear regression is the most popular.

These forecasts should be based on rational development assumptions and preceded by economic and financial analyses of the past results of an enterprise undergoing valuation. The SWOT analysis can be a helpful tool for identifying and classifying business opportunities and threats.

The problem of the time horizon of the forecast period (from now to infinity) has been partially solved by dividing the time of the forecast into two periods, namely: the period of detailed forecast and the later period.

Company value = current value of cash flows in the period of the detailed forecast + current value of cash flows after the period of detailed forecast

The selection of the length of the detailed forecast period (2-5 years) should be determined by two basic factors:

1. The length of the period in which an analyst performing the valuation is able to reasonably estimate individual items in the financial statements of a company undergoing valuation. The ‘reasonable estimation’ should be understood as one that can be justified by convincing

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arguments. The knowledge of said analyst as well as the availability of relevant data and information are of decisive importance in this case.

2. The specificity of a company undergoing valuation and its current economic situation. The main focus is the cyclical nature of a given industry – one should strive to include a detailed forecast of the full cycle of activity.

### **3.6. Cost of capital**

When discounting cash flows, it is necessary to determine the appropriate cost of capital for them, fulfilling the role of the discount rate. If the cash flows belonging to all FCFF financing parties are discounted, this will be the weighted average cost of capital (WACC). However, in the case of the DCF method in the direct variant for the owners discounting the FCFE, the role of the discount rate meets the cost of equity ( $k_e$ ).

The weighted average cost of capital:

$$WACC = k_d(1-T)\left(\frac{D}{E+D}\right) + k_e\left(\frac{E}{E+D}\right)$$

Where:

$WACC$  – weighted average cost of capital,

$k_d$  – cost of debt before tax,

$T$  – income tax rate,

$k_d(1-T)$  – cost of debt after tax,

$E$  – value of equity,

$D$  – value of debt,

$E + D$  – value of total capital (equity + debt),

$k_e$  – cost of equity.

The cost of equity can be estimated in many ways:

1. CAPM (capital asset pricing model):

$$k_e = r_f + \beta(r_m - r_f),$$

Where:

$k_e$  – cost of equity capital,

$r_f$  – rate of return on risk-free securities,

$\beta$  – systematic risk ratio for a given company,

$r_m$  – market portfolio return rate,

$(r_m - r_f)$  – market risk premium.

2. Assuming a constant increase in net profit (Gordon's model)

$$k_e = D_0(1+g)/P_0 + g$$

Where:

$D_0$  – dividend paid,

$P_0$  – share price,

$g$  – assumed dividend increase.

3. Industry ROE can also be adopted

### 3.7. Residual value

Therefore, the residual value is estimated on the basis of simplified assumptions regarding the company's results – most often by assuming a constant growth dynamics – during the continuation period.

Despite the adoption of high quality simplified assumptions, the estimate of the residual value is indispensable because it often constitutes a large share in the total value of an enterprise.

The most common method of residual value estimation is the use of the Gordon's model assuming that there is the constant cash flow growth model in an infinitely long period and that the company growth  $g$  is less than cost of capital  $r$ . For example for  $r = \text{WACC}$

$$RV = RV^* \left( \frac{1}{1 + \text{WACC}} \right)^n$$

$$RV^* = \frac{FCFF_{n+1}}{\text{WACC} - g}$$

Where:

$RV$  – residual value,

$FCFF_{n+1}$  – normalised level of cash flows in the first year after the detailed forecast period,

$r$  – cost of equity capital,

$g$  – expected rate of increase in cash flows over an infinite period.

#### Note:

The Gordon's formula is as such due to the fact that the infinite sum of the convergent geometric sequence is finite.

### 4. Comparative (market) methods

The basis of the comparative method is the assumption that similar assets have a similar market value. Therefore, if one wants to value a given asset using this method, it is necessary find the same one or a similar one, whose value was determined via a purchase-sale transaction concluded on the market.

In the case of specific entities such as enterprises, the following markets are the source of this information:

- original capital market, which informs about the prices paid for shares of companies as part of placing new issues,
- secondary capital market, which provides information about prices paid for shares of public companies on the stock exchange or the regulated OTC market,
- control market, which is the source of information about share prices or shares acquired as part of mergers and acquisitions.

Based on this assumption, the value of a company is determined in the case of the comparative methods by using the following formula:

$$EV = P_{ew} \cdot M_r = P_{ew} \cdot \frac{C}{P_{ep}}$$

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Where:

$EV$  – company value,

$P_{ew}$  – appropriate economic parameter of a company being valued,

$M_r$  – market multiplier – market price referred to the relevant parameter of comparable public companies,

$C$  – market price of comparable public companies,

$P_{ep}$  – appropriate parameter for comparable public companies.

The most commonly used parameters during the valuation of enterprises with the use of the comparative method are:

- net profit,
- book value,
- revenues,
- pre-tax and interest (EBIT – earnings before income and taxes),
- profit before tax, interest and depreciation (EBITDA – earnings before depreciation, income, and taxes).

Market multipliers from comparative methods are most often the indicators given by listed companies publicly:

- price/earnings ratio ( $P/E$  – price/earnings ratio),
- price/book value indicator ( $P/BV$  – price/book value),
- $P/EBIT$ ,
- $P/EBITDA$ , etc.

The multiplier should be based on a parameter that is as strongly correlated with the market value of companies in a given industry.

Valuation with market multiples is relatively simple and easy compared to other valuation methods of enterprises (especially when it comes to the labour-intensive DCF method), which makes it very popular, almost universal. By far the most commonly used version is the net profit multiplier ( $P / E$ ).

$$EV = NP \cdot (P / E)_m$$

Where:

$NP$  – net profit of an enterprise undergoing valuation,

$P/E_m$  – price to earning ratio of a comparative company present on the stock exchange.

## **5. Asset based methods**

There are four asset based methods:

- net asset value method,
- method of the value of adjusted net assets,
- replacement value method,
- liquidation value method.

The methods are based on the material and immaterial company assets. The balance sheet of a company is the source of information for the company value estimation.

Example of the application of the book value method (the net asset value method)

Assets	[PLN]	E+L	[PLN]
Fixed assets		Equity capital	
Gross fixed assets	25 000	<i>capital</i>	18 000
<i>depreciation</i>	200	<i>retained earning</i>	2 520
Net fixed assets	24 800		
Current assets	7 460	Credit	10 000
<i>inventory</i>	1 000		
<i>receivable</i>	0	Liabilities	1 740
Total assets	32 260	Total	32 260

$$EV = PLN\ 32\ 260 - PLN\ 11\ 740 = PLN$$

The liquidation value method, also known as the liquidation method, allows a company to estimate its liquidation value (the liquidation value or the lock-up value), which is defined as the total revenue that can be obtained from the sale of individual company assets in the event of liquidation at a given time.

This value is then reduced by the liquidation costs and the value of the company's liabilities.

## 6. Mixed methods

The valuation methods used result in different values. The value of an enterprise depends on its assets and how effectively they are used. Thus, it can be concluded that:

$$EV = V_A + \text{goodwill}$$

Where:

$EV$  – company value,

$V_A$  – value of the company's net assets.

The company's goodwill is calculated as a function of asset and income methods.

Depending on the form of this function, two groups of methods can be distinguished within the scope of the property methods:

- average value methods (Schmalenbach's method, Swiss method),
- methods with additional profit as the source of goodwill.

For example, for ( $W_D > W_M$ ):

$$EV = W_M + \frac{W_D - W_M}{2} = \frac{W_M + W_D}{2}$$

Where:

$EV$  – company value,

$WM$  – value of the net assets of an enterprise,

$WD$  – enterprise's income value calculated on the basis of a perpetual rent.

In order to apply this Schmalenbach's method, there needs to be a higher value of the company's income than the value of its property, which is a feature shared by good enterprises.

In the case of weak enterprises whose income value is lower than the asset value, this method requires the following:

1. valuation of the enterprise using the income method, if its financial result is positive,

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2. valuation of the company using the liquidation method (hence the application of one of the property methods), if the financial result is negative.

When the asset value is equal to the income value, the company's goodwill simply does not exist and the value of an enterprise is reduced only to the value of its property.

In methods with additional profit, the existence of the goodwill is a condition for the existence of the additional profit.

The additional profit is the surplus of the financial result actually realised by a company over the financial result, which would have been achieved assuming a return on equity (ROE) equal to the cost of the company's capital (its interest rate).

The value of an enterprise is therefore determined in the case of this approach with the following formula:

$$EV = W_M + n \cdot Z_D$$

Where:

$EV$  – company value,

$WM$  – value of the net assets of the enterprise,

$n$  – number of years of occurrence of additional profit in the future,

$Z_D$  – value of the predicted additional profit.

This method expresses the goodwill value of a company as the  $n$ -fold of the projected additional profit of  $Z_D$ , whereby the possibility of the loss of additional profit is determined by limiting the value of  $n$  to the range from 3 to 5 years.

## **7. Measuring changes in the company's market value**

An enterprise creates surplus value over the face value of the capital invested in it. It is capable of creating additional value if the profitability of capital is greater than its cost.

### **7.1. EVA – economic value added**

The market value of debt capital is usually close to its nominal (book) value, therefore maximising the value of an enterprise, e.g. a joint-stock company, means maximising the value of capital employed by its shareholders.

After the principal installments and interest on the debt have been paid, the surplus cash flows remain at the disposal of the shareholders.

The higher they are, the higher the potential benefits for shareholders (an increase in dividends, an increase in the company share prices).

EVA (economic value added) is a measure of the company's ability to create an additional value. It is used interchangeably with the terms: economic added value, pure economic profit, true economic profit.

$$EVA_t = (ROIC_t - WACC_t) \cdot K_{t-1}$$

Where:

$ROIC_t$  – rate of return on capital generated in a given period,

$WACC_t$  – weighted average cost of capital in  $t$  period of time,

$K_{t-1}$  – value of capital invested in fixed assets and net working capital at the beginning of the period of time.

The EVA is an internal measure. It measures the effectiveness of a company using the capital entrusted to it. It determines the difference between the operating profit after taxation generated by an enterprise and the total cost of its capital (its equity and debt capital) calculated on an annual basis:

$$EVA_t = EBIT_t(1-T) - WACC_t \cdot K_{t-1}$$

Where:

$EBIT_t$  – operating profit in period  $t$ ,

$T$  – income tax rate

## 7.2. MVA – market value added

The market value added (MVA) is the surplus of the market value of an enterprise ( $V$ ) over the value of capital invested in it ( $IC$ ):

$$MVA = V - IC$$

The MVA is the difference between the value of cash that would be obtained by shareholders by withdrawing all their capital and the amount previously invested by them in an enterprise (in the form of share purchases and reinvestment of profits).

The MVA is a measure of the value of all economic surpluses expected by investors in the future.

$$MVA_{t_0} = \sum_{t=1}^{\infty} \frac{EVA_t}{(1+WACC)^t}$$

The MVA values show whether the company generated additional economic value ( $MVA > 0$ ) or a loss ( $MVA < 0$ ) in the period of interest.

The MVA measures the additional value generated by a company over its life.

On the other hand, the EVA indicates whether a company created or consumed its value in a single period.

## 8. Advantages and disadvantages of the methods

The valuation methods are based on various assumptions. Their application depends on the purposes of the valuation and the availability of information.

Each method has its advantages and disadvantages.

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### DCF method

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>– takes into account the possibility for the property to generate income,</li> <li>– makes it possible to identify redundant assets,</li> <li>– focuses on the future. It takes into account future income, time, risk, and the impact of the capital structure.</li> </ul>	<ul style="list-style-type: none"> <li>– complexity;</li> <li>– it requires one to forecast many variables (cost of capital, income, risk, etc.),</li> <li>– subjectivity of estimates.</li> </ul>

### Comparative methods

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>– simplicity,</li> <li>– speed of the valuation,</li> <li>– suitable for the valuation of small, simple companies: pharmacies, bakeries.</li> </ul>	<ul style="list-style-type: none"> <li>– results depend on the current value of indicators affected by the stock market,</li> <li>– difficulties in finding comparable companies.</li> </ul>

### Asset based methods

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>– easy valuation of the material substance of an enterprise,</li> <li>– they provide relatively simple and unambiguous results due to the strict formalisation of the procedure of their application and the possibility of precise documentation.</li> </ul>	<ul style="list-style-type: none"> <li>– they do not take into account intangible elements that affect the value of an enterprise, e.g. its market position, distribution network, location,</li> <li>– they do not take into account the income generating capacity of the assets.</li> </ul>

### Mixed methods

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>– focus on the future. They take into account future income, time, risk, and the impact of the capital structure and the assets.</li> </ul>	<ul style="list-style-type: none"> <li>– lack of rational justification for combining the income and property approach,</li> <li>– ‘as an artificial and arbitrary amalgamation of opposing concepts, they have no economic interpretation.’ (D. Zarzecki)</li> </ul>

## **9. Completion of the course**

The course is completed after the assessment of the valuation project prepared by students, which concerns enterprises of their choosing that are the most successful in their own country as well as the colloquium.

## 9.1. Colloquium – an example

1. Characterise the objectives and functions of the valuation of a company.
2. Present what purpose the mediation function serves in the valuation process using the example of the M&A.
3. Present the DCF models of the company's value.
4. Present the methods of estimating the value of a company using mixed methods.

### Task 1.

For the next three years, a company will generate cash flows in the amount of:

PLN 200 000, PLN 500 000, PLN 500 000, and then said cash flows will increase by 10% per annum. The company finances its operations with equity and debt capital. The interest rate on its debt capital is 10%, and the tax rate is 20%. The value of the company's capital is PLN 1 000 000 and PLN 400 000 constitutes a bank loan. The required rate of return of its shareholder is 20%.

The company issued 2 000 000 ordinary shares.

Calculate the company's value using the DCF method. Calculate the market value of its shares.

### Task 2.

At the end of 2018, AFAX Sp. z o.o. generated an operating profit of PLN 100 000.

The company pays 19% income tax. The company's balance sheet at the end of 2018 was as follows:

ASSETS	[PLN]	L&E	[PLN]
Fixed assets	150 000	Equity capital	150 000
Current assets	50 000	Debt capital	50 000
Total	200 000	Total	200 000

The structure of the liabilities and equity did not change during the year. The cost of its debt capital is 10% and the equity capital is 20%. Has the company generated added value or not? What is the increase or loss of value?

## 9.2. Subject of the project

Please evaluate the value of the company of your choosing using 2 methods: the book value method and the DCF method.

Calculate the company's value using the book value method:

- provide the company's balance sheet for the past 2 years,
- calculate its value.

Calculate the company's value using the DCF method – steps for the DCF method:

- describe the company: its offer, assets, the size of its capital, the number of ordinary shares, markets, etc.,
- define the objective of the company valuation,
- conduct the fundamental analysis,
- conduct the strategic analysis,
- conduct the financial analysis,

*Company Valuation Methods*

- prepare the CF forecast,
- prepare the capital cost evaluation,
- calculate the EV.

Compare results of your valuation with the price of stocks.

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