

**MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE**

**SIMON KUZNETS KHARKIV NATIONAL UNIVERSITY OF ECONOMICS**

**FINANCIAL DIAGNOSTICS AND VALUE-BASED  
ESTIMATION OF BUSINESS**

**Guidelines to independent work  
for Bachelor's (first) degree students  
of all specialities**

**Kharkiv  
S. Kuznets KhNUE  
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Guidelines to independent work of students are given. Test tasks, tasks of alternative choice, tasks to be performed independently, cases, questions for self-assessment of the received knowledge and the acquired skills are offered to develop the professional competences that a student should possess after studying the academic discipline.

For Bachelor's (first) degree students of all specialities.

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## Introduction

Financial diagnostics is an indispensable part of the management system of any business entity, regardless of its size, organizational and legal form, sphere of activity. It is the basis for assessing the level of efficiency of business entities, their business activity, solvency and financial sustainability, as well as for developing managerial decisions to improve their financial situation. The accounting and analytical function is a natural and integral component of the enterprise management system. This is due to several reasons. First, all objects of accounting have a cost estimate and therefore automatically fall into the scope of financial analysis. Secondly, financial resources represent a priority type of resources due to its importance from the point of view of operational and strategic management of the company's activity, as well as its unique opportunity with a minimum time lag transformed into any other kind of resources. All this requires expert's knowledge of the methodology of financial analysis taking into account the characteristics of the domestic economy and the study of world experience.

The purpose of the academic discipline is to study the theoretical foundations of financial diagnostics to form a system of fundamental knowledge, skills and competences in analytical work concerning business efficiency. The tasks of the academic discipline are:

- the studying of the information base and directions of the financial diagnostics;

- the ability to analyze the composition and effectiveness of the use of economic and financial resources of a business entity;

- formation of the ability to conduct an assessment of the financial condition of a business entity;

- working out options for providing analytical conclusions obtained in the course of analysis, forming the ability to determine the impact of financial and economic factors on the activity of a business entity;

- formation of the ability to identify reserves to raise the efficiency of activities and increase financial results of a business entity.

The object of the academic discipline is business entities and the efficiency of their functioning.

The subject of the academic discipline is the theoretical basis and methodical approaches to conducting analytical calculations and assessing the effectiveness of business operations.

# **Content module 1. The essence and significance of financial diagnostics in ensuring the effectiveness of a business entity**

## **Topic 1. The meaning and theoretical foundations of analytical activity**

### **Questions for self-assessment**

1. Describe financial analysis as an economic category and a tool of financial activity of the enterprise.
2. Define and characterize the object and subjects of financial analysis.
3. Define the purpose and tasks of financial analysis.
4. Who are the users of information regarding the results of financial analysis of the company's activities? How are the goals of the designated users different and why?
5. Describe classification and types of financial analysis.
6. Define and describe the methods of financial analysis.
7. What techniques are used during financial analysis?
8. Describe the differences between express analysis and detailed analysis of the company's financial condition.
9. What approaches to conducting financial analysis, highlighted in modern economic literature and practical activities, do you know?
10. Describe the main models of financial analysis.
11. Describe the essence and purpose of drawing up and using the company's financial statements.
12. What are the main needs of users of financial statements and what do they depend on?
13. Principles of financial reporting.
14. National and international accounting standards.
15. Define the purpose and task of analyzing the company's financial statements.
16. The main components of the company's financial reporting as an information base for financial analysis.
17. Relationship between the forms of the enterprise financial reporting.
18. Preparation of consolidated financial statements.

**Recommended reading:** [1 – 3].

## **Topic 2. Information support for financial diagnostics**

### **Case 2.1. Comparative analysis of Ukraine's and international financial statements**

Execution of this case involves a comparative analysis of financial statements in Ukraine and abroad.

#### ***Guidelines to case 2.1***

The student needs to study the principles, forms, standards, components and other characteristics of financial reporting in Ukraine in comparison with the approaches used in Europe, the United States and other countries. It is advisable to consider in detail the principles of financial reporting, assumptions and additional conditions. It is also necessary to present domestic and foreign forms of financial reporting of economic entities, to compare them, to establish similarities and differences.

The result of the case is the student's presentation.

#### **Questions for self-assessment**

1. Indicate the signs of usefulness of financial information for financial analysis.
2. Describe the nature and purpose of the preparation and use of financial statements of an enterprise.
3. What are the basic needs of users of financial statements and what do they depend on?
4. What regulations determine the procedure for preparing financial statements of enterprises in Ukraine?
5. Describe the main components of financial statements of an enterprise.
6. Explain the relationship between the forms of financial reporting of an enterprise.
7. Identify the main characteristics of the International Financial Reporting Standards.
8. Describe the preparation of consolidated financial statements.
9. Compare the Ukrainian and international financial reporting standards.

**Recommended reading:** [2; 3; 10; 15; 17].

# **Content module 2. Analysis of economic and financial resources of a business entity**

## **Topic 3. Analysis of assets**

### **Case 3.1. Analysis of financial statements of an international company**

The student must perform an analysis of financial statements according to the companies listed on the site of the Wall Street Journal [37]. According to the data of financial statements the student has to fill in Table 3.1 and determine, which indicators have grown, draw conclusions.

#### ***Guidelines to case 3.1***

The balance sheet (or the statement of financial position) is a report that shows the financial position of an enterprise at a particular time, including the firm's economic resources (assets), economic obligations (liabilities), and the residual claims of owners (owners' equity). Assets are usually shown in the order of their liquidity (nearness to cash) while liabilities are presented in the order of their maturity date.

Assets are probable economic benefits obtained or controlled by a particular entity as a result of past transactions or events. Future economic benefits refer to the capacity of an asset to benefit the enterprise by being exchanged for something else of value to the enterprise, by being used to produce something of value to the enterprise, or by being used to settle its liabilities.

Balance sheets are usually presented in comparative form. Comparative statements include the current year's statement and statements of one or more of preceding accounting periods. Comparative statements are useful in evaluating and analyzing trends and relationships.

Financial statement procedures fall into three basic categories:

- 1) comparisons and measurements relating to financial data for two or more periods;
- 2) comparisons and measurements relating to financial data of the current period;
- 3) special-purpose examination.

A review of financial statements can involve two types of analysis: horizontal and vertical. Horizontal analysis spotlights trends and establishes relationships between items that appear in the same row of a comparative

statement. Horizontal analysis discloses changes in items in financial statements over time. Each item (such as sales) in a row for one fiscal period is compared with the same item in a different period. Horizontal analysis can be carried out in terms of changes in dollar amounts, in percentages of change, or in a ratio format.

Vertical analysis involves the conversion of items appearing in statement columns into terms of percentages of a base figure to show the relative significance of the items and to facilitate comparison. For example, individual items appearing on the income statement can be expressed as percentage of sales. On the balance sheet, individual assets can be expressed in terms of their relationship to total assets. Liabilities and shareholders' equity accounts can be expressed in terms of their relationship to total liabilities and shareholders' equity. On the income statement, each item is stated as a percentage of sales. On the retained earnings statement, beginning retained earnings are 100 percent. The percentages for the company in question can be compared with industry norms.

The formulas for calculation are presented in Table 3.1.

### **Questions for discussion**

1. Economic content and characteristics of the company's assets.
2. Analysis of the fixed capital (non-current assets).
3. General assessment of the assets' value.
4. Evaluation of the assets using efficiency.

### **Questions for self-assessment**

1. Reveal the economic essence of the concept of enterprise assets, indicate their main economic characteristics.
2. Describe the structure of the company's property.
3. Classification of enterprise assets.
4. Principles of formation of enterprise assets.
5. Describe the indicators of the company's property status.
6. Compare the features of financing current and non-current assets.
7. The main tasks of analyzing the company's property status.
8. Analysis of the movement of fixed assets of an enterprise, sources of information.
9. Describe the content of the main stages of optimization of the company's asset structure.

**Recommended reading:** [2; 3; 10; 15; 17].





## **Topic 4. Analysis of current assets**

### **Questions for discussion**

1. The features of the functioning of the company's current assets.
2. The purpose and main tasks of analysis of current assets.
3. Analysis of the cash flow of an enterprise.
4. Assessment of the movement and state of receivables.

### **Questions for self-assessment**

1. Reveal the essence and describe the main economic characteristics of current assets. What is the purpose of analysis of these assets?
2. Classification of current assets.
3. List the main indicators of assessing the state and structure of the company's current assets.
4. What indicators are used to evaluate the efficiency of using current assets?
5. Factor analysis of working capital.
6. What types of financing strategies for current assets do you know?
7. Analysis of the company production stock's state.
8. Assessment of receivables.

### **True or false task**

1. Accounts receivable are the amounts owed to company by customers.
2. Net working capital is defined as current assets plus current liabilities.
3. Temporary working capital is the amount of current assets required to meet long-term minimum needs.
4. Current assets include cash, marketable securities, accounts receivable, inventory, and prepaid expenses.
5. Net working capital is positive when current assets are greater than current liabilities.
6. Inventories are raw materials, work-in-process, and finished goods.
7. Current assets typically comprise 30 – 50 % of a firm's assets.
8. Prepaid expenses are the ultimate in liquidity.
9. For each level of output, the firm can have a number of different levels of current assets.

**Recommended reading:** [2; 3; 10; 15; 17].

## **Topic 5. Analysis of capital and financial recourses**

### **Case 5.1. Analysis of financial resources of an international company**

The student must perform analysis of financial resources according to the companies listed on the site of the Wall Street Journal [37]. According to the data of financial statements the student has to fill in Table 5.1 and determine, which indicators have grown, draw conclusions.

#### ***Guidelines to case 5.1***

The balance sheet portrays the financial position of the organization at a particular point in time. It shows what you own (assets), how much you owe to vendors and lenders (liabilities), and what is left (assets minus liabilities, known as equity or net worth).

Major classifications used in the statement of financial position include the following:

1. Liabilities:

a) current liabilities (accounts payable, notes payable, wages payable, accrued liabilities, unearned revenue);

b) long-term liabilities.

2. Owners' equity:

a) capital stock;

b) additional paid-in capital;

c) retained earnings.

Liabilities are probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events. Three essential characteristics of an accounting liability include the following:

1. A duty or obligation to pay exists.

2. The duty is virtually unavoidable by a particular entity.

3. An event obligating the enterprise has occurred.

Liabilities are usually classified as current or non-current liabilities. Current liabilities are those obligations whose liquidation is reasonably expected to require the use of existing resources properly classified as current assets, or the creation of other current liabilities. This definition emphasizes a short-

term creditors' claim to working capital rather than the due date for classification purposes. Current liabilities include:

- 1) trade accounts payable;
- 2) short-term notes payable;
- 3) current maturities of long-term liabilities;
- 4) unearned revenues (collections in advance, e.g. rent, interest, and magazine subscription revenues);
- 5) accrued expenses for payrolls, interest, taxes, and others expenses.

Unearned revenues arise when assets are received before being earned; a liability called unearned revenue is created. After the services are performed, revenue is earned and the liability is settled. Accrued liabilities are liabilities that exist at the end of an accounting period but which have not yet been recorded. All liabilities not classified as current are reported as long-term liabilities.

Equity is the residual interest in the assets of an entity that remains after deducting its liabilities. In a business enterprise, the equity or capital is the ownership interest. In accounting for stockholders' equity, the basic accounting purposes are the following:

- 1) to identify the source of corporate capital;
- 2) to identify legal capital;
- 3) to indicate the dividends that could be distributed to the stockholders.

Paid-in or contributed capital. A distinction is usually made between capital originating from stockholders' investments, referred to as contributed capital or paid-in capital, and the equity originating from earnings, referred to as retained earnings. The stockholders' equity section of a corporate balance sheet is usually divided into three parts:

- 1) capital stock – the par or stated value of the shares issued;
- 2) additional paid-in capital – primarily the excess of the amounts paid in over the par or stated value;
- 3) retained earnings – the undistributed earnings of the corporation.

Treasury stock represents a corporation's own stock that has been reacquired after having been issued and fully paid. Such reacquired shares are held in the treasury for reissue and are not retired. A corporation cannot recognize a gain or a loss when reacquiring or reissuing its own stock.

Table 5.1

### Liabilities and shareholders' equity analysis

Liabilities and shareholders' equity	Regular (thousand \$)		Percentage, %		Changes in the given period			
	Jan 1, 20	Jan 1, 21	Jan 1, 20	Jan 1, 21	Growth, thousand	Growth, %	Rate of increase, %	Percentage of the increase in assets
1	2	3	4	5	$6 = 3 - 2$	$7 = 5 - 4$	$8 = (6 / 2) \times$ $\times 100 \%$	$9 = 6 / \Sigma 6 \times 100$
Bank loans and notes payable								
Accounts payable								
Accrued taxes								
Other accrued liabilities								
<b>Current liabilities</b>								
<b>Long-term debt</b>								
<b>Total liabilities</b>								
Common stock, \$1 par value								
Additional paid-in capital								
Retained earnings								
<b>Total shareholders' equity</b>								
<b>Total liabilities and shareholders' equity</b>								

### **Questions for self-assessment**

1. Describe the essence, structure and highlight the main economic features of the company's equity capital.
2. Describe the essence, structure and highlight the main economic features of the company's loan capital.
3. What are the main differences between the company's own and loan capital?
4. Describe the indicators that characterize the capital structure of a company.
5. List the factors affecting the ratio of equity and debt capital at an enterprise.
6. What indicators characterize the return on capital?
7. Describe the factor model of return on equity and its components.

**Recommended reading:** [2; 3; 10; 15; 17].

## **Topic 6. Cash flow analysis**

### **Questions for discussion**

1. The purpose and task of cash flow analysis.
2. Methods of assessing a cash flow.
3. Management problems of cash flow analysis.
4. Indicators of cash flows analysis.

### **Questions for self-assessment**

1. The essence and types of cash flow.
2. Basic methods and purpose of cash flow analysis.
3. Describe the essence of the operational and financial cycle of an enterprise.
4. Calculation of the duration of the financial cycle.
5. The essence and principle of calculating the affordability coefficients.
6. Assessment of the optimal level of funds.
7. Determination of the time value of money.

### **True or false task**

1. The operating cycle is the time between receiving materials from suppliers and collecting cash following their sale as finished products.
2. The inventory period is calculated as 360 minus the inventory activity ratio.

3. A company with a short operating cycle typically requires a larger cushion of current assets and higher current and quick ratios, unless the firm's suppliers extend their credit terms.

4. The operating cycle begins with a purchase of inventory on account followed by the account payment.

5. The operating cycle or cash conversion cycle is of interest to financial management, because it reveals how long cash is tied up in inventory and receivables.

6. Suppliers and loan officers are more assured of repayment with a longer cycle.

7. The operating cycle is also called the cash conversion cycle.

**Recommended reading:** [2; 3; 10; 15; 17].

## **Content module 3. Financial position analysis and value-based estimation**

### **Topic 7. Liquidity analysis**

#### **Questions for discussion**

1. Means of payment and fixed-term obligations of a business entity.
2. Classification aspects of solvency as an economic category.
3. Interrelationship of the company's liquidity indicators.
4. Taking into account the risk component of liquidity and solvency of an enterprise when choosing a policy for managing the current assets of an enterprise.
5. Indicators of assessment of loss and recovery of solvency.

#### **Case 7.1. Liquidity ratios**

The student must use the data of the company's financial statements according to the companies listed on the site of the Wall Street Journal [37]. The student has to fill in Table 7.1 and calculate the company's liquidity ratios for 2 periods, draw conclusions.

### Calculation of liquidity ratios

No.	Financial indicator	1st period	2nd period	Growth, %
1	2	3	4	$5 = (4 - 3) / 3 \times 100$
1	Cash and cash equivalents			
2	Accounts receivable			
3	Inventories			
4	Current assets			
5	Current liabilities			
6	Current Ratio = $\frac{\text{Current assets}}{\text{Current liabilities}}$			
7	Acid-Test (or Quick) Ratio = $\frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$			
8	Cash Ratio = $\frac{\text{Cash} + \text{Cash equivalents}}{\text{Current liabilities}}$			
9	Cash burn Ratio = $\frac{\text{Current assets}}{\text{Average daily operating expenses}}$			
10	Average daily operating expenses = (cost of goods sold + SG&A Expense + other operating expenses) / 365			

#### **Guidelines to case 7.1**

Liquidity is the ability to pay bills when they are due. Liquidity reflects an asset's or liability's nearness to cash. Liquidity ratio provides insights into a company's short-term cash requirements.

The relationship of current assets to current liabilities is an important indicator of the degree to which a firm is liquid. Working capital and the components of working capital also provide measures of the liquidity of a firm. Ratios that directly measure a firm's liquidity provide clues concerning whether or not a firm can pay its maturing obligations. The current (or working capital) ratio and the acid-test (or quick) ratio are important ratios that are used to measure a firm's liquidity. The current ratio expresses the relative relationship between current assets and current liabilities.

A quick measure of the debt-paying ability of a company is referred to as the quick ratio or acid-test ratio. The quick ratio expresses the relationship

of quick assets (cash, marketable securities, and accounts receivable) to current liabilities. Inventory and prepaid expenses are not considered quick assets because they may not be easily convertible into cash. The acid-test ratio is a more severe test of a company's short-term ability to pay debt than is the current ratio. A rule of thumb for the quick ratio is suggested as 1:1.

A significant decline in the quick ratio indicates deterioration in the company's liquidity, which could indicate the company's inability to satisfy its maturing debt immediately, if it had to do so.

A lower quick ratio may mean that the company will have greater difficulty borrowing short-term funds. A very low ratio may indicate that the company will be unable to meet its short-term debt payments.

Two other popular liquidity ratios that a short-term creditor might be interested in are: the cash ratio and the cash burn rate. The cash ratio is a more severe test of liquidity than the acid-test ratio. The cash ratio is computed by dividing cash by current liabilities. This ratio is most relevant for companies in financial distress. The doomsday ratio name comes from the worst case assumption that the business ceases to exist and only the cash on hand is available to meet credit obligations.

Suppose that a company is facing a strike and cash inflows begin to dry up. How long could the company keep running? One answer is given by the cash burn rate. This ratio is most relevant for start-up companies that often have little in the way of revenues. A high value indicates no need for outside financing. It may also suggest that the company is in the mature or declining phase of the corporate life cycle.

### **Questions for self-assessment**

1. Describe the essence of the concepts of liquidity and payability and their relationship.
2. List the economic factors affecting the level of liquidity and solvency of an enterprise.
3. What is balance sheet liquidity? How is it evaluated?
4. Calculation of liquidity ratios.
5. Describe the relationship between liquidity and solvency and the company's working capital management policy.
6. Forecasting the company's solvency.
7. The relationship between liquidity and business activity of a company.

**Recommended reading:** [2; 3; 10; 15; 17].



## Topic 8. Financial sustainability analysis

### Case 8.1. Financial leverage (debt) ratios

The student must use the data of the company's financial statements according to the companies listed on the site of the Wall Street Journal [25]. The student has to fill in Table 8.1 and calculate the company's financial leverage ratios for 2 periods, draw conclusions.

Table 8.1

#### Financial leverage ratios calculation

No.	Financial indicators	1st period	2nd period	Growth, %
1	2	3	4	$5 = (4 - 3) / 3 \times 100$
1	Long-term debt			
2	Total debt (total liabilities)			
3	Shareholder's equity (equity)			
4	Total assets			
5	Earnings before interest and taxes (EBIT)			
6	Interest expenses			
7	Debt-to-Equity Ratio = $\frac{\text{Total debt}}{\text{Shareholders equity}}$			
8	Debt-to-Total-Assets Ratio = $\frac{\text{Total debt}}{\text{Total assets}}$			
9	Long-term Ratio = $\frac{\text{Long-term debt}}{\text{Total capitalization (Long-term debt + shareholders' equity)}}$			
10	Equity to debt ratio = $\frac{\text{Shareholders' equity}}{\text{Total debt}}$			
11	Shareholders' equity to total assets ratio = $\frac{\text{Shareholders' equity}}{\text{Total assets}}$			
12	Interest Coverage Ratio = $\frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Interest expenses}}$			

### ***Guidelines to case 8.1***

The capital structure of an enterprise consists of debt and equity funds. The sources and composition of the two types of capital determine to a considerable extent the financial stability and long-term solvency of the firm. Equity capital is risk capital, and the return on investment to an investor is subject to many uncertainties. Debt capital must be paid on a specified date, usually with interest, if the firm is to survive.

There is no ideal capital structure common to all firms. In general, a firm should not have a heavy amount of long-term debt and preferred stock in relation to common stock and retained earnings. Senior security holders should be well protected, and the common stock should not be burdened by excessive debt. A company's capitalization usually depends on the industry, the financial position of the company, and the philosophy of management. Generally, relatively stable industries, such as utilities, have a higher debt-to-equity structure than industrial companies.

The debt-to-equity ratio is the reciprocal of the equity-to-debt ratio. This ratio measures the amount of leverage used by a company. It measures the number of times the shareholder's capital has been leveraged by the use of debt. A highly leveraged company involves a substantial use of debt and a limited use of equity. Investors generally consider a higher debt-to-equity ratio favorable while creditors favor a lower ratio. This ratio is an indicator of creditors' risk. Generally, the higher relative amount of debt in the capital structures of an enterprise, the larger the volatility of net earnings.

The debt ratio compares total liabilities (total debt) to total assets. It shows the percentage of total funds obtained from creditors. Creditors would rather see a low debt ratio because there is a greater cushion for creditor losses if the firm goes bankrupt. Note: How much debt is too much? The rule of thumb is: The debt portion should be less than 50 %. All of bankruptcies arise from a company's inability to meet its debt obligations.

The relationship of equity to total liabilities is an important measure of the capital structure of a business. As stockholders' equity increases in relation to total liabilities, the margin of protection to creditors increases, other things remaining unchanged. The enterprise is less vulnerable to declines in business or in the economy, the cost of carrying debt is reduced, and the company should be able to meet its obligations more easily.

This ratio provides a measure of the relative claims of the owners and creditors against the resources of the firm. A high value of the ratio shows

that the claims of the owners are greater than those of the creditors. A high value is viewed by creditors as a favorable sign that the firm has a high degree of security.

The shareholder's equity to total assets ratio measures the proportion of the firm's assets that are provided or claimed by the shareholders. The ratio is a measure of creditor risk. The less leveraged the company, the safer the creditors' interests. A high ratio of shareholders' equity to assets can represent a relatively large degree of security for the firm, but it also indicates that the firm is not highly leveraged. On the other hand, if the shareholders' equity is a small proportion of total assets, the firm may be viewed as being financially weak, because the shareholders would be viewed as having a relatively small investment in the firm.

The number of times interest is earned ratio is a measure of the debt position of a firm in relation to its earnings. This ratio emphasizes the importance of a company's covering total interest charges. The ratio indicates the company's ability to meet interest payments and the degree of safety available to creditors. Concern over the impact of interest expense differs as between companies, different stages of the business cycle, and stages of the life cycle of the business. The ratio is computed by dividing income before any charges for interest or income tax by the interest requirements for the period. This ratio uses in the numerator income before interest and income tax because this amount indicates the income available to cover interest. Income taxes are paid only after interest charges have been taken care of.

### **Questions for self-assessment**

1. The essence of the concept of financial sustainability of a company, approaches to its definition.
2. Characterization and classification of factors affecting the financial sustainability of an enterprise.
3. Information support for assessing the financial sustainability of an enterprise according to existing approaches.
4. Describe the relationship between the concepts of financial stability, financial sustainability and financial balance.
5. The coefficient approach to assessing the financial sustainability of an enterprise. What is the economic meaning of the indicators used?

**Recommended reading:** [2; 3; 10; 15; 17].

## Topic 9. Business activity analysis

### Case 9.1. Analysis of activity ratios

The student must use the data of the company's financial statements according to the companies listed on the site of the Wall Street Journal [37]. The student has to fill in Table 9.1 and calculate the company's business activity ratios for 2 periods, draw conclusions.

Table 9.1

### Business activity ratios calculation

No.	Financial performance	1st period	2nd period	Growth, %
1	Inventories			
2	Accounts receivable			
3	Accounts payable			
4	Net sales (revenue)			
5	Cost of goods sold			
6	Total assets			
7	Receivable turnover (RT) ratio = $= \frac{\text{Revenue}}{\text{Accounts receivable}}$			
8	Receivable turnover in days (RTD) = $= \frac{\text{Receivables} \times \text{Days in the year}}{\text{Revenue}}$			
9	Inventory activity = $\frac{\text{Cost of goods sold}}{\text{Inventory}}$			
10	Inventory turnover in days (ITD) = $= \frac{\text{Inventory} \times \text{Days in the year}}{\text{Cost of goods sold}}$			
11	Payable turnover in days (PTD) = $= \frac{\text{Accounts payable} \times \text{Days in the year}}{\text{Cost of goods sold}}$			
12	Total asset turnover (capital turnover) = $= \frac{\text{Net sales}}{\text{Total assets}}$			

### ***Guidelines to case 9.1***

Activity ratios measure the firm's use of assets to generate revenue and income.

Examples include inventory turnover, average collection period, and receivables turnover.

Accounts receivable ratios comprise the accounts receivable turnover and the average collection period. The accounts receivable turnover gives the number of times accounts receivable is collected during the year. It is found by dividing net credit sales (if not available, then total sales) by the average accounts receivable. Average accounts receivable is typically found by adding the beginning and ending accounts receivable and dividing by 2. Note: When a balance sheet amount is related to an income statement amount in computing a ratio, the balance sheet amount should be converted to an average for the year. The reason is that the income statement amounts represent activity over a period. Thus, the balance sheet figure should be adjusted to reflect assets available for use throughout the period. If the beginning of the period balance is not available, the end of the period accounts receivable would be used in the denominator of the formula.

The average collection period (the number of days' sales in receivables ratio) is the number of days it takes to collect on receivables.

Inventory ratios: the inventory turnover ratio establishes the relationship between the volume of goods sold and inventory. The inventory turnover for businesses in different industries and within industries can vary widely. A grocery store may have an average turnover of 20, for all items. A furniture store would normally have a much smaller turnover. The inventory turnover is computed as follows, using the average inventory (where data is available) as the denominator. The reason is that the income statement amounts represent activity over a period. Thus, the balance sheet figure should be adjusted to reflect assets available for use throughout the period.

When cost of goods sold is not available, some analysts use net sale in the numerator. Note, however, that the cost of sales is preferred rather than sales because the cost of sales base eliminates any changes caused solely by sales price changes. Furthermore, using sales in the numerator is inconsistent with valuing inventories at cost in the denominator.

Account payable ratios: the relationship of accounts payable to purchases of the period can provide information concerning the proportion of payables outstanding. The days' purchases in accounts payable determines the average

number of days that it takes for the company to pay short-term creditors. This ratio is used by creditors and financial management to measure the extent to which accounts payable represents current rather than overdue obligations. Accounts payable period (the number of days' purchases in payables) is useful when compared to the credit terms given by suppliers.

The total asset turnover ratio is helpful in evaluating a company's ability to use its asset base efficiently to generate revenue. A low ratio may be due to many factors, and it is important to identify the underlying reasons. For example, is investment in assets excessive when compared to the value of the output being produced? If so, the company might want to consolidate its present operation, perhaps by selling some of its assets and investing the proceeds for a higher return or using them to expand into a more profitable area. Long-term investments are usually excluded from total assets when they make no contribution to sales. If sales can be expressed in units sold, the ratio of units sold to total assets can provide basically the same information as the asset turnover except that units sold are not affected by price changes.

### **Questions for self-assessment**

1. Characteristics of the business activity of an enterprise as an object of financial analysis.
2. Factors affecting the level of business activity.
3. Quantitative and qualitative criteria for assessing business activity.
4. Analysis of indicators of production and sale of products.
5. Analysis of production costs.
6. Analysis of the efficiency of the use of enterprise resources.
7. Absolute and relative indicators of assessment of business activity.
8. Analysis of turnover of payables and receivables.

**Recommended reading:** [2; 3; 10; 15; 17].

## **Topic 10. Profitability analysis**

### **Case 10.1. Analysis of profitability ratios**

The student must use the data of the company's financial statements according to the companies listed on the site of the Wall Street Journal [37].

The student has to fill in Table 10.1 and calculate the company's profitability ratios for 2 periods, draw conclusions.

Table 10.1

**Calculation of profitability ratios**

No.	Financial indicators	1st period	2nd period	Growth, %
1	Net sales (revenue)			
2	Cost of goods sold			
3	Net profit after taxes			
4	Total assets			
5	Shareholders' equity			
6	Profitability in relation to sales = $= \frac{\text{Net sales} - \text{Cost of goods sold}}{\text{Net sales}}$			
7	Net profit margin (sales profitability) = $= \frac{\text{Net profit after taxes}}{\text{Net sales}}$			
8	Total asset turnover (capital turnover) = $= \frac{\text{Net sales}}{\text{Total assets}}$			
9	Return on investment (ROI) = $= \frac{\text{Net profit after taxes}}{\text{Total assets}}$			
10	Equity multiplier = $\frac{\text{Total assets}}{\text{Shareholders' equity}}$			
11	Return on equity (ROE) = $= \frac{\text{Net profit after taxes}}{\text{Shareholders' equity}}$			

**Guidelines to case 10.1**

Profitability refers to the ability of a company to earn income. Net income is the single most significant measure of profitability. Investors and creditors have a great interest in evaluating the current and prospective profitability of an enterprise.

Profitability ratios have been developed to measure operational performance. The numerator of the ratios consists of profits according to the specified

definition (gross margin, operating income, net income); the denominator represents a relevant investment base.

The gross profit margin reveals the percentage of each dollar left over after the business has paid for its goods. The higher the gross profit earned, the better. Gross profit equals net sales less cost of goods sold.

A higher growth margin ratio suggests that the average margin between sales price and inventory cost (or production cost) is increasing. Too high a margin may result in lost sales.

A decline in the ratio might have several causes: (1) the company may have begun to sell products with a lower markup', (2) increased competition may have resulted in a lower sales price, or (3) the company may be forced to pay higher prices to its suppliers without being able to pass these costs on to its customers.

Net profit margin on sales indicates the dollar amount of net income the company receives from each dollar of sales. This ratio reflects the ability of the company to control costs and expenses in relation to sales.

The profit margin indicates the success of management in generating earnings from its operations. The higher the profit margin on each sales dollar generated, the better the company is doing financially. Profit may also be increased by controlling expenses. A high profit margin is desirable because it indicates that the company is earning a good return on its cost of merchandise sold and operating expenses.

By examining the company's profit margin relative to previous years and to industry norms, one can evaluate the company's operating efficiency and pricing strategy as well as its competitive status within the industry. The income to sales ratio is important to investors and creditors because it indicates the financial success of the business. The "bottom line" is what counts.

Profit margin reveals the entity's ability to generate earnings at a particular sales level. Investors will be reluctant to invest in an entity with poor earning potential, since the market price of stock and future dividends will be adversely affected. Creditors will also shy away from companies with deficient profitability, since the amounts owed to them may not be paid.

The return on total assets (ROA) or return on investment (ROI) indicates management's performance in using the firm's assets to produce income. There should be a reasonable return on funds committed to the enterprise. This return can be compared to alternative uses of the funds. As a measure of effectiveness, the higher the return, the better.



Return on stockholders' equity (ROE) indicates management's success or failure at maximizing the return to stockholders based on their investment in the company. This ratio emphasizes the income yield in relationship to the amount invested. Financial leverage can be estimated by subtracting return on total assets from return on shareholders' equity. If the return on shareholders' equity is greater than the return on total assets, financial leverage is positive to the extent of the difference. If there is no debt, the two ratios would be the same.

### **Questions for self-assessment**

1. The purpose and task of analyzing the financial results of the company's activities.
2. Sources of analytical information for profitability analysis.
3. The "direct-cost" system as a theoretical base for cost analysis and profit optimization.
4. Factor analysis of profit from product sales.
5. Analysis of distribution and use of net profit.
6. Analysis and interpretation of profitability indicators.

**Recommended reading:** [2; 3; 10; 15; 17].

## **Topic 11. The concept of value-oriented management in financial science**

### **Case 11.1. Making business decisions**

An entrepreneur has 1 800 000 UAH, which he plans to use for financial activities. He is considering two alternative options for investing these funds: purchasing a functioning business (a mini-bakery with a small network of sales of its own products; the net profit of the enterprise in 2022 was 72 000 UAH) or investing these funds in a bank deposit. The entrepreneur plans to buy a house for his son in eight years, so it is necessary to determine which option of investing funds for this period is more profitable. To solve the problem, it is necessary to review the conditions offered by banks under deposit programs, determine what amount an entrepreneur can receive after eight years, and evaluate the prospects for business development in the field of bread baking.

On the official websites of any three banks (of the student's choice), it is necessary to consider the options offered by the banks for investing funds, and draw appropriate conclusions.

### **Guidelines to case 11.1**

The present value of the business is determined by the discounted amount of future free cash flows, which are determined as follows:

$$V = \sum_{n=1}^N \frac{FCF}{(1+i)^n} + V_r + NFA, \quad (11.1)$$

where  $V$  is the enterprise value;

$N$  is the number of forecast periods;

$n$  is the forecast period number;

$FCF$  is the free cash flow;

$i$  is the discount rate;

$V_r$  is the cost of reversion;

$NFA$  is the value of non-functional assets.

The cost of reversion is the value of the evaluation objects, which is forecast for the period following the forecast. The cost of the reversion is subject to discounting using the discount rate to obtain their exact value.

Non-functional assets are assets that do not participate in generating income.

### **Tests**

1. What elements are not included in the national and international assessment standards:

a) a brief description of the requirements for the evaluator's activities, namely, for reports or conclusions on evaluation;

b) a list and brief description of the main methods and procedures provided for evaluators;

c) a list of certificates that the appraiser must possess;

d) determination of the main types of value identified by appraisers;

e) a list of assessment principles?

2. What is the main purpose of TEGoVA (The European Group of Valuers' Associations) activity:

a) an international commercial organization uniting national evaluation associations;

b) an international non-commercial organization that unites national evaluation associations mainly of the European continent and represents the common professional interests of more than seventy thousand evaluators from European countries;

c) an international non-commercial organization that unites exclusively European assessment associations;

d) an international commercial organization that develops evaluation standards;

e) an international non-profit organization that certifies evaluators and gives the right to engage in evaluative activities?

3. What is National Standard No. 1 dedicated to:

a) general principles of property and property rights assessment;

b) assessment of property rights of intellectual property;

c) valuation of real estate;

d) evaluation of integral property complexes;

e) assessment of intangible assets?

4. What is National Standard No. 2 dedicated to:

a) general principles of valuation of property and property rights;

b) assessment of property rights of intellectual property;

c) valuation of real estate;

d) evaluation of integral property complexes;

e) assessment of intangible assets?

5. What is National Standard No. 3 dedicated to:

a) general principles of valuation of property and property rights;

b) assessment of property rights of intellectual property;

c) valuation of real estate;

d) evaluation of integral property complexes;

e) assessment of intangible assets?

6. What is National Standard No. 4 dedicated to:

a) general principles of valuation of property and property rights;

b) assessment of property rights of intellectual property;

c) valuation of real estate;

d) evaluation of integral property complexes;

e) assessment of intangible assets?

7. What are the main directions of the development of evaluation activities defined in the Concept of Development of Evaluation Activities in Ukraine, developed by the All-Ukrainian Association of Evaluation Specialists:

a) application of mathematical statistics methods in relation to assessment tasks;

b) development of a methodology and a regulatory framework for determining the average useful life of fixed assets;

c) improvement of risk calculation methods during the analysis of the profitability of evaluation objects;

d) formation of an optimal mechanism for writing an evaluation report;

e) development of methods for calculating damage from natural disasters and man-made accidents?

8. When assessing the value of enterprises, financial analysis based on financial reporting data is carried out in the following stages:

a) cash flow forecasting;

b) analysis of financial ratios (indicators);

c) determination of the market share;

d) analysis of financial reports;

e) analysis of liquidity indicators.

9. The active part of fixed assets is:

a) equipment and intangible assets;

b) only equipment;

c) equipment and premises;

d) machines, equipment and vehicles;

e) money and stocks.

10. Income per share shows:

a) the share of net profit (in monetary units) attributable to one ordinary share;

b) the share of gross profit (in monetary units) attributable to one ordinary share;

c) the share of net profit (in monetary units) attributable to one preferred share;

d) the share of income (in monetary units) attributable to one preferred share;

e) the share of income (in monetary units) attributable to one ordinary share.

## Questions for self-assessment

1. Determine the necessity and order of organization of assessment activities in the market economy.
2. Justify the concept of market value assessment. Name the scope of application of market value assessment in the modern economy.
3. Justify the necessity and possibility of cost assessment in Ukrainian conditions.
4. Describe the difference between the value estimate and accounting (balance sheet), audit, and rating estimate.
5. Define the objects and subjects of valuation.
6. Explain the nature of the influence of the specific characteristics of the evaluated object on the evaluation process.
7. Describe the quality criteria of evaluation activity and the responsibility of the evaluator specialist.
8. What are the main goals and principles of assessment activities?
9. Describe the evaluation bases.
10. Describe the factors affecting the value of an enterprise and its property.
11. Describe the similarities and differences of market value and market price.
12. Explain the relationship between assessment goals, types of value, assessment objects.

**Recommended reading:** [8; 11; 19; 20; 32; 34].

## Topic 12. The income approach to business valuation

### Case 12.1. Determination of the discount rate

Calculate the discount rate for the company's equity using the capital asset valuation method based on the following data:

- 1) risk-free rate is 6.5;
- 2) "beta" coefficient is 1.25;
- 3) average market rate is 10;
- 4) risk for an individual company is 5.0;
- 5) country risk is 6.0.

Provide relevant findings and recommendations.

### **Guidelines to case 12.1**

To determine the discount rate, the capital asset valuation model should be used:

$$i = R + \beta \times (R_m - R), \quad (12.1)$$

where  $i$  is the discount rate;

$R$  is the rate of return at which there are no risks;

$\beta$  is the coefficient reflecting the risks of investing;

$R_m$  is average yield of shares on the stock market.

A higher value of the discount rate indicates that the company has a higher level of risk and, in the case of the same net cash flows, will have a lower value.

### **Tests**

1. What methods does the income approach to the estimation of the enterprise value include:

- a) the future net financial result method;
- b) the income capitalization method;
- c) the method of net assets;
- d) the method of discounting cash flows;
- e) the method of price multipliers?

2. What types of cash flows are used with the income approach to estimation of the enterprise value:

- a) the cash flow from investment activities;
- b) the cash flow from operating activities;
- c) the cash flow from capital activities;
- d) the cash flow from credit activities;
- e) the cash flow from financial activities?

3. What methods does the cost the estimation of the enterprise value include:

- a) method of net assets (adjusted book value);
- b) method of discounting cash flows;
- c) substitution method;
- d) capitalization method;
- e) the method of calculating the liquidation value?

4. The value determined by deducting the amount of the organization's assets from the amount of its liabilities is:

- a) net liabilities;
- b) net assets;
- c) total balance sheet assets;
- d) market assets;
- e) non-current assets.

5. What methods does a comparative approach to the assessment of an enterprise value include:

- a) the capital market method;
- b) the capitalization method;
- c) the method of transactions;
- d) the method of industry coefficients;
- e) the substitution method?

6. Coefficients reflecting the relationship between the market value of a business and a certain financial and economic base are:

- a) cash flow indicators;
- b) industry coefficients;
- c) solvency ratios;
- d) price multipliers;
- e) monetary aggregates.

7. The method based on the use of prices formed by the open stock market is:

- a) the method of price multipliers;
- b) the method of the analogue company;
- c) the capital market method;
- d) the method of industry coefficients;
- e) the capitalization method.

8. On what sources of information is the cost approach to the assessment of an enterprise value include:

- a) financial statements of the enterprise;
- b) market industry coefficients;
- c) data on the cost of raw materials on the market;
- d) information on the development of competitors;
- e) information about the cost of raising capital?

9. What types of cash flow according to capital do you know:

- a) invested capital;
- b) current capital;

- c) own capital;
- d) long-term capital;
- e) reversionary capital?

10. The cost approach to the estimation of an enterprise value should be used if:

- a) the majority of assets are liquid;
- b) the enterprise owns significant intangible assets;
- c) the enterprise being assessed is either newly formed or one that is in bankruptcy proceedings;
- d) the enterprise being assessed owns large assets;
- e) the total value of the enterprise liabilities exceeds the value of equity.

### **Questions for self-assessment**

1. Explain the concepts of income and cash flow of an enterprise.
2. Describe the procedure for using information about the results of financial, investment and operational activities of an enterprise to calculate its market value.
3. Describe the types and models of cash flow calculation.
4. Explain the need and procedure for temporary assessment of cash flows in the process of enterprise value management.
5. Describe the nature of the impact of risks on the market value of the company's property.
6. Determine the methods of taking risks into account in the process of assessing the value of an enterprise.
7. Describe methodical approaches to the estimation of the enterprise value.
8. Describe the advantages and disadvantages of approaches to evaluation.
9. Describe the procedure for determining the final value of an enterprise.

**Recommended reading:** [11 – 13; 19].

## **Topic 13. Cost and comparative approaches to business valuation**

### **Case 13.1. Reporting using a set of approaches to business value estimation**

The enterprise "Perlyna" (the basic balance of which is shown in Table 13.1) plans to update the main assets in order to master the production



of a new type of toothpaste. For this purpose, it is necessary to attract 800,000 UAH. Analysts of the enterprise have developed a scheme for raising capital for the purchase of equipment (Table 13.2).

It is expected that the commissioning of new equipment and the release of a new type of product will provide the company with a profit of 25 % of the cost of equipment in the first year.

Table 13.1

### The basic balance sheet of the Perlyna enterprise

Assets	Amount, thousand UAH	Passive	Amount, thousand UAH
Non-current assets	2,000	Equity	3,000
Current assets	7,000	Long-term liabilities	5,000
		Short-term liabilities	1,000
Balance	9,000	Balance	9,000

Table 13.2

### The scheme of attracting capital for the purchase of equipment

A source of capital attraction	Share in loan capital	Conditions for attracting capital
Bank loan (short-term)	20 %	27 % per annum, maintaining a constant account balance of 11 %
Issue of bonds	50 %	22 % discount, issue costs make 3,000 UAH
Bank loan (long-term)	30 %	32 % per annum, expenses for the preparation of documents make 7,000 UAH

Evaluate the efficiency of capital raising, draw conclusions, provide suggestions for optimization of the process of upgrading the equipment. Clarify how the equipment upgrade will affect the market value of the enterprise.

#### **Guidelines to case 13.1**

To find the optimal capital structure, the indicator of the efficiency of borrowed capital or the efficiency of financial leverage is used:

$$EFL = (1 - IT) \times (ROA - CV) \times \frac{LC}{EC} \times 100 \%, \quad (13.1)$$

where IT is the income tax;

ROA is the level of profitability of the use of assets;

CV is the loan interest rate;

LC is the amount (or specific weight) of loan capital;

EC is the amount (or specific weight) of equity capital.

### Tests

1. What indicator characterizes the economic profit of an organization, that is, determines the amount of income received taking into account the lost profit that arises due to the inability to invest resources in an alternative way:

- a) NPV;
- b) EVA;
- c) IRR;
- d) PP;
- e) IP?

2. What are the advantages of calculating the level of added value for evaluation of the effectiveness of investment attractiveness:

- a) the possibility of taking into account investment risks;
- b) the possibility of assessing the added value provided by investments;
- c) high accuracy of strategic analysis results;
- d) combination of elements of cost and cost approaches;
- e) the possibility of taking into account investment and operational risks?

3. Which of the following are methods of determining investment attractiveness:

- a) quantitative;
- b) qualitative;
- c) expert;
- d) complex;
- e) rational?

4. Which of the following statements regarding the method of income capitalization are correct:

a) according to the capitalized cost method, data on the cost, composition and structure of assets do not directly affect the assessment;

b) the method is used to estimate the value of an enterprise as a complete property complex and corporate rights of an enterprise;

c) the method is based on the data on the residual value of assets;

d) it is advisable to apply the method for stable incomes of an enterprise or for stable rates of their change;

e) the capitalized value of income is the same as the present value of cash flow?

5. The constant turnover of assets being used is related to:

a) risk;

b) liquidity;

c) correct answers are a, b, c;

d) there is no correct answer.

6. To evaluate a credit and financial institution as a financial base, you can use:

a) dividends or a stream of payments to bank shareholders;

b) profit (its various types); financial receipts;

c) gross profit;

d) cash flow;

e) added value.

7. The following methods are used to forecast the net profit of a financial and credit institution:

a) middle-model;

b) investment model;

c) income model;

d) cost model;

e) compensation model.

8. Conditions for the formation of an enterprise's investment attractiveness are as follows:

a) there are opportunities for the development of the company's personnel;

b) the invested funds must bring the enterprise to a qualitatively different level in terms of production volumes, technologies, and product quality;

c) there are opportunities for further development of the enterprise;

d) invested funds must pay off quickly enough;

e) invested funds must generate cash flow.

9. Users of information on the investment attractiveness of an enterprise include:

a) owners;

b) investors;

c) the state;

- d) personnel;
  - e) creditors.
10. Sources of information about investment attractiveness are:
- a) financial reporting;
  - b) industry coefficients;
  - c) stock indices;
  - d) macroeconomic prognoses;
  - e) marketing observations.

### **Questions for self-assessment**

1. Reveal the economic essence and conditions of application of the cost approach to business valuation.
2. Reveal the economic meaning of the cost approach methods.
3. Describe the methodological regularities and principles of the cost approach to the estimation of an enterprise (business) value.
4. Reveal the methods of the cost approach, the features of these methods when applied to evaluation of Ukrainian enterprises.
5. Give a general description of the net asset value method.
6. Give a general description of the liquidation value method.
7. Determine the procedure for developing a calendar schedule for the liquidation of the company's assets, adjustment of the balance sheet value of assets and liabilities.
8. Describe the procedure for determining the costs associated with the liquidation of an enterprise.
9. Reveal the economic essence and conditions of applying the comparative approach to the evaluation of various property objects.
10. Determine the main stages of business evaluation from the standpoint of a comparative approach to business evaluation.
11. Describe the informational and legal basis and features of financial analysis when using a comparative approach.
12. Describe the methods of the comparative approach.
13. Describe the criteria for selecting comparable enterprises and the basis of comparison in the evaluation process using a comparative approach.
14. Describe the order of selection and calculation of price multipliers, the range of application of price multipliers.

**Recommended reading:** [8; 11 – 13; 17 – 19; 21 – 32; 34].

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НАВЧАЛЬНЕ ВИДАННЯ

# **ФІНАНСОВА ДІАГНОСТИКА ТА ОЦІНКА ВАРТОСТІ БІЗНЕСУ**

**Методичні рекомендації  
до самостійної роботи  
для студентів усіх спеціальностей  
першого (бакалаврського) рівня  
(англ. мовою)**

*Самостійне електронне текстове мережеве видання*

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Подано методичні рекомендації до самостійної роботи студентів. Для формування професійних компетентностей, якими має володіти студент після вивчення навчальної дисципліни, запропоновано тестові завдання, завдання альтернативного вибору, завдання для самостійного виконання, кейси, питання для самоперевірки здобутих знань і набутих умінь.

Рекомендовано для студентів усіх спеціальностей першого (бакалаврського) рівня.

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