

**Kachula S.V., Khalatur S.M., Pavlova H. Ye.,  
Lysiak L.V., Dubrova N.P.**

**INVESTMENT MANAGEMENT**  
**PRACTICUM**

Dnipro  
**MONOLITH**  
2024

UDC 330.322

I-58

*Recommended for publication by the academic council of  
Dnipro State Agrarian and Economic University  
(protocol № 6 from 28.03.2024)*

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**I-58 Investment management: training manual (practicum) / Kachula S.V., Khalatur S.M., Pavlova H.Ye., Lysiak L.V., Dubrova N.P. Dnipro: Monolyt, 2024. 200 p.  
ISBN 978-617-7369-82-9**

The training manual (practicum) provides a meaningful presentation of the material in diagrams, tables and figures in accordance with the work program of the "Investment Management" discipline of training for higher education applicants of the "Master's" degree in the specialty 072 "Finance, banking, insurance and stock market". The manual contains practical tasks for studying each topic, tests for self-testing of knowledge, problem questions and a glossary.

This training manual (practicum) will be useful for students of higher education, graduate students, teachers, as well as practitioners who are interested in modern methods and technologies of investment management at the enterprise.

**UDC 330.322**

ISBN 978-617-7369-92-8

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# **ІНВЕСТИЦІЙНИЙ МЕНЕДЖМЕНТ**

**ПРАКТИКУМ**

Дніпро  
**МОНОЛИТ**  
2024

УДК 330.322

I-58

*Рекомендовано до друку вченою радою  
Дніпровського державного аграрно-економічного університету  
(протокол № 6 від 28.03.2024 р.)*

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**I-58** **Інвестиційний менеджмент: навчальний посібник (практикум) /**  
Качула С.В., Халатур С.М., Павлова Г.Є., Лисяк Л.В., Дуброва Н.П.  
Дніпро: Монолін, 2024. 200 с.  
ISBN 978-617-7369-82-9

Навчальний посібник (практикум) містить змістовне викладення матеріалу у схемах, таблицях і малюнках відповідно до робочої програми дисципліни «Інвестиційний менеджмент» підготовки здобувачів вищої освіти освітнього ступеня «магістр» за спеціальністю 072 «Фінанси, банківська справа, страхування та фондовий ринок». Посібник містить практичні завдання для вивчення кожної теми, тести для самоперевірки знань, проблемні запитання та глосарій.

Даний навчальний посібник (практикум) буде корисним здобувачам вищої освіти, аспірантам, викладачам, а також практикам, які цікавляться сучасними методами та технологіями управління інвестиціями на підприємстві.

**УДК 330.322**

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## CONTENT

<b>Preface</b> .....	7
<b>Topic 1. Theoretical and methodological foundations of investment management</b> .....	9
1.1. Methodical recommendations for conducting practical classes.....	9
1.2. Practical tasks.....	18
1.3. Terminological dictionary of key concepts.....	22
1.4. Test tasks.....	23
1.5. Questions for self-control.....	29
<b>Topic 2. Methodical tools of investment management</b> .....	31
2.1. Methodical recommendations for conducting practical classes.....	31
2.2. Practical tasks.....	36
2.3. Terminological dictionary of key concepts.....	46
2.4. Test tasks.....	47
2.5. Questions for self-control.....	55
<b>Topic 3. Investment strategy of the enterprise</b> .....	57
3.1. Methodical recommendations for conducting practical classes.....	57
3.2. Practical tasks.....	67
3.3. Terminological dictionary of key concepts.....	72
3.4. Test tasks.....	73
3.5. Questions for self-control.....	80
<b>Topic 4. Management of real investments of the enterprise</b> .....	82
4.1. Methodical recommendations for conducting practical classes.....	82
4.2. Practical tasks.....	86
4.3. Terminological dictionary of key concepts.....	93
4.4. Test tasks.....	94
4.5. Questions for self-control.....	101
<b>Topic 5. Management of financial investments of the enterprise</b> .....	102
5.1. Methodical recommendations for conducting practical classes.....	102
5.2. Practical tasks.....	112
5.3. Terminological dictionary of key concepts.....	115
5.4. Test tasks.....	115
5.5. Questions for self-control.....	122
<b>Topic 6. Management of the formation of investment resources of the enterprise</b> .....	124
6.1. Methodical recommendations for conducting practical classes.....	124
6.2. Practical tasks.....	134
6.3. Terminological dictionary of key concepts.....	140
6.4. Test tasks.....	140
6.5. Questions for self-control.....	147
<b>Topic 7. Management of investment resources of agribusiness enterprises</b> .....	149
7.1. Methodical recommendations for conducting practical classes.....	149
7.2. Practical tasks.....	157
7.3. Terminological dictionary of key concepts.....	160
7.4. Test tasks.....	161
7.5. Questions for self-control.....	168
<b>References</b> .....	169
<b>Appendices</b> .....	174

## ЗМІСТ

<b>Передмова</b> .....	8
<b>Тема 1. Теоретичні та методологічні основи інвестиційного менеджменту</b> .....	9
1.1. Методичні рекомендації до проведення практичних занять.....	9
1.2. Практичні завдання.....	18
1.3. Термінологічний словник ключових понять.....	22
1.4. Тестові завдання.....	23
1.5. Питання для самоконтролю.....	29
<b>Тема 2. Методичний інструментарій інвестиційного менеджменту</b> .....	31
2.1. Методичні рекомендації до проведення практичних занять.....	31
2.2. Практичні завдання.....	36
2.3. Термінологічний словник ключових понять.....	46
2.4. Тестові завдання.....	47
2.5. Питання для самоконтролю.....	55
<b>Тема 3. Інвестиційна стратегія підприємства</b> .....	57
3.1. Методичні рекомендації до проведення практичних занять.....	57
3.2. Практичні завдання.....	67
3.3. Термінологічний словник ключових понять.....	72
3.4. Тестові завдання.....	73
3.5. Питання для самоконтролю.....	80
<b>Тема 4. Управління реальними інвестиціями підприємства</b> .....	82
4.1. Методичні рекомендації до проведення практичних занять.....	82
4.2. Практичні завдання.....	86
4.3. Термінологічний словник ключових понять.....	93
4.4. Тестові завдання.....	94
4.5. Питання для самоконтролю.....	101
<b>Тема 5. Управління фінансовими інвестиціями підприємства</b> .....	102
5.1. Методичні рекомендації до проведення практичних занять.....	102
5.2. Практичні завдання.....	112
5.3. Термінологічний словник ключових понять.....	115
5.4. Тестові завдання.....	115
5.5. Питання для самоконтролю.....	122
<b>Тема 6. Управління формуванням інвестиційних ресурсів підприємства</b> .....	124
6.1. Методичні рекомендації до проведення практичних занять.....	124
6.2. Практичні завдання.....	134
6.3. Термінологічний словник ключових понять.....	140
6.4. Тестові завдання.....	140
6.5. Питання для самоконтролю.....	147
<b>Тема 7. Управління інвестиційними ресурсами підприємств АПК</b> .....	149
7.1. Методичні рекомендації до проведення практичних занять.....	149
7.2. Практичні завдання.....	157
7.3. Термінологічний словник ключових понять.....	160
7.4. Тестові завдання.....	161
7.5. Питання для самоконтролю.....	168
<b>Список рекомендованих джерел</b> .....	169
<b>Додатки</b> .....	174

*Dedicated to the 100th anniversary of  
the Dnipro State Agrarian and  
Economic University*

## **PREFACE**

In modern conditions, the issue of mobilizing and effectively utilizing investments is particularly pertinent for the efficient operation of an enterprise. To invest in the right direction and at the right time, an enterprise must determine the prioritization of strategic initiatives within its portfolio. Utilizing data to make decisions regarding priority determination is crucial. The goal of investment management is to align key decisions regarding investment with strategy, objectives, measurable business outcomes, and financial factors specific to the enterprise. Investment management is the process of creating a portfolio of stocks, bonds, and other investments in accordance with set goals.

The uncertainties of today, periodic global financial and economic crises, entail an increased role of investment management in ensuring effective enterprise development. Research in investment management is a vital component of the overall strategic management system of an enterprise. The effective functioning of an enterprise in market conditions is unattainable without well-established capital management, encompassing primary forms of financing (resource investment) in the form of material and monetary assets, along with various financial instruments.

A training manual (practicum), presented in schemes, tables, and illustrations, is designed in accordance with the curriculum of the discipline "Investment Management" for higher education students pursuing a Master's degree in the field of Finance, Banking, Insurance, and Stock Market (specialty 072). The objectives of the "Investment Management" discipline are to educate students on the theoretical aspects and practical skills of investment management, not only in overseeing the investment portfolio of a particular enterprise but also in aligning investment strategy with other assets and primary objectives of enterprise activity.

The author's team would like to thank the reviewers of the training manual, doctor of economics, senior researcher, professor of the Department of Finance of the State University of Trade and Economics *Valentyna MAKHOHON*, doctor of economic sciences, professor, head of the department of finance, accounting and taxation of National Aviation University *Tetiana KOSOVA*, doctor of economic sciences, professor, head of Management and Public Administration Department of Dnipro State Agrarian and Economic University *Nataliia BONDARCHUK*, the rector of Dnipro State Agrarian and Economic University, doctor of sciences in public administration, professor, Honored Worker of Education of Ukraine *Anatolii KOBETS*, the first vice-rector – the vice-rector for educational work, professor, candidate of agricultural sciences *Dmytro ONOPRIENKO* for their assistance in the publication of this training manual.

*Присвячується до 100-річчя  
Дніпровського державного аграрно-  
економічного університету*

## ПЕРЕДМОВА

У сучасних умовах питання мобілізації та ефективного використання інвестицій є особливо актуальним для ефективної діяльності підприємства. Щоб інвестувати в правильному напрямку та в потрібний час, підприємство має визначити пріоритетність стратегічних ініціатив у своєму портфелі. Використання даних для прийняття рішень щодо визначення пріоритетів має вирішальне значення. Метою управління інвестиціями є узгодження ключових рішень щодо інвестицій зі стратегією, цілями, вимірними результатами діяльності та фінансовими факторами, характерними для підприємства. Управління інвестиціями - це процес створення портфеля акцій, облігацій та інших інвестицій відповідно до поставлених цілей.

Невизначеність сьогодення, періодичні глобальні фінансово-економічні кризи зумовлюють підвищення ролі інвестиційного менеджменту в забезпеченні ефективного розвитку підприємства. Дослідження в галузі інвестиційного менеджменту є життєво важливою складовою загальної системи стратегічного управління підприємством. Ефективне функціонування підприємства в ринкових умовах не досяжне без налагодженого управління капіталом, що охоплює первинні форми фінансування (інвестування ресурсів) у вигляді матеріальних і грошових активів, а також різні фінансові інструменти.

Навчальний посібник (практикум), поданий у вигляді схем, таблиць та ілюстрацій, розроблено відповідно до навчальної програми дисципліни «Інвестиційний менеджмент» для здобувачів вищої освіти магістратури спеціальності 072 «Фінанси, банківська справа, страхування та фондовий ринок». Завданнями дисципліни «Інвестиційний менеджмент» є навчання здобувачів вищої освіти теоретичним аспектам і практичним навичкам управління інвестиціями не тільки в нагляді за інвестиційним портфелем конкретного підприємства, але й у відповідності інвестиційної стратегії з іншими активами та основними цілями діяльності підприємства.

Авторський колектив висловлює подяку рецензентам навчального посібника д.е.н., с.н.с., професору кафедри фінансів Державного торговельно-економічного університету Валентині МАКОГОН, д.е.н., професору, завідувачці кафедри фінансів, обліку та оподаткування Національного авіаційного університету Тетяні КОСОВІЙ, д.е.н., професору, завідувачці кафедри менеджменту та державного управління Дніпровського державного аграрно-економічного університету Наталії БОНДАРЧУК, ректору Дніпровського державного аграрно-економічного університету, д.н. державного управління, професору, заслуженому працівнику освіти України Анатолію КОБЦЮ, першому проректору – проректору з навчальної роботи, професору, к.с.-г.н. Дмитру ОНОПРИЄНКУ за сприяння у виданні цього навчального посібника.



## TOPIC 1. THEORETICAL AND METHODOLOGICAL BASIS OF INVESTMENT MANAGEMENT

### 1.1. Methodical recommendations for conducting practical classes

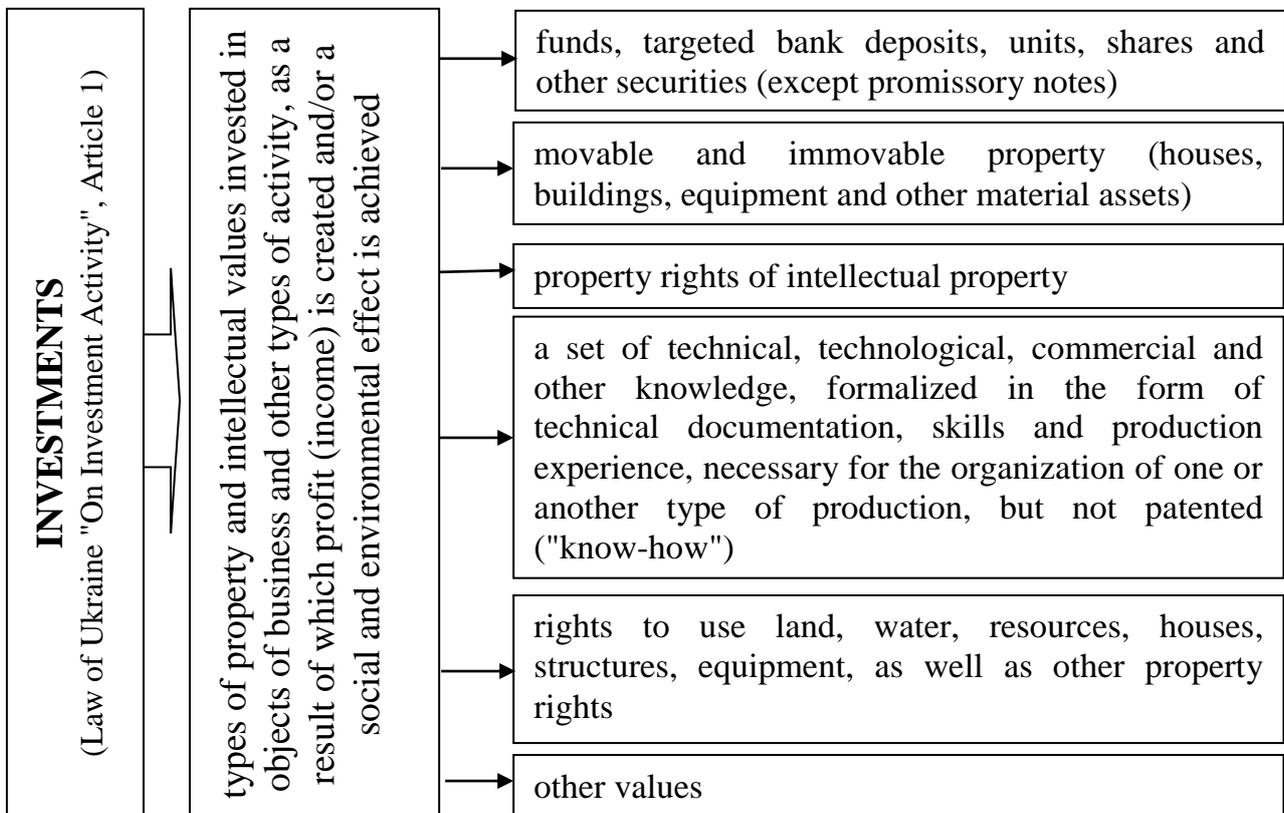
*The purpose of the lesson:* find out the essence of the concept of "investment management"; basic principles of management of investment activities of the enterprise; consolidate in practice the methodological foundations of investment management and the theoretical foundations of investing in the development of human capital

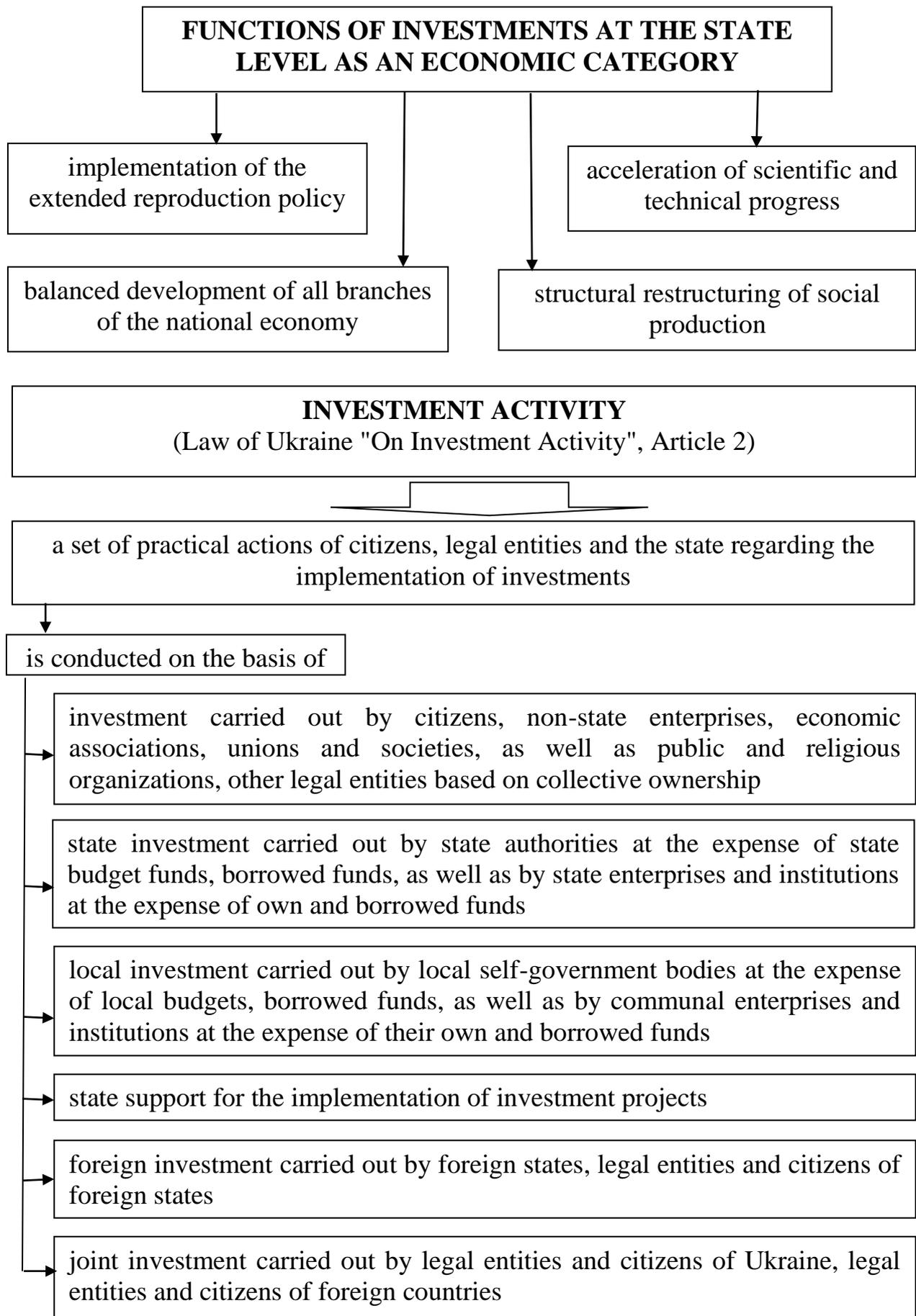
*Plan of a practical session:*

1. Economic essence and classification of investments
2. The essence, functions and mechanism of investment management
3. Organizational support of investment management
4. Systems and methods of investment management

*Theoretical information*

*1. Economic essence and classification of investments*





## INVESTMENT PROJECT

(Law of Ukraine "On Investment Activity", Article 2)

a set of measures (organizational-legal, managerial, analytical, financial, and engineering-technical) determined on the basis of the national system of values and tasks of innovative development of the national economy and aimed at the development of certain industries, sectors of the economy, industries, regions, which are carried out by subjects of investment activity using values in accordance with the provisions Law of Ukraine "On Investment Activity"

The investment project is drawn up in the form of planning and calculation documents necessary and sufficient for the justification of investment, organization and management of works on the implementation of the project within the limits of the determined cost and term of its implementation

### Objects of investment activity

any property, including fixed assets and working capital in all sectors of the economy, securities (except promissory notes), earmarked cash deposits, scientific and technical products, intellectual property, other property objects, as well as property rights

### Subjects of investment activity

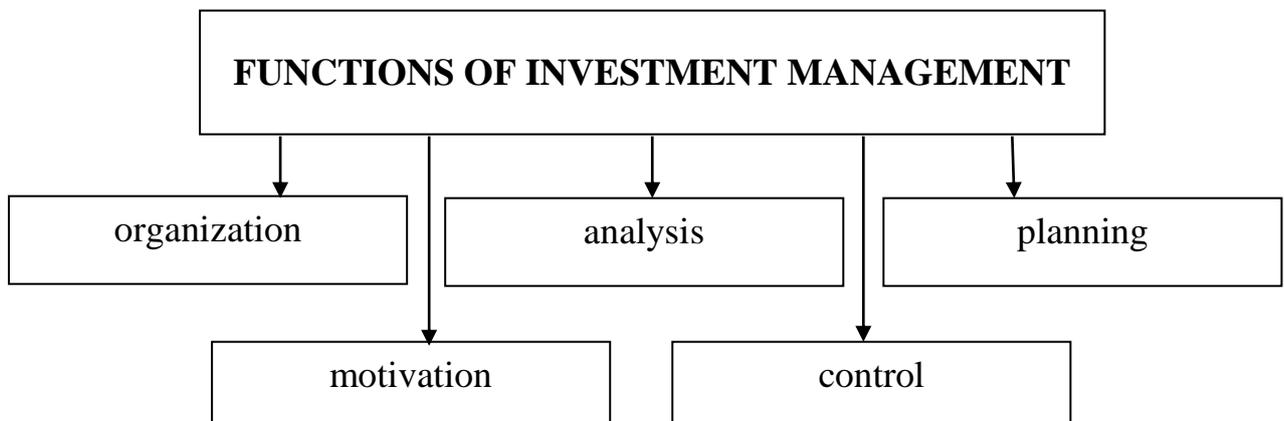
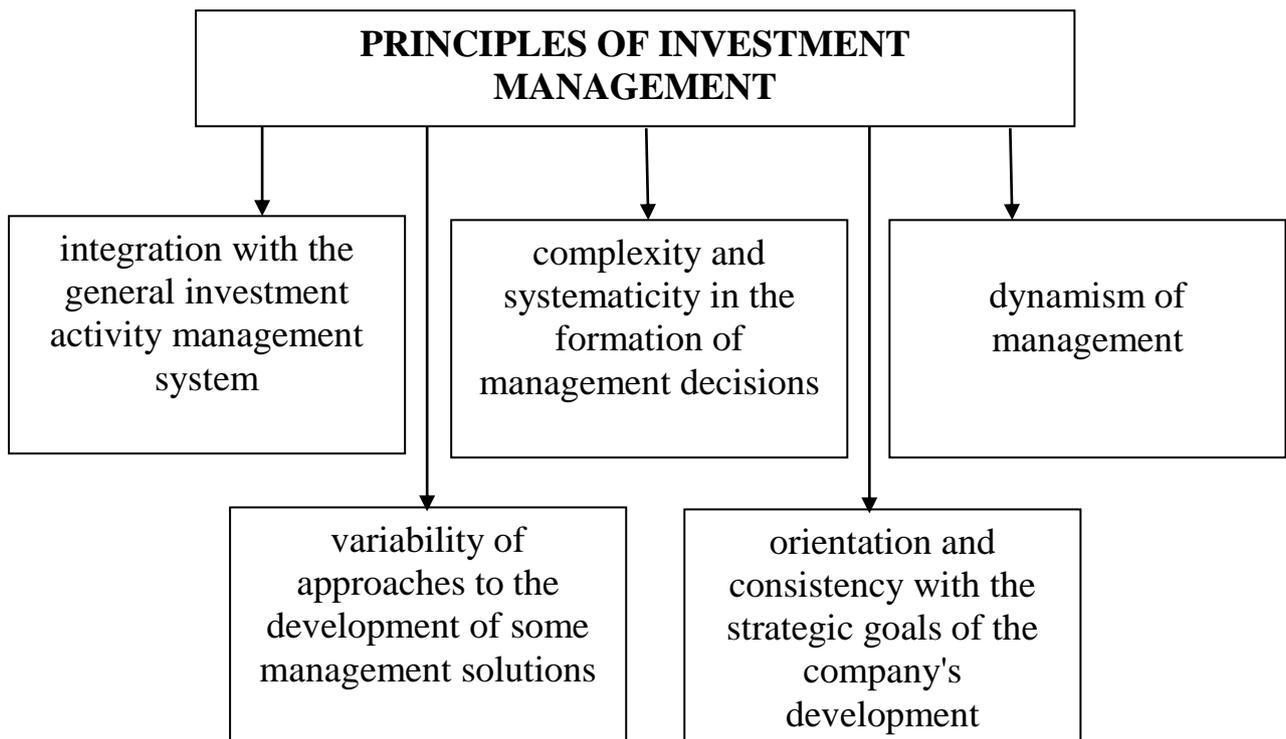
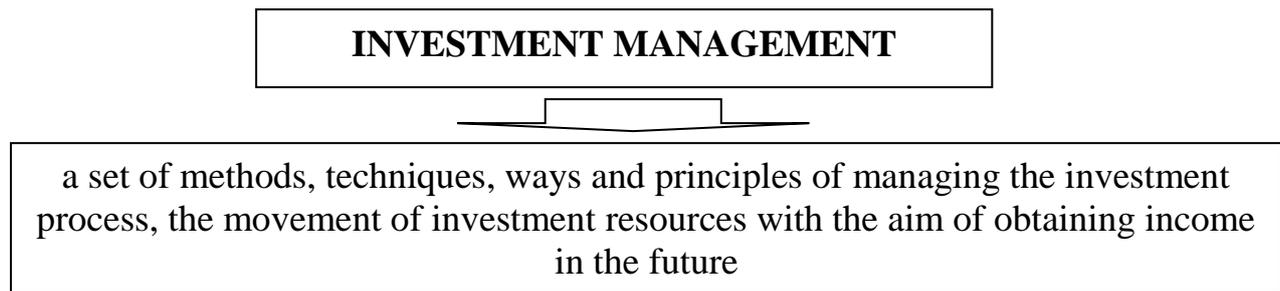
- citizens and legal entities of Ukraine and foreign countries, as well as the state;
- non-state pension funds, joint investment institutes, insurers and financial institutions - legal entities under public law carry out investment activities in accordance with the legislation that determines the specifics of their activities

**Investors** - subjects of investment activities who make decisions about investing their own, borrowed and borrowed property and intellectual values in investment objects

## CLASSIFICATION OF INVESTMENTS

<i>Classification sign</i>	<i>Type of investment</i>	<i>Essence</i>
on objects of investment of funds	real investment	investment in newly created, reconstruction and technical rearmament of enterprises
	financial investments	investing funds in financial instruments, mainly securities
by the nature of participation in the company's affairs	direct investment	economic operations involving the contribution of funds or property to the authorized capital of a legal entity in exchange for the right to participate in the management of the enterprise
	indirect (portfolio) investments	business transactions involving the purchase of securities and other financial assets for cash on the stock market. The investor does not have the right to participate in the management of the enterprise, he receives only dividends
by investment period	short-term (up to 1 year)	investments in short-term deposit contributions, government and corporate bonds with a maturity of up to 1 year, other financial assets
	long-term (more than 1 year)	investment in the main production, innovative activity, securities with a maturity of more than 1 year
by forms of ownership of investors	private	individuals and legal entities with private capital
	state	state and local authorities, state enterprises investing from budget funds
	foreign	individuals and legal entities of foreign countries
	compatible	subjects of different states
regionally	internal	investing within the country
	external	investing outside a certain country
according to the level of risks	venture investments	risky capital investments due to the need to finance small innovative firms in the areas of new technologies
	annuity	investments that bring the investor a certain income at regular intervals

## *2. The essence, functions and mechanism of investment management*



## DIRECTIONS OF IMPLEMENTATION OF INVESTMENT MANAGEMENT FUNCTIONS

- – study of the external investment environment
- – forecasting the investment market situation
- – development of strategic areas of investment activities and strategies for the formation of investment resources of the enterprise
- – search and assessment of investment attractiveness of individual real investment projects, selection of the most effective of them
- – assessment of investment qualities of financial instruments, selection of the most effective of them, formation of an investment program (portfolio)
- – current management of the investment portfolio and implementation of real investment projects and programs
- – development of proposals for restructuring investment portfolios (programs)

## TASKS OF INVESTMENT MANAGEMENT

- – ensuring high rates of economic development of the enterprise through effective investment activities
- – guaranteeing the maximization of investment income at a given level of investment risk and its minimization
- – ensuring the financial stability and solvency of the enterprise in the process of carrying out investment activities
- – search for ways to accelerate the implementation of current real investment programs
- – development of the capital investment budget

### 3. *Organizational support of investment management*

#### **INVESTMENT ACTIVITY MANAGEMENT ORGANIZATION**

coordination and optimization in time and space of the enterprise's investment activities in order to achieve the greatest investment effect in a certain period of time

involves, first of all, the development of the structure and the creation of a system of special internal structural services and divisions of the enterprise, the functioning of which should be aimed at the development and adoption of effective management decisions on all issues of the enterprise's investment activities. The structure of the system of these services depends on the size of the enterprise and the scale of its investment activities

#### **STAGES OF FORMATION OF THE ORGANIZATIONAL SYSTEM FOR MANAGEMENT OF INVESTMENT ACTIVITIES AT THE ENTERPRISE**

1. Study of the peculiarities of the functioning of individual structural divisions of the enterprise and identification of the degree of their influence on the efficiency of investment activities.

2. Development of the structure of the investment activity management system, determination of the types of its elements (departments).

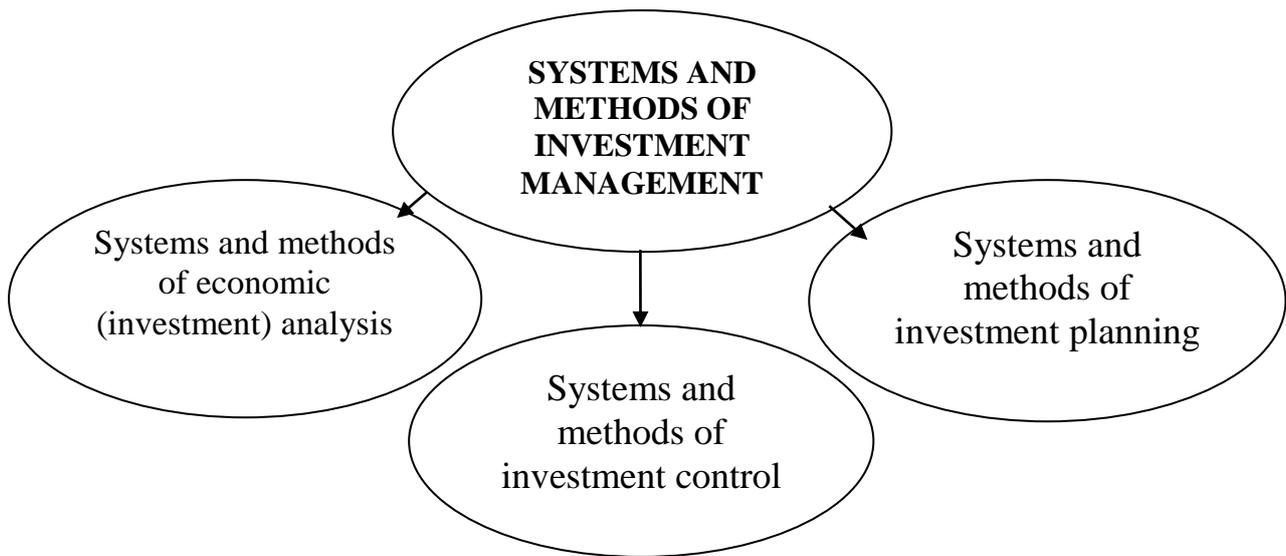
3. Formation of the system of rights and responsibilities and the degree of responsibility of the heads of these departments.

4. Development of planned tasks for these departments and bringing them to the executors.

5. Ensuring control of the performance of established tasks by these departments by receiving relevant information (reports), analyzing it and establishing the causes of deviations.

*The organization of management of investment activities at the enterprise is the basis for making effective management decisions in the field of investments*

#### 4. Systems and methods of investment management



#### SYSTEM OF INVESTMENT ANALYSIS METHODS

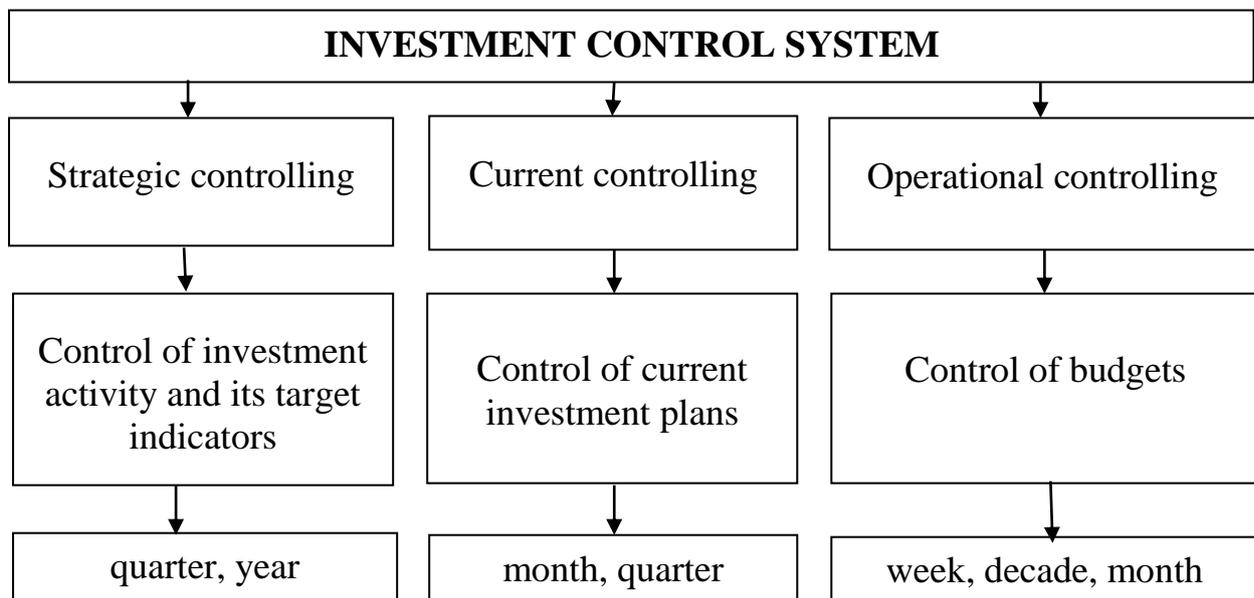
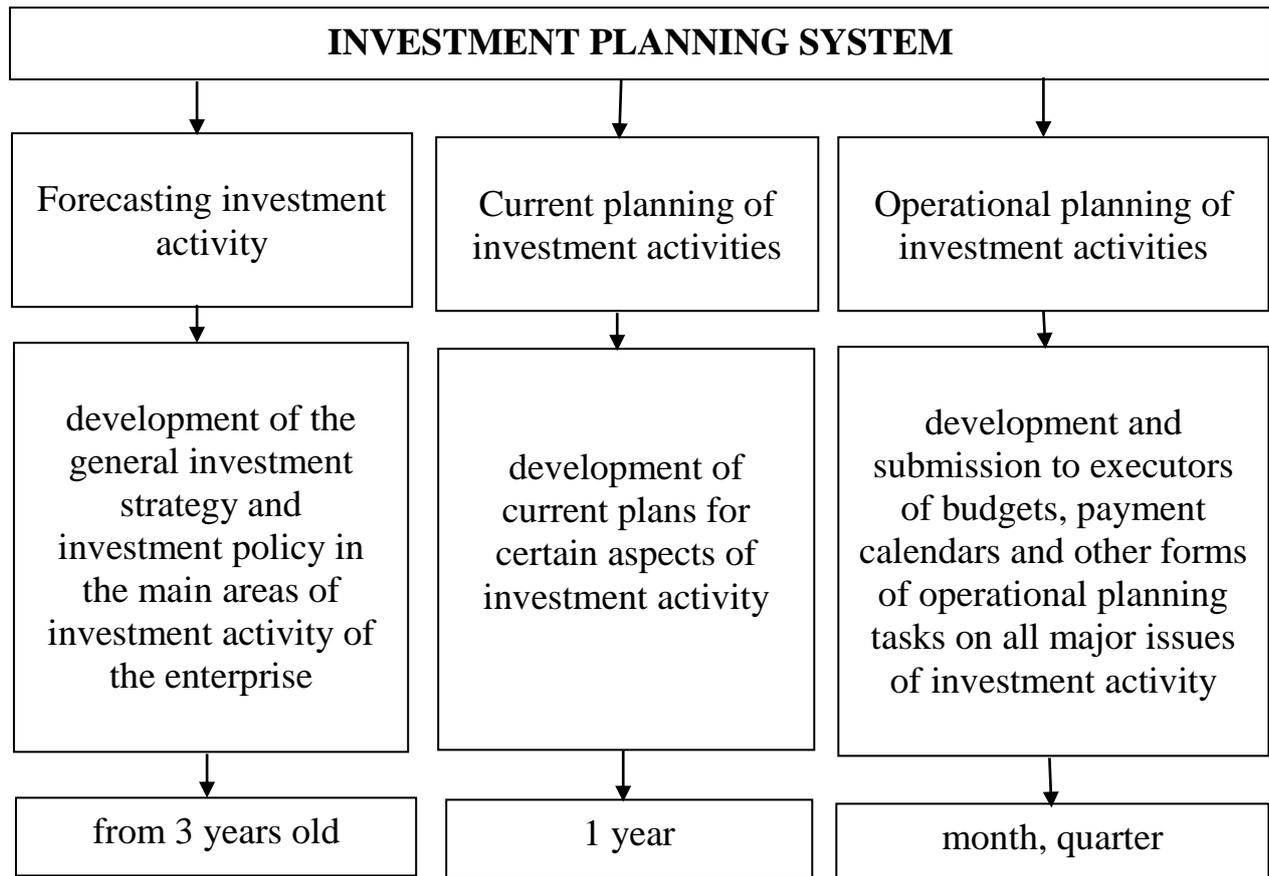
**Horizontal (trend) analysis** is based on studying the dynamics of individual indicators of investment activity over time. In the process of using this analysis system, the growth rates (increase) of individual investment indicators over a number of periods are calculated and the general trends of their change (trends) are determined.

**Vertical (or structural) analysis** is based on the structural detailing (separation) of individual indicators of the enterprise's investment activity. In the process of carrying out this analysis, the specific weight of individual structural elements of the general aggregated indicators is calculated

**The comparative analysis** is based on the comparison of separate groups of similar indicators with each other. In the process of using this analysis system, the absolute and relative deviations of the compared indicators are calculated.

**The analysis of financial ratios** is based on the calculation of the ratio of various absolute indicators of the enterprise's investment activity among themselves. In the process of using this analysis system, various relative indicators and their impact on the level of the company's financial condition are determined. The following groups of analytical financial ratios are most common: estimates of the profitability of investment activities, estimates of the turnover of operating assets.





## 1.2. Practical tasks

### *Solving typical tasks on the topic*

#### **Task 1.**

A potential investor needs to calculate the profitability threshold, margin of financial strength and possible profit / loss and make a decision in which company it is better to invest funds.

Data for calculation:

Table 1.1

Indicator	data on enterprises, thousand hryvnias		
	A	B	C
Revenue from sale	367	255	148
Variable costs	244	136	65
Fixed costs	88	77	55

#### **Solution**

The system of indicators of commercial activity serves to answer the most important questions that arise before a potential investor:

- What profit does the company make?
- How are the results and costs related?
- What is the financial risk of commercial activity?

The analysis of commercial activity cannot be carried out without determining the profitability threshold, the point of cost recovery. Analysis of commercial activity 1 is based on the gross margin calculation method.

$$\text{Gross margin} = \text{Revenue from sale} - \text{Variable costs}$$

$$\text{Gross margin percentage} = \frac{\text{Price} - \text{Variable costs}}{\text{Price}} \times 100$$

The profitability threshold is the sales revenue at which the company no longer has losses, but does not yet receive a profit.

$$\text{Profitability threshold} = \frac{\text{Fixed costs}}{\text{Coverage revenue percentage to sales revenue}} \times 100$$

$$\text{Threshold sales volume} = \text{Profitability threshold} / \text{Price or fixed costs} / (\text{Price} - \text{Average variable costs})$$

Margin of financial strength is the amount by which the company can afford to reduce revenue without leaving the profit zone. The margin of financial strength is determined by the formula:

*Stock of financial strength = Sales revenue – Profitability threshold or as a percentage of sales revenue:*

$$\frac{\text{Revenue from sale} - \text{Profitability threshold}}{\text{Revenue from sale}} \times 100$$

***Enterprise A:***

- 1) Gross margin = 367 – 244 = UAH 123 thousand
- 2) Profit = 123 – 88 = UAH 35 thousand
- 3) Profitability threshold = 88 / 35 \* 100 = UAH 251,4 thousand
- 4) Stock of financial strength = 367 – 251,4 = UAH 115,6 thousand

***Enterprise B:***

- 1) Gross margin = 255 – 136 = UAH 119 thousand
- 2) Profit = 119 – 77 = UAH 42 thousand
- 3) Profitability threshold = 77 / 42 \* 100 = UAH 183,3 thousand
- 4) Stock of financial strength = 255 – 183,3 = UAH 71,7 thousand

***Enterprise C:***

- 1) Gross margin = 148 – 65 = UAH 83 thousand
- 2) Profit = 83 – 55 = UAH 28 thousand
- 3) Profitability threshold = 55 / 28 \* 100 = UAH 196,4 thousand
- 4) Stock of financial strength = 148 – 196,4 = – UAH 48,4 thousand

***Conclusion:*** The investor can choose options A and B, option C is better not to choose

**Task 2.**

Calculate whether the investor's opinion will change if the sales revenue at the enterprises listed in task 1 changes: enterprise A will increase by 10%, enterprise B will decrease by 10%, enterprise C will remain unchanged.

**Solution*****Enterprise A:***

- 1) Gross margin =  $403,7 - 268,4 = \text{UAH } 135,3$  thousand
- 2) Profit =  $135,3 - 88 = \text{UAH } 47,3$  thousand
- 3) Profitability threshold =  $88 / 47,3 * 100 = \text{UAH } 186,0$  thousand
- 4) Stock of financial strength =  $403,7 - 186,0 = \text{UAH } 217,7$  thousand

***Enterprise B:***

- 1) Gross margin =  $229,5 - 122,4 = \text{UAH } 107,1$  thousand
- 2) Profit =  $107,1 - 77 = \text{UAH } 30,1$  thousand
- 3) Profitability threshold =  $77 / 30,1 * 100 = \text{UAH } 255,8$  thousand
- 4) Stock of financial strength =  $229,5 - 255,8 = - \text{UAH } 26,3$  thousand

***Enterprise C: без змін***

**Conclusion:** The investor can choose only option A, options B and C - it is better not to choose

***Tasks for independent work*****Task 1.**

A potential investor needs to calculate the profitability threshold, margin of financial strength and possible profit / loss and make a decision in which company it is better to invest funds. Data for calculation:

Table 1.2

Indicator	data on enterprises, thousand hryvnias		
	A	B	C
Revenue from sale	144	208	305
Variable costs	45	99	78
Fixed costs	55	23	70

How will the investor's opinion change if the revenue from sales at enterprises changes: enterprise A will decrease by 10%, enterprise B will increase by 10%, enterprise C will increase by 15%?

**Task 2.**

A potential investor needs to calculate the profitability threshold, margin of financial strength and possible profit / loss and make a decision in which company it is better to invest funds.

Data for calculation:

Table 1.3

Indicator	data on enterprises, thousand hryvnias		
	A	B	C
Revenue from sale	455	541	647
Variable costs	312	444	325
Fixed costs	108	23	215

How will the investor's opinion change if the revenue from sales at enterprises changes: enterprise A will decrease by 15%, enterprise B will increase by 12%, enterprise C will increase by 8%?

**Task 3.**

A potential investor needs to calculate the profitability threshold, margin of financial strength and possible profit / loss and make a decision in which company it is better to invest funds.

Data for calculation:

Table 1.4

Indicator	data on enterprises, thousand hryvnias		
	A	B	C
Revenue from sale	107	200	188
Variable costs	44	32	66
Fixed costs	21	44	56

How will the investor's opinion change if the revenue from sales at enterprises changes: enterprise A will increase by 15%, enterprise B will decrease by 12%, enterprise C will decrease by 8%?

**Task 4.**

The owner needs to choose one of the options: liquidate the farm or reorganize it. It was determined that the liquidation value of the farm is UAH 54 million. The projected average annual net cash flow is UAH 18 million. The weighted average cost of capital is 12%.

**Task 5.**

The anti-crisis manager needs to choose one of the options: liquidate the enterprise or reorganize with the involvement of additional investments, if it is known that the liquidation value of the enterprise is UAH 10 million. The projected average annual net cash flow is UAH 2 million. The weighted average cost of capital is 5%.

### 1.3. Terminological dictionary of key concepts

**Investments** are a set of long-term expenditures of financial, labor, and material resources for the purpose of increasing savings and obtaining profit.

**Capital investments** are a part of investments aimed at the reproduction of fixed assets for production and non-production purposes, the creation of new ones, reconstruction and development of existing fixed assets, including objects of the social sphere.

**Capital assets** are substantial items of property such as homes, cars, investment properties, stocks, bonds, and even collectibles or art.

**Investment resources** – all types of monetary and other assets involved in making investments in investment objects.

**Investment tools** are absolutely everything in which you can invest money and get a certain income from it.

**An investor** is a legal entity or an individual who makes investments, invests own, borrowed or other borrowed funds in investment projects, financial or real assets.

**Investment analysis** is a process of researching the investment activity and efficiency of an enterprise's investment activity in order to identify reserves for their growth.

**Investment controlling** is a controlling system that ensures the concentration of control actions on the most priority areas of the enterprise's investment activity, the timely detection of deviations of its actual results from the predicted ones and the adoption of operational management decisions that should ensure the normalization of this activity.

**Investment management** is the process of managing all aspects of the investment activity of a business entity.

**An investment project** is a long-term investment of money and other resources with the aim of obtaining economic benefits.

#### 1.4. Test tasks

##### 1. Investments are:

- 1) capital formed by the enterprise for investment;
- 2) investment of all types of property and intellectual values in various objects;
- 3) an economic operation that involves the acquisition of fixed assets, intangible assets, corporate rights and securities in exchange for funds or property;
- 4) investing capital in various financial investment instruments, mainly in securities, with the aim of obtaining income.

##### 2. What defines investment activity?

- 1) a set of practical actions of legal entities, the state and citizens regarding the implementation of investments;
- 2) the sphere where the practical implementation of investments is carried out (construction, machine building);
- 3) the process of obtaining profit by the enterprise;

4) there is no correct answer.

### **3. What is investment management?**

1) the process of managing all aspects of the firm's investment activities;

2) a set of practical actions of legal entities, the state, and citizens regarding the implementation of investments;

3) formation of the firm's investment portfolio;

4) the process of involving all information resources at the enterprise.

### **4. What is the main goal of investment management?**

1) ensuring high rates of development of the firm;

2) ensuring the most effective ways of implementing the investment strategy at individual stages of the firm's investment strategy;

3) search for ways to accelerate the implementation of investment projects, investment programs;

4) development of a strategy for the formation of investment resources and ensuring maximum profit.

### **5. What is investment in a broad sense?**

1) a set of practical actions of citizens, legal entities and the state regarding the implementation of investments;

2) characterize the general investment of funds, which are directed to reproduction;

3) all types of intellectual and property values that are invested in all types of activities for the purpose of obtaining profit or achieving a social effect;

4) total gross and net cash flows.

### **6. What does the term "investment" mean in a narrow sense?**

1) transfers;

2) funds;

3) deposits;

4) loans.

### **7. How are investments classified by investment objects?**

1) real and financial investments;



- 2) direct and indirect;
- 3) private and joint;
- 4) domestic and foreign.

**8. For the purpose of efficient functioning of the economy, investments are divided into the following types:**

- 1) financial and net investments;
- 2) gross and net investments;
- 3) real and financial investments;
- 4) gross and financial investments.

**9. Who can be the subject of investment activity?**

- 1) only investors;
- 2) only participants;
- 3) investors and participants;
- 4) there is no correct answer.

**10. According to the forms of ownership, investments are of the following types:**

- 1) joint, foreign;
- 2) open, shared, private, closed;
- 3) state, joint-stock;
- 4) private, state, foreign, joint.

**11. Which of the tasks of investment management is a priority?**

- 1) ensuring high rates of economic development of the enterprise with sufficient financial stability;
- 2) maximization of income from investment activities;
- 3) ensuring minimization of investment risks;
- 4) search for ways to accelerate the implementation of investment programs.

**12. Which function of investment management is responsible for the formation of a system of primary observational indicators?**

- 1) organization of monitoring the implementation of individual investment programs and projects;

- 2) development of the firm's investment resources formation strategy;
- 3) study of the external environment;
- 4) formation of an investment portfolio.

**13. What is the investment sphere?**

- 1) investment in various financial assets;
- 2) the sphere where the practical implementation of investments is carried out;
- 3) ensuring the most effective ways of implementing the investment strategy;
- 4) all answers are correct.

**14. Direct investment means:**

- 1) direct participation of the investor in the selection of investment objects and investment of funds;
- 2) investments that go to expansion, i.e. increase of production potential;
- 3) investments in physical assets;
- 4) all answers are correct.

**15. Name the objects of investment activity:**

- 1) new fixed assets, securities, shares, promissory notes, bonds;
- 2) houses and structures, targeted cash contributions;
- 3) scientific and technical products, property rights;
- 4) all answers are correct.

**16. What cannot be objects of investment activity?**

- 1) targeted cash deposits;
- 2) objects of residential construction, the construction of which is financed with the use of non-state funds;
- 3) basic funds in all branches and spheres of the national economy;
- 4) scientific and technical products.

**17. What function of investment management examines the legal conditions of investment activity as a whole?**

- 1) study of the internal environment;
- 2) research of the external environment and programming of the investment management conjuncture;

- 3) programming and research of the competitive environment;
- 4) selection of investment projects and capital expansion.

**18. Formation of accumulations, investment of resources, obtaining profit**

**is:**

- 1) purpose of investment activity;
- 2) stages of investment activity;
- 3) areas of investment activity;
- 4) the purpose of innovative activity.

**19. How many laws and regulations regulate investment activities in Ukraine?**

- 1) >100;
- 2) <100;
- 3) 100;
- 4) there is no correct answer.

**20. According to the nature of the assets, the following types of investments can be distinguished:**

- 1) in non-financial and financial assets;
- 2) direct and indirect;
- 3) passive and active;
- 4) all answers are correct.

**21. An investor is:**

- 1) an entity of entrepreneurial activity that makes a decision to invest its own, borrowed and borrowed property and intellectual values in investment objects;
- 2) this is the capital formed by the enterprise for making investments;
- 3) the process of finding the necessary investment resources, choosing effective investment objects (tools), forming an investment program (investment portfolio) balanced according to the selected parameters and ensuring its implementation;

4) a system of principles and methods for the development and implementation of management decisions related to the implementation of various aspects of the enterprise's investment activities.

**22. According to the direction of the main economic activity, investors are classified:**

- 1) strategic investor;
- 2) portfolio investor;
- 3) individual investor;
- 4) domestic investor.

**23. According to the purpose of investment, investors are classified as:**

- 1) institutional investor;
- 2) conservative investor;
- 3) portfolio investor;
- 4) foreign investor.

**24. Macroeconomic factors of investment activity include:**

- 1) inflation rate;
- 2) deflation;
- 3) assessment of the financial condition of the enterprise;
- 4) all answers are correct.

**25. The main external users of investment information include:**

- 1) managers (directors) of the enterprise;
- 2) shareholders of the enterprise;
- 3) investment managers of all levels;
- 4) tax authorities.

**26. The main forms of investment analysis at the enterprise, depending on the depth of the analytical study, include:**

- 1) external investment analysis;
- 2) thematic investment analysis;
- 3) analysis of investment activities of the enterprise as a whole;
- 4) express analysis.

**27. The main content of the SWOT analysis is:**

- 1) study of the nature of the strengths and weaknesses of the enterprise's investment activity;
- 2) isolation of individual indicators of economic activity from general components for their further study;
- 3) determination of general assessments and forecast of future results of the enterprise's activity;
- 4) all answers are correct.

**28. The system of operative planning of investment activity is based on:**

- 1) on the developed investment strategy and investment policy for certain aspects of investment activity;
- 2) development of a complex of short-term planning tasks for investment provision of the main areas of development of the enterprise's economic activity;
- 3) on a certain investment ideology;
- 4) all answers are correct.

**29. Enterprises allocate budgets by type of investment activity:**

- 1) financial investment;
- 2) microinvestment;
- 3) macro investment;
- 4) there is no correct answer.

**30. Types of investment controlling include:**

- 1) initial;
- 2) current;
- 3) final;
- 4) daily.

**1.5. Questions for self-control**

1. What is the purpose of investment management?
2. List the tasks of investment management.
3. What role do investments play in ensuring the efficiency of the enterprise?

4. What is the essence of the investment multiplier effect?
5. What macroeconomic indicators affect the investment activity of the enterprise?
6. Describe the enterprise as an object of investment management. State the classification of enterprises as objects of investment management.
7. What is the investment management mechanism?
8. Describe the functions of investment management.
9. Describe the system of organizational support for investment management.
10. Name the main stages of formation of a system of organizational support for managing investment activities of the enterprise?
11. Describe the investment management information support system
12. What indicators system of investment management information support is formed from external and internal sources?
13. Describe the systems and methods of investment analysis.
14. What is the essence of:
  - horizontal (trend) analysis?
  - vertical analysis?
  - comparative analysis?
  - analysis of coefficients?
  - integral analysis?
15. Describe the systems and methods of investment planning.
16. Describe the systems and methods of investment control.
17. Name the main principles of building an investment controlling system at the enterprise

## TOPIC 2.

### METHODOLOGICAL TOOLKIT OF INVESTMENT MANAGEMENT

#### 2.1. Methodical recommendations for conducting practical classes

*The purpose of the lesson:* consolidation of theoretical knowledge and acquisition of practical skills on the use of the concept of the value of money over time; making calculations in the process of managing the company's investments, taking into account the inflation factor and the level of liquidity

*Plan of the practical session:*

1. The concept and methodological toolkit of evaluating the value of money over time
2. Taking the inflation factor into account in investment calculations
3. Consideration of the risk factor in investment calculations
4. Consideration of the liquidity factor in investment calculations

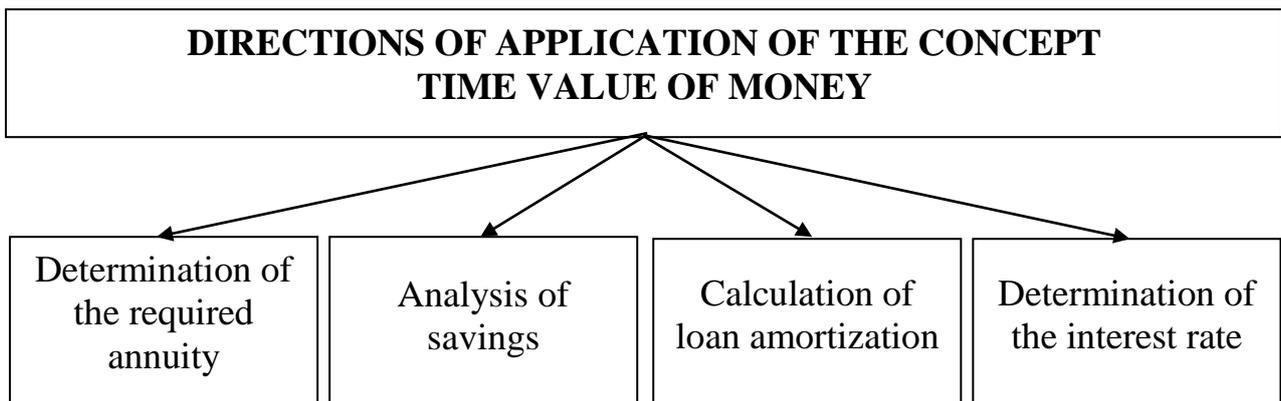
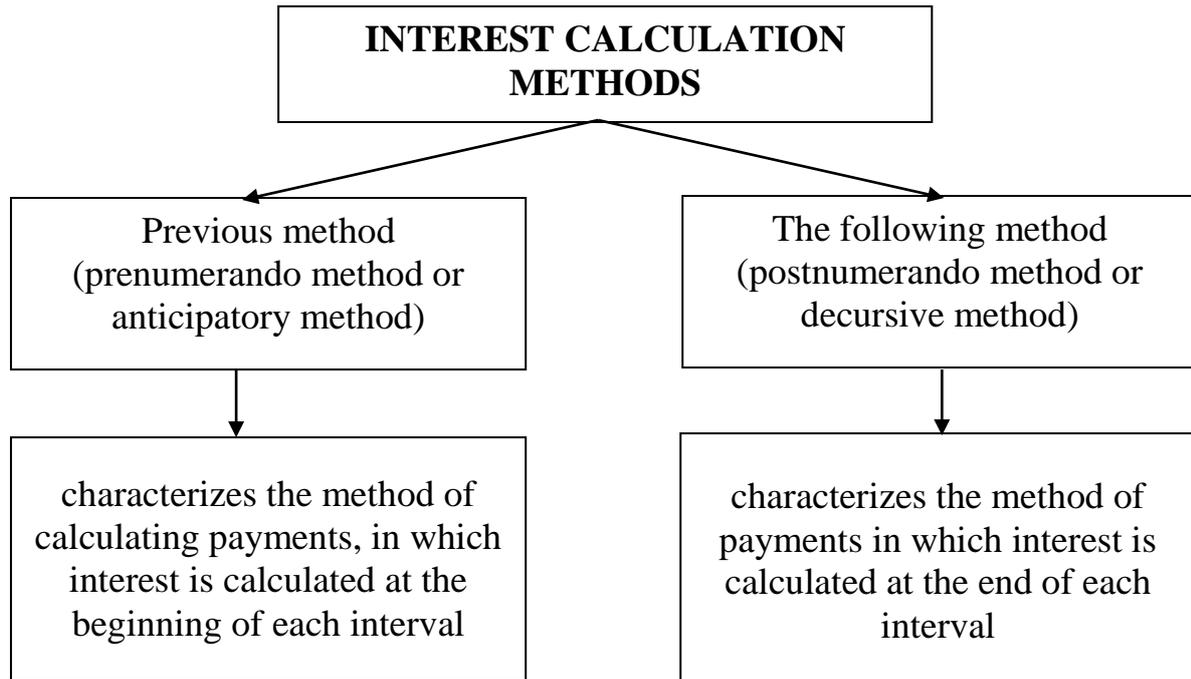
*Theoretical information*

- 1. The concept and methodological toolkit of evaluating the value of money over time**

#### THE TIME VALUE OF MONEY CONCEPT

is that the value of money changes over time, taking into account the rate of return on the financial market, which is usually the rate of loan interest (or interest). That is, the same amount of money in different periods of time has different value; this value at the present time is always higher than at any future period

*The main instrument for evaluating the value of money over time is the interest rate (interest rate) - a specific indicator, in accordance with which the amount of interest per unit of monetary capital is paid in specified terms. Usually, the interest rate characterizes the ratio of the annual amount of interest and the amount of provided (borrowed) monetary capital (expressed as a decimal fraction or percentage)*



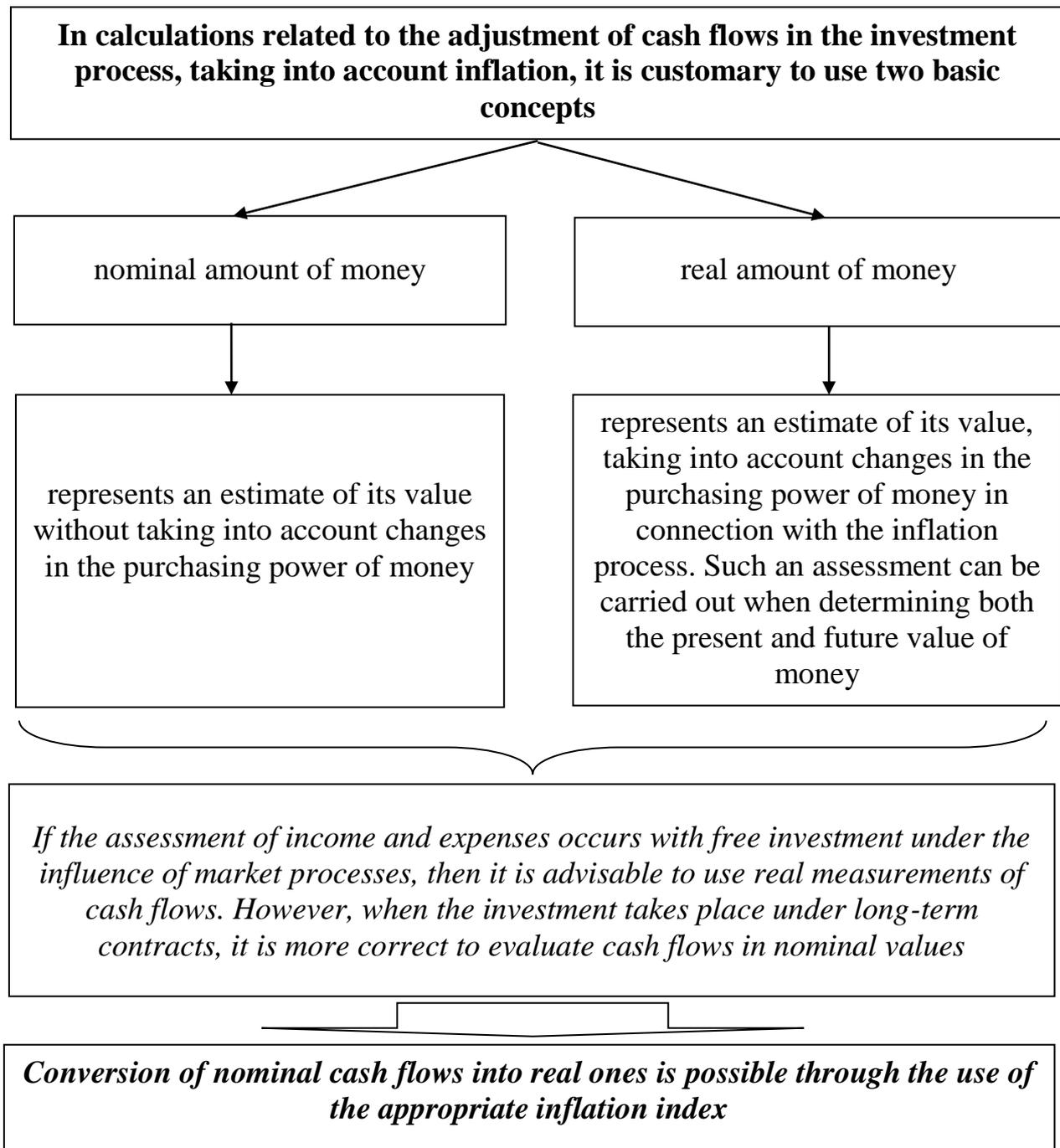
**Compounding** is the process of determining the future value of money based on the present value.

**Discounting** is the process of determining the present value of money if its future value is known.

**Simple interest** - accrual from the present value of the deposit at the end of one payment period determined by the investment conditions (month, quarter, etc.).



## 2. Taking into account the inflation factor in investment calculations

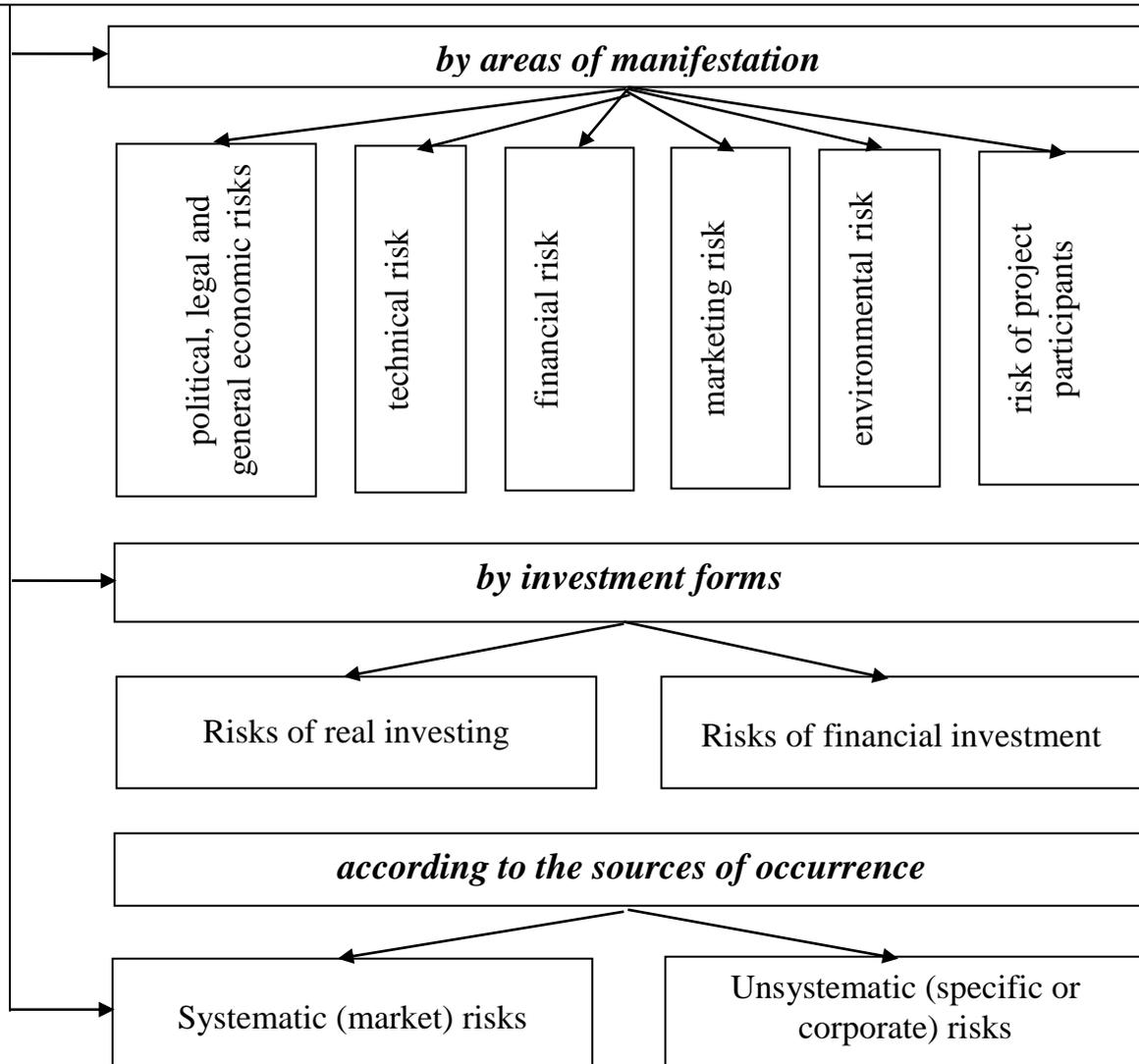


### 3. Consideration of the risk factor in investment calculations

#### INVESTMENT RISK

the probability of obtaining a different from the expected result of investment activity due to the action of exogenous and endogenous influencing factors

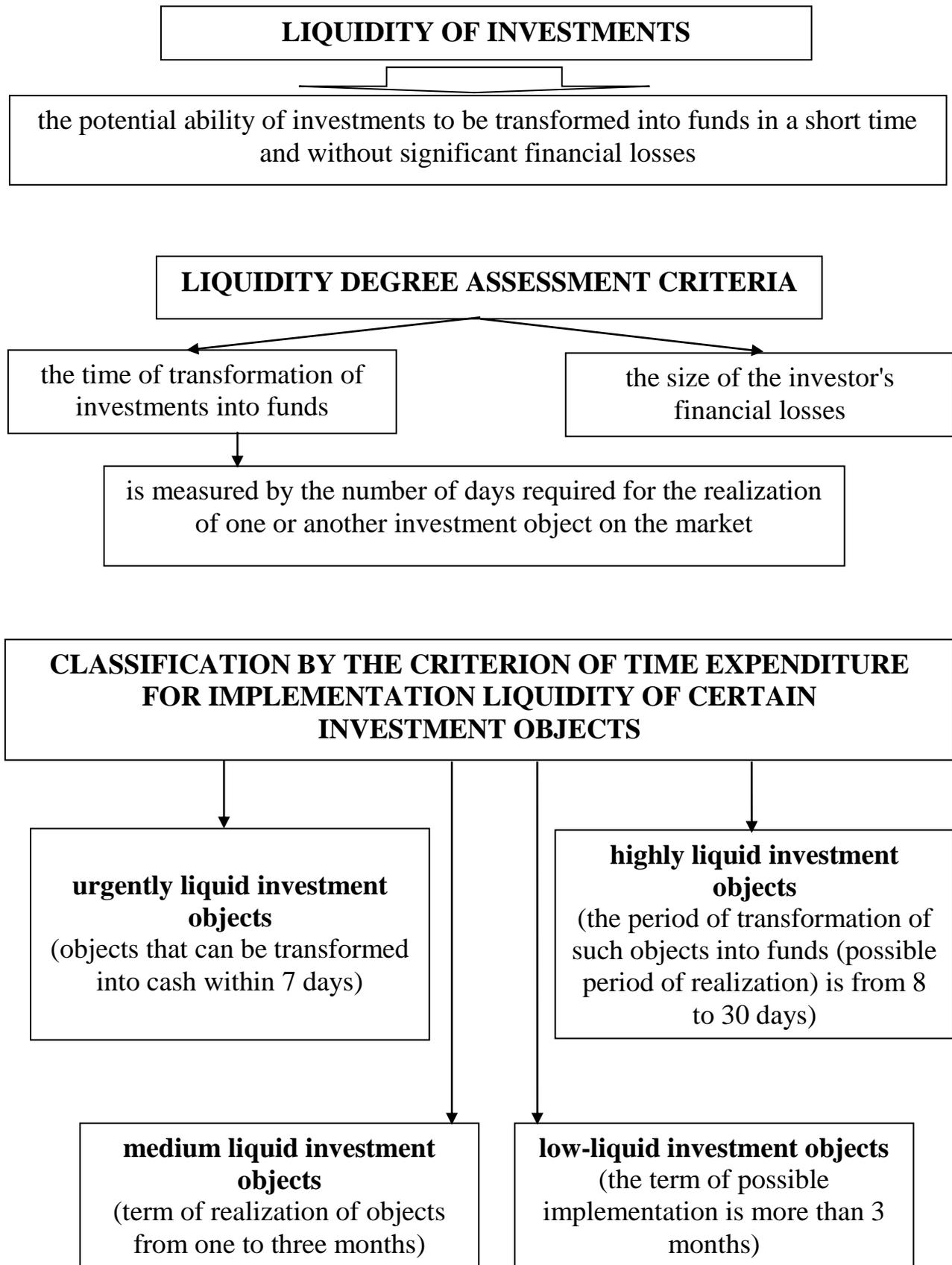
#### CLASSIFICATION OF INVESTMENT RISKS



**The concept of taking into account the risk factor** in investment calculations consists in an objective assessment of its level in order to achieve the necessary profitability of investment operations and minimize its negative financial consequences for the investment activity of the enterprise.

*Level of investment risk is defined as the deviation of expected returns from investment from the average or estimated value. The assessment of investment risks is always related to the assessment of expected income and the probability of their loss*

#### 4. Consideration of the liquidity factor in investment calculations



## 2.2. Practical tasks

### *Solving typical tasks on the topic*

#### **Task 1.**

4500 hryvnias are invested at 17% per annum for 5 years. Determine the amount that accumulates at the end of the 5th year (compound interest). Compare the obtained result with the value of the accrued amount calculated using the simple interest rate. Draw conclusions.

#### **Solution**

Simple interest is calculated using the following formula:

$$S = P \times i \times t \quad (2.1)$$

where  $I$  — the amount of profit of the owner of the investment;

$i$  — interest rate;

$t$  — investment time period;

$P$  — initial amount of investment (deposit).

The essence of the simple interest calculation method boils down to the fact that interest is calculated throughout the entire term of the investment (loan) on the same amount of invested capital. At the end of period  $t$ , the amount received by the investor is equal to  $P + I$ . Then:

$$S = P + I = P + P \times i \times t = P \times (1 + i \times t) \quad (2.2)$$

The value  $(1 + it)$  is called the simple interest compounding factor.

The compound interest calculation method consists in the fact that in the first period the calculation is carried out on the original investment (loan) amount, after that it is compounded with the accrued interest and in each subsequent period the interest is accrued on the already accrued amount.

$$S_n = P \times (1 + i)^n \quad \text{at } t = n \quad (2.3)$$

where  $(1 + i)$  — is a complex decursive coefficient;

$(1 + i)^n$  — compound interest compounding factor.

Using equation (2.3), we get:

$$S = 4500 \times (1 + 0,17)^5 = 4500 \times 2,19 = 9855 \quad \text{UAN}$$

With compound interest, at the end of ten years you can get 9855 UAN.

Using equation (2.2), we get:

$$S = 4500 \times (1 + 0,17 \times 5) = 8325 \quad \text{UAN}$$

With simple interest, at the end of ten years you can get UAH 8,325.

Therefore, the calculations made allow us to conclude that the amount of capital calculated by the method of compound interest is exceeded.

## **Task 2.**

Calculate the term for the initial investment amounts to double by using simple and compound interest compounding factors. The annual interest rate is 5%.

## **Solution**

Using compounding multipliers for simple and compound interest rates, determine the time required to increase the initial amount  $N$  times. In order for the initial amount  $P$  to increase by  $N$  times, it is necessary that the multiplication factors be equal to  $N$ , i.e.:

- for simple interest rates  $1 + in \times n = N$ , whence

$$n = \frac{(N - 1)}{i_s} \quad (2.4)$$

- for compound interest rates  $(1 + i_c)^n = N$ , whence

$$n = \frac{\ln N}{\ln(1 + i_c)} \quad (2.5)$$

Formulas (2.4) and (2.5) are used to calculate the term for doubling the initial investment amount.

We have 5% for a simple interest rate:

$$n = (2 - 1)/0,25 = 1/0,25 = 4 \text{ years.}$$

For a compound interest rate of 5%, we have:

$$n = \frac{\ln 2}{\ln(1 + 0,25)} = \frac{0,69}{0,22} = 3,14$$

So it takes 4 years to double the initial investment amount at 25% annual simple interest rate, and 3 years and 2 months at 25% annual compound interest rate.

### **Task 3.**

The investor plans to invest UAH 4,500. in an annuity at the end of each year for 5 years. If interest at the rate of 17% is compounded annually, what amount can the investor receive after 5 years?

### **Solution**

Investing money in various programs, creating earmarked funds, paying off bank debt, etc., involve payments made at certain intervals. At the same time, a number of successive payments, called a flow of payments, arises.

A series of consecutive fixed payments made at equal intervals of time is called a financial annuity or an annuity.

Generalizing indicators of an annuity are its future and present value.

The future value of an annuity is the sum of all members of the stream of payments with accrued interest at the end of the period, that is, on the date of the last

payment. It shows how much capital invested at regular intervals throughout the annuity term will represent, along with accrued interest.

$$F(1+i) = A[(1+i)^n + (1+i)^{n-1} + \dots + (1+i)]$$

$$F_i = A((1+i)^n - 1)$$

$$F = A \frac{(1+i)^n - 1}{i} \quad (2.6)$$

$$F = 4500 \times \frac{(1+0,17)^5 - 1}{0,17} = 4500 \times \frac{2,19 - 1}{0,17} = 4500 \times 7 = 31500 \quad \text{UAN}$$

At the end of the 5th year, the investor will receive UAH 31,500.

#### Task 4.

The corporation expects to receive the following cash flows from investments: year 1 - 5,500 hryvnias, year 2 - 6,700 hryvnias, year 3 - 8,200 hryvnias. The required rate of return on investments is 10%. Determine the present value of the cash flows from the investment.

#### Solution

The present value of a series of payments (or receipts) is the sum of the annual individual payments (receipts). This amount is expressed by the following formula:

$$PVA = \frac{S_1}{1+i} + \frac{S_2}{(1+i)^2} + \dots + \frac{S_n}{(1+i)^n} \quad (2.7)$$

where PVA — the present value of the money to be received

$$PVA = \frac{5500}{(1+0,1)} + \frac{6700}{(1+0,1)^2} + \frac{8200}{(1+0,1)^3} = 5000 + 5537,19 + 3203,13 = 13740,32 \text{ UAH}$$

The present value of cash flows from investments equals UAH 13,740.32

### Task 5.

Determine the nominal future value of the contribution, taking into account inflation, if:

- the initial amount of the contribution is UAH 25,000;
- the real annual interest rate used to build up the cost of the contribution – 12%;
- projected annual rate of inflation - 7%;
- the total period of placement of the contribution is 4 years with interest accrual once a year.

### Solution

When estimating the future value of money, taking into account inflation, a formula is used, which is a modification of the previously considered Fisher Model:

$$FI_N = IAC \times [(1 + I_r) \times (1 + I)]^t \quad (2.8)$$

where  $FI_H$  – the nominal future value of the contribution (money), which takes into account inflation;

$IAC$  – the initial amount of the contribution;

$I_r$  – real interest rate (decimal);

$I$  – projected inflation rate (decimal fraction);

$t$  – the number of intervals at which interest payments are made.

By substituting these indicators into the above formula, we will obtain the nominal future value of the contribution, which takes into account the inflation factor:



$$FI_N = 25000 \times [(1 + 0,12) \times (1 + 0,07)]^4 = 25000 \times 2,07 = 51750 \text{ UAN.}$$

### Task 6.

It is necessary to determine the real value of funds under the following conditions:

- expected nominal future value of money - UAH 25,000;
- real interest rate for discounting the cost - 12% per year;
- projected annual rate of inflation - 7%;
- the discounting period is 4 years, and its interval is 1 year.

### Solution

The actual cost of funds, taking into account inflation, is determined by the formula:

$$R_p = FI_N / [(1 + I_r) \times (1 + IR)]^t \quad (2.9)$$

where  $R_p$  – the real present amount of the contribution (amounts), which takes into account the factor of inflation;

$FI_N$  – expected nominal future value of contribution (cash);

$I_r$  – real interest rate used for discounting (decimal);

$IR$  – projected inflation rate (decimal fraction);

$t$  – the number of intervals at which interest payments are made.

By substituting these indicators into the above formula, we will get the real present amount of money, which takes into account the inflation factor:

$$R_p = 25000 / [(1 + 0,12) \times (1 + 0,07)]^4 = 25000 / 2,07 = 12077,3 \text{ UAN}$$

### Task 7.

It is necessary to determine the future value of the deposit taking into account the risk factor under the following conditions: the initial amount of the deposit is UAH 25,000, the rate of return on risk-free operations on the investment market is

4%. The level of the risk premium is set at 7%, and the total investment period is 4 years with interest accrual once a year.

### **Solution**

A formula is used to estimate the future value of money taking into account the risk factor:

$$FR = P \times [(1 + A_n) \times (1 + RP_n)]^n \quad (2.10)$$

where  $F_R$  – the future value of the deposit (money), which takes into account the risk factor;

$P$  – the initial deposit amount;

$A_n$  – rate of return on risk-free operations per investment. market (decimal fraction);

$RP_n$  – risk premium for investment instrument (transaction) (decimal fraction);

$n$  – the number of intervals at which payments are made in the total time period.

Substituting the indicators into formula (2.10), we get:

$$FR = 25000 \times [(1 + 0,04) \times (1 + 0,07)]^4 = 25000 \times 1,53 = 38250 \text{ UAN}$$

### **Task 8.**

It is necessary to determine the present value of funds taking into account the risk factor under the following conditions:

- expected future value of money - UAH 25,000;
- rate of return on risk-free transactions on the financial market is 4%;
- the risk premium level is set at 7%;
- the discounting period is 4 years, and its interval is 1 year.

### **Solution**

A formula is used to estimate the present value of money taking into account the risk factor:

$$PR = FR / [(1 + A_n) \times (1 + RP_n)]^n \quad (2.11)$$

where  $PR$  – the present value of investments (cash), which takes into account risk factors;

$FR$  – expected future value of investment (cash);

$A_n, RP_n, n$  – the same parameters as in formula (2.10).

By substituting these data into the above formula (2.11), we will get the value of the present value of investments (cash funds), taking into account risk factors:

$$PR = 25000 / [(1 + 0,04) \times (1 + 0,07)]^4 = 25000 / 1,53 = 16339,87 \text{ UAN}$$

### **Task 9.**

Determine the future value of the instrument taking into account liquidity if:

- the cost of purchasing an investment tool is UAH 25,000;
- the average annual rate of return on investment. instruments with absolute liquidity - 17%;
- the required level of the premium for liquidity, determined by the investment instrument - 3%;
- the total period planned for the use of this investment tool is 4 years, with the expected payments of current income on it once a year.

### **Solution**

The required level of liquidity premium is determined by the formula:

$$P_L = (OP_L \times RR_L) / n \quad (2.12)$$

where  $P_L$  – required level of liquidity premium, in percentage;

$OP_L$  – liquidity period of a specific investment object (instrument), in days;

$RR_L$  – average annual rate of return of an investment object (instrument) with absolute liquidity, in loans;

$n$  – the number of intervals in which payments are made in the total time period.

The future value of the investment instrument, which takes into account the liquidity factor, is determined by the formula:

$$F_L = InV_L \times [(1 + RR_L) \times (1 + P_L)]^n \quad (2.13)$$

where  $InV_L$  – initial value.

Substituting these indicators into the above formula (2.13), we obtain:

$$F_L = 25000 \times [(1 + 0,17) \times (1 + 0,03)]^4 = 25000 \times 2,14 = 53500 \text{ UAN}$$

### **Task 10.**

Determine the present value of funds taking into account liquidity, if:

- the expected future value of the investment instrument is UAH 25,000;
- average annual rate of return on investment instruments with absolute liquidity - 17%;
- the required level of premium for liquidity determined by this investment instrument - 3%;
- the total period of intended use of this investment tool is 4 years, with current income payments on it once a year.

### **Solution**

When estimating the current value of funds, taking into account liquidity, we will use the formula:

$$InV_L = F_L / [(1 + RR_L) \times (1 + P_L)]^n \quad (2.14)$$

By substituting these values into the above formula (2.14), we will obtain the present value of the investment instrument, which takes into account the factor of their liquidity:

$$InV_L = 25000 / [(1 + 0,17) \times (1 + 0,03)]^4 = 25000 / 2,14 = 11682,24 \text{ UAN}$$

### ***Tasks for independent work***

#### **Task 1.**

Calculation of compound interest.

2500 is invested at 10% per annum for 3 years. Determine the amount that accumulates at the end of the 3rd year.

#### **Task 2.**

The term of increasing the initial amount of the investment by N times.

Calculate the term for the initial investment amount to increase by 4 times, using compounding factors for simple and compound interest. The annual interest rate is 7%.

#### **Task 3.**

The investor faces the task of placing UAH 150,000 on a deposit for 1 year. Different banks offer different conditions:

The first is to pay income at compound interest of 17% per quarter; the second - 25% once every 4 months; the third - 33% twice a year; the fourth - 52% once a year. Which investment option is the best?

#### **Task 4.**

The annuity payment period is 7 years. The payment interval is 1 year. The amount of each separate payment (annuity member) is UAH 12,000. The interest rate for increasing the value is 12% per year. Calculate the future value of an annuity.

#### **Task 5.**

Determine the nominal future value and the real value of the contribution funds, taking into account inflation, if:

- the initial amount of the contribution is UAH 2,500;

- the real annual interest rate used to build up the cost of the contribution - 15%;
- projected annual rate of inflation - 7%;
- the total period of placement of the contribution is 4 years with interest accrual once a year.

#### **Task 6.**

It is necessary to determine the future value of the deposit and the present value of funds taking into account the risk factor under the following conditions: the initial amount of the deposit is UAH 3,700, the rate of return on risk-free transactions on the investment market is 8%. The level of the risk premium is set at 12%, and the total investment period is 4 years, with interest charged once a year.

#### **Task 7.**

Determine the future value of the instrument and the present value of funds taking into account liquidity if:

- the cost of purchasing an investment tool is UAH 2,850;
- the average annual rate of return on investment. instruments with absolute liquidity - 17%;
- the required level of the premium for liquidity, determined by the investment instrument - 5%;
- the total period planned for the use of this investment tool - 3 years, with the expected payments of current income on it once a year.

### **2.3. Terminological dictionary of key concepts**

**Annuity (financial annuity)** - equal payments or receipts made in equal shares at equal intervals during a certain period.

**Discounting** is the process of determining the present value of money if its future value is known.

**Compounding** is the process of determining the future value of money based on the present value.

**The future value of money** is the amount of money invested now, into which it will turn after a certain period of time, taking into account a certain interest rate (interest rate).

**Postnumerando** - payments are made at the end of the corresponding periods (year, half year, etc.).

**Prenumerando** - payments are made at the beginning of the corresponding periods (year, half year, etc.).

**Simple interest** is calculated from the present value of the deposit at the end of one payment period determined by the investment conditions (month, quarter, etc.).

**The real value of money** is the amount of future cash given taking into account a certain interest rate (interest rate) until this time period.

## 2.4. Test tasks

### 1. Simple interest on investments is:

- 1) the amount of income generated as a result of investing, provided that the amount of accrued simple interest is not paid after each period;
- 2) the amount calculated based on the initial value of the deposit at the end of one payment period determined by the terms of investment of funds;
- 3) the amount of funds calculated on the basis of the inflation rate;
- 4) the amount of future cash receipts, calculated taking into account the specified interest rate for the current period.

### 2. The percentage is:

- 1) the amount of income from lending capital or a fee for using loan capital in all its forms;
- 2) the amount of income accrued to the principal sum of capital in each interval, for which further payment calculations are not carried out;

3) the amount of income accrued in each interval, which is not paid out, but is added to the principal amount of capital and in the subsequent payment period itself brings income;

4) a specific indicator, according to which the amount of interest per unit of capital is paid within the established terms.

### **3. Compound interest is:**

1) the amount of income from lending capital or a fee for using loan capital in all its forms;

2) the amount of income accrued to the principal sum of capital in each interval, for which further payment calculations are not carried out;

3) the amount of income accrued in each interval, which is not paid out, but is added to the principal amount of capital and in the subsequent payment period itself brings income;

4) a specific indicator, according to which the amount of interest per unit of capital is paid within the established terms.

### **4. The interest rate is:**

1) the amount of income from lending capital or a fee for using loan capital in all its forms;

2) the amount of income accrued to the principal sum of capital in each interval, for which further payment calculations are not carried out;

3) the amount of income accrued in each interval, which is not paid out, but is added to the principal amount of capital and in the subsequent payment period itself brings income;

4) a specific indicator, according to which the amount of interest per unit of capital is paid within the established terms.

### **5. A simple interest is:**

1) the amount of income from lending capital or a fee for using loan capital in all its forms;

2) the amount of income accrued to the principal sum of capital in each interval, for which further payment calculations are not carried out;



3) the amount of income accrued in each interval, which is not paid out, but is added to the principal amount of capital and in the subsequent payment period itself brings income;

4) a specific indicator, according to which the amount of interest per unit of capital is paid in the established terms.

#### **6. The future value of money is:**

1) the process of reducing the future value of money to its true value by subtracting the corresponding amount of interest from its future amount;

2) the amount of money invested at the moment, into which they will turn after a certain period of time, taking into account a certain interest rate;

3) the process of reducing the present value of money to its future value in a certain period by adding to its original amount the accrued amount of interest;

4) the amount of future cash, calculated taking into account the specified interest rate (interest rate) to the present time period.

#### **7. The real value of money is:**

1) the process of reducing the future value of money to its true value by subtracting the corresponding amount of interest from its future amount;

2) the amount of money invested at the moment, into which they will turn after a certain period of time, taking into account a certain interest rate;

3) the process of reducing the present value of money to its future value in a certain period by adding to its original amount the accrued amount of interest;

4) the amount of future cash, calculated taking into account the specified interest rate (interest rate) to the present time period.

#### **8. Cost discounting is:**

1) the process of reducing the future value of money to its true value by subtracting the corresponding amount of interest from its future amount;

2) the amount of money invested at the moment, into which they will turn after a certain period of time, taking into account a certain interest rate;

3) the process of reducing the present value of money to its future value in a certain period by adding to its original amount the accrued amount of interest;

4) the amount of future cash, calculated taking into account the specified interest rate (interest rate) to the present time period..

**9. Value addition is:**

1) the process of reducing the future value of money to its true value by subtracting the corresponding amount of interest from its future amount;

2) the amount of money invested at the moment, into which they will turn after a certain period of time, taking into account a certain interest rate;

3) the process of reducing the present value of money to its future value in a certain period by adding to its original amount the accrued amount of interest;

4) the amount of future cash, calculated taking into account the specified interest rate (interest rate) to the present time period.

**10. The accrual period is:**

1) a specific time period is determined (within the general accrual period), within which a separate amount of interest is calculated at its established rate;

2) the method of calculating payments, in which interest is calculated at the beginning of each interval;

3) the method of calculating payments, in which interest is calculated at the end of each interval;

4) the general period of time during which the process of increasing or discounting the value of monetary funds is carried out.

**11. The accrual interval is:**

1) a specific time period is determined (within the general accrual period), within which a separate amount of interest is calculated at its established rate;

2) the method of calculating payments, in which interest is calculated at the beginning of each interval;

3) the method of calculating payments, in which interest is calculated at the end of each interval;

4) the general period of time during which the process of increasing or discounting the value of monetary funds is carried out.

**12. The previous method of calculating interest is:**

- 1) a specific time period is determined (within the general accrual period), within which a separate amount of interest is calculated at its established rate;
- 2) the method of calculating payments, in which interest is calculated at the beginning of each interval;
- 3) the method of calculating payments, in which interest is calculated at the end of each interval;
- 4) the general period of time during which the process of increasing or discounting the value of monetary funds is carried out.

**13. The further method of calculating interest is:**

- 1) a specific time period is determined (within the general accrual period), within which a separate amount of interest is calculated at its established rate;
- 2) the method of calculating payments, in which interest is calculated at the beginning of each interval;
- 3) the method of calculating payments, in which interest is calculated at the end of each interval;
- 4) the general period of time during which the process of increasing or discounting the value of monetary funds is carried out.

**14. A discrete cash flow is:**

- 1) a long-term investment flow of payments characterized by the same level of interest rates throughout the entire period;
- 2) the flow of cash for investment activities, the interest accrual period for which is not limited, and accordingly, the deadline for returning the principal amount of capital is not defined;
- 3) cash flow for investment activities, which has a clearly limited interest accrual period and a deadline for returning the principal sum of capital;
- 4) the process of reducing the present value of money to its future value in a certain period by adding to its original amount the accrued amount of interest.

**15. Continuous cash flow is:**

- 1) a long-term investment flow of payments characterized by the same level of interest rates throughout the entire period;
- 2) the flow of cash for investment activities, the interest accrual period for which is not limited, and accordingly, the deadline for returning the principal amount of capital is not defined;
- 3) cash flow for investment activities, which has a clearly limited interest accrual period and a deadline for returning the principal sum of capital;
- 4) the process of reducing the present value of money to its future value in a certain period by adding to its original amount the accrued amount of interest.

**16. An annuity is:**

- 1) a long-term investment flow of payments characterized by the same level of interest rates throughout the entire period;
- 2) the flow of cash for investment activities, the interest accrual period for which is not limited, and accordingly, the deadline for returning the principal amount of capital is not defined;
- 3) cash flow for investment activities, which has a clearly limited interest accrual period and a deadline for returning the principal sum of capital;
- 4) the process of reducing the present value of money to its future value in a certain period by adding to its original amount the accrued amount of interest.

**17. According to the use in the process of estimating the value of money over time, the interest rate is classified as:**

- 1) discount rate;
- 2) fixed interest rate;
- 3) effective interest rate;
- 4) contractual interest rate.

**18. According to the stability of the level of use of the interest rate within the accrual period, the interest rate is classified as:**

- 1) discount rate;
- 2) fixed interest rate;

- 3) effective interest rate;
- 4) contractual interest rate.

**19. With regard to ensuring the accrual of a certain annual amount of interest, the interest rate is classified as:**

- 1) discount rate;
- 2) fixed interest rate;
- 3) effective interest rate;
- 4) contractual interest rate.

**20. According to the terms of formation, the interest rate is classified as:**

- 1) discount rate;
- 2) fixed interest rate;
- 3) effective interest rate;
- 4) contractual interest rate.

**21. 10,000 hryvnias were deposited in the bank for a deposit for 3 years at a simple rate of 20% per annum. What increased amount will the depositor receive?**

- 1) UAH 6,000;
- 2) UAH 2,000;
- 3) UAH 3,000;
- 4) UAH 12,000.

**22. What is the amount of accumulated debt, if the loan is UAH 500,000, the term is 5 years, simple interest at the rate of 10% per annum?**

- 1) UAH 250,000;
- 2) UAH 750,000;
- 3) UAH 550,000;
- 4) UAH 1 million.

**23. 180 days after signing the contract, the debtor will pay UAH 310,000. The loan is issued at 16% per annum. What is the initial amount of the debt, assuming that the time base is equal to 365 days?**

- 1) UAH 276,453.34;

- 2) UAH 326,897.56;
- 3) UAH 158,000.00;
- 4) UAH 287,328.59.

**24. The future value of money is determined in the amount of UAH 100,000. The compound interest rate used for discounting is 20% per year. The accrual period is 4 years. The amount of the discount will be:**

- 1) UAH 48,225.31;
- 2) UAH 51,774.69;
- 3) UAH 47,158.95;
- 4) UAH 52,413.75.

**25. Why is investing money in securities also considered investing?**

- 1) because in this way the country's GDP increases;
- 2) in this case, the investor invests money in fixed assets;
- 3) in this case, the investor has the usual goal for investing - obtaining a profit (income) from the invested money;
- 4) the purchase of securities cannot be considered an investment at all.

**26. Can buying a diamond be considered an investment?**

- 1) yes, but only if the diamond is purchased at an auction;
- 2) it cannot in principle be considered as an investment;
- 3) yes, but only if the diamond weighs more than 10 carats;
- 4) if the purchase of a diamond means its subsequent sale at a higher price.

**27. An investor bought share A for 15 hryvnias, share B for 25 hryvnias, share C for 30 hryvnias, and share D for 35 hryvnias. After a quarter, share A was sold for 17 hryvnias, share B for 28 hryvnias, share C for 31 hryvnias, and share D for 39 hryvnias. In addition, dividends in the amount of 0.5 hryvnias were paid for B shares. Investing in which share is better?**

- 1) share A;
- 2) share B;
- 3) share C;
- 4) share D.

**28. Postnumerando is:**

- 1) increase, build-up of deposits, which occurs regularly at the end of each settlement period;
- 2) a series of consecutive fixed payments made at regular intervals;
- 3) systematic increase of deposits, with their regular receipt to the account;
- 4) the multiplier used in the process of evaluating the value of money.

**29. Prenumerando is:**

- 1) increase, build-up of deposits, which occurs regularly at the end of each settlement period;
- 2) a series of consecutive fixed payments made at regular intervals;
- 3) systematic increase of deposits, with their regular receipt to the account;
- 4) the multiplier used in the process of evaluating the value of money.

**30. If the initial cost of money is UAH 1,000, the projected annual rate of inflation is 12%, then the amount of the annual inflation premium will be:**

- 1) UAH 12;
- 2) UAH 120;
- 3) UAH 1,200;
- 4) 2400 hryvnias.

### **2.5. Questions for self-control**

1. What does the accumulation of debt mean and how to calculate it?
2. What factors affect the change in the value of money?
3. What is the future and present value of money?
4. What is the essence of discounting?
5. What is a discount and how to calculate it?
6. What are the methods of discounting?
7. What is compound interest?
8. What is an annuity?

9. Why is it necessary to take the inflation factor into account during investment calculations?
10. How is the formation of the real interest rate and the assessment of the value of money taking into account the inflation factor?
11. What types of risks affect investment activity?
12. How investment risk affects investment activity.
13. Why is the beta coefficient used?
14. Reveal the essence: capital assets model, risk premium, "market reliability line".
15. What is the mechanism for assessing the level of investment risk.
16. How is the formation of the necessary level of profitability of investment operations taking into account the risk factor.
17. What are the main methodical approaches to taking into account the liquidity factor in the process of managing the enterprise's investment activities.
18. Justify the scientific principles of investing in human potential.



## TOPIC 3.

### INVESTMENT STRATEGY OF THE ENTERPRISE

#### 3.1. Methodical recommendations for conducting practical classes

*The purpose of the lesson:* to find out the essence, principles, methods and sequence of developing the investment strategy of the enterprise; strategic directions and forms of investment activity; evaluate the effectiveness of the developed investment strategy of the enterprise according to certain parameters; effectiveness of investing in human capital and human capital; the impact of investments in human capital on the overall results of the enterprise.

*Plan of the practical session:*

1. The essence of the enterprise's investment strategy and the principles of its development
2. The sequence of development of the enterprise's investment strategy
3. Justification of strategic goals, directions and forms of investment activity
4. Evaluation of the effectiveness of the developed investment strategy

*Theoretical information*

- 1. The essence of the enterprise's investment strategy and the principles of its development**



**FORMATION OF THE INVESTMENT STRATEGY OF THE ENTERPRISE**

forecasting certain conditions of investment activity (investment climate)

forecasting the state of the investment market both in general and in relation to its individual segments

**MAIN CONDITIONS FOR DETERMINING THE PERIOD OF FORMING THE INVESTMENT STRATEGY OF THE ENTERPRISE**

– duration of the period of formation of the general economic strategy of the enterprise, that is, the investment strategy cannot go beyond this period

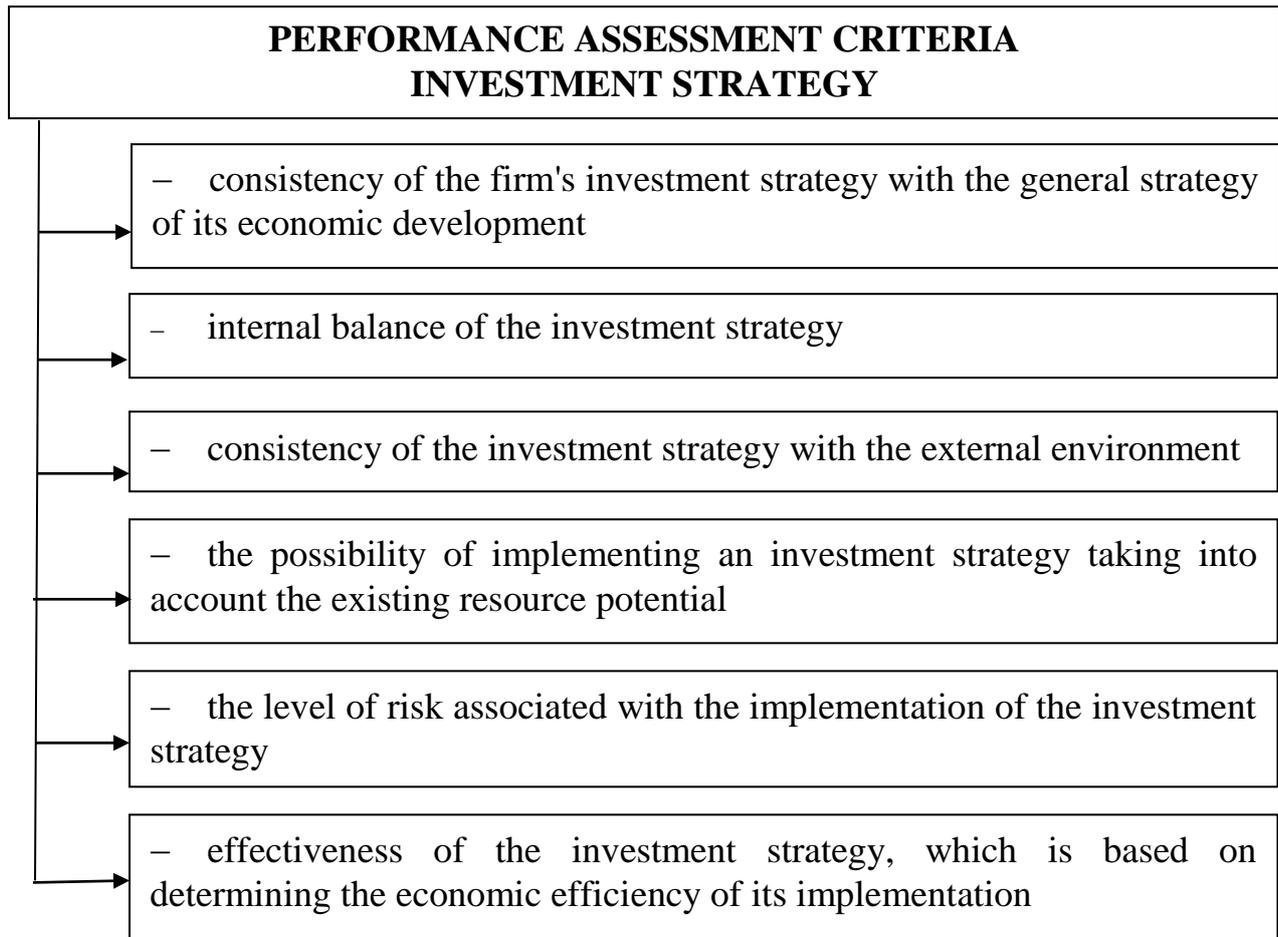
– branch affiliation of the enterprise, as well as, one of the conditions for determining the period of investment strategy formation is the size of the enterprise

– relationship with the system of goals of the general strategy of economic development

**DIRECTIONS FOR THE DEVELOPMENT OF EFFECTIVE WAYS OF IMPLEMENTING THE STRATEGIC GOALS OF THE INVESTMENT ACTIVITIES OF THE ENTERPRISE**

development of strategic areas of investment activity

development of a strategy for the formation of investment resources



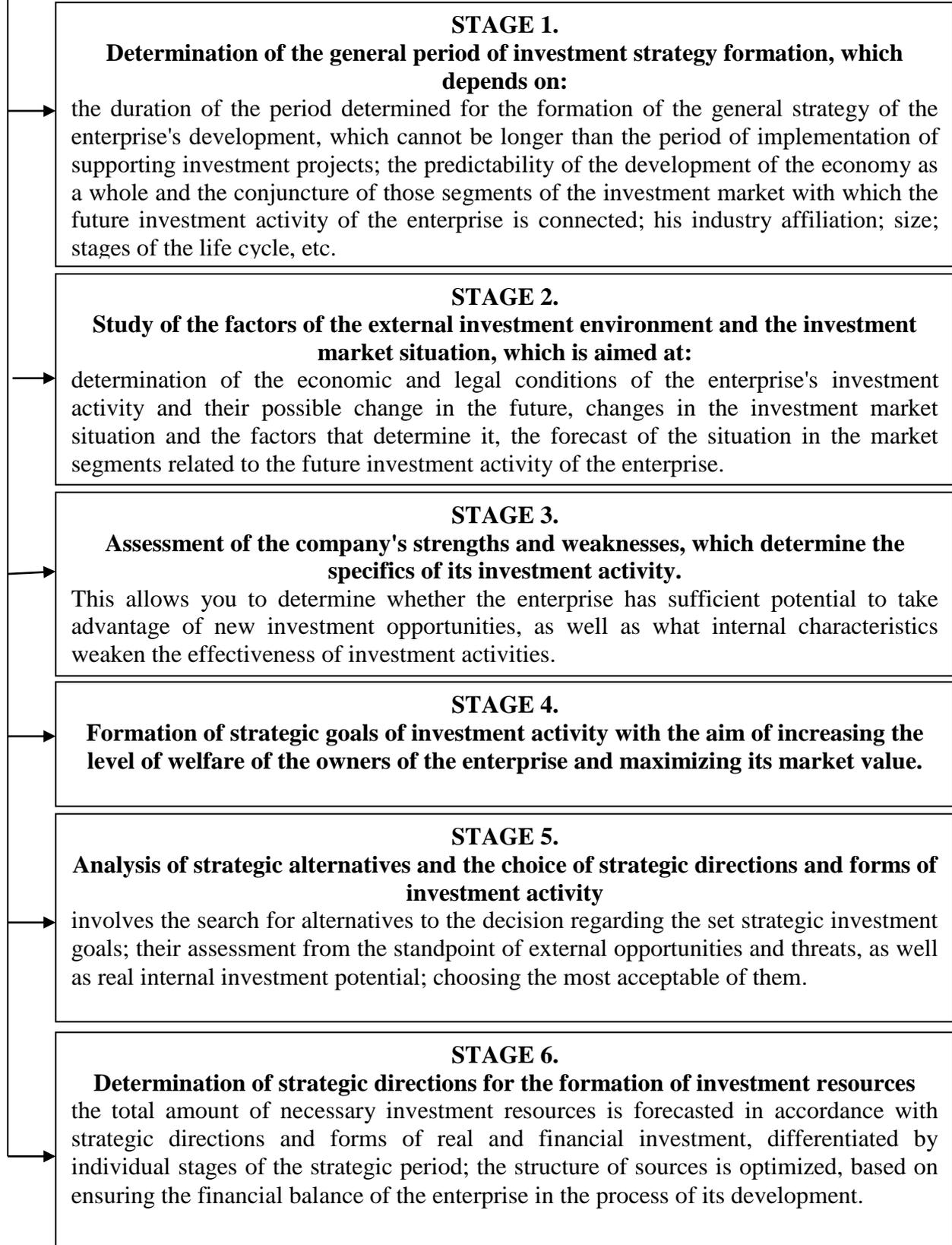
## *2. The sequence of development of the enterprise's investment strategy*

*All stages of development of an investment strategy are carried out sequentially in a certain time interval, which is selected based on the periodicity of updating the general strategy of the enterprise*

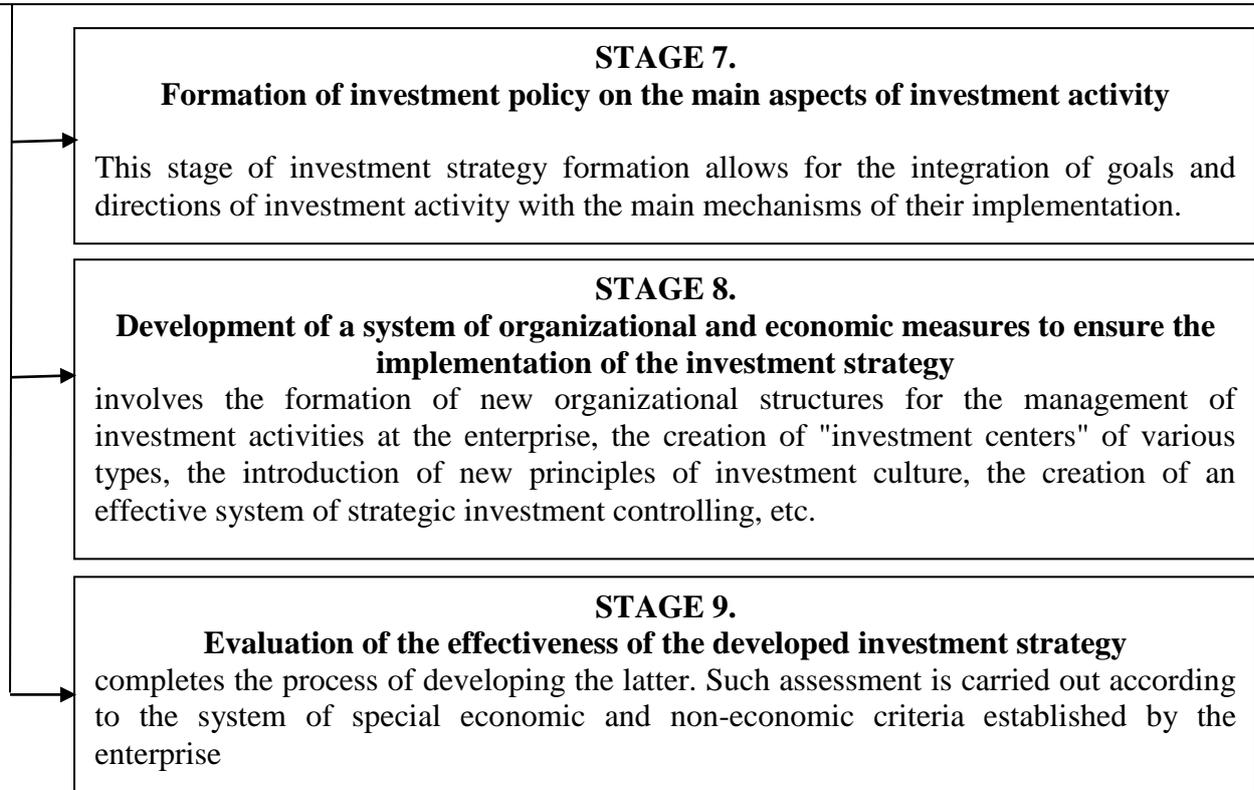
the period depends on the predictability of general economic processes at the moment and the predictability of changes in the selected market segment

the more unstable market conditions, the shorter the strategy planning period

## STAGES OF THE DEVELOPMENT PROCESS INVESTMENT STRATEGY OF THE ENTERPRISE



## STAGES OF THE DEVELOPMENT PROCESS INVESTMENT STRATEGY OF THE ENTERPRISE



### *3. Justification of strategic goals, directions and forms of investment activity*

## STRATEGIC MANAGEMENT OF INVESTMENT ACTIVITIES

*has a targeted nature of investment activity (presupposes the setting and achievement of defined goals). Being clearly expressed, strategic goals become a powerful means of increasing the efficiency of investment activity in the long term, its coordination and control, as well as a basis for making management decisions at all stages of the investment process*

## REQUIREMENTS FOR THE FORMATION OF STRATEGIC GOALS OF INVESTMENT ACTIVITIES

### 1. Subordination to the main goal of investment management.

The strategic goals of investment activity are developed for the long-term realization of the main goal of investment management - maximizing the welfare of the owners of the enterprise. The system of specific goals of the investment strategy is formed in support of this main goal and should be comparable to it.

### 2. Orientation to a high result of investment activity.

Each strategic goal should stimulate investment managers, cause a desire to achieve it, ensure the most complete use of the investment potential of the enterprise.

### 3. Reality (Achievability).

The basis of the development of strategic investment goals is an ideal idea of the strategic investment position of the enterprise, which must be consciously limited according to the criterion of real achievement, taking into account the factors of the external investment environment and internal investment potential.

### 4. Measurability.

Each of the formed strategic investment goals should be expressed in specific indicators, which will allow them to be used in the system of planning (normation) of the main parameters of the ID, to be differentiated by separate intervals of the strategic period, to be used as criteria for evaluating the results of the implementation of the investment strategy of the enterprise.

### 5. Unambiguity of interpretation.

Each strategic investment goal must be unambiguously and clearly perceived by all investment managers whose activities are related to its implementation. This is ensured by the clear establishment of the strategic period (or its individual intervals), differentiation by various objects of strategic management, a comparable system of units of measurement of quantitative values and other factors that ensure a clear perception of strategic goals.

### 6. Scientific validity.

The process of forming strategic investment goals should be based on objective economic laws that determine the level of investment activity of the enterprise and the efficiency of its investment activity. During its implementation, modern methodological tools for the real assessment of individual parameters should be used, and the system of interrelationships and interdependence of individual goals should be clearly defined.

## REQUIREMENTS FOR THE FORMATION OF STRATEGIC GOALS OF INVESTMENT ACTIVITIES

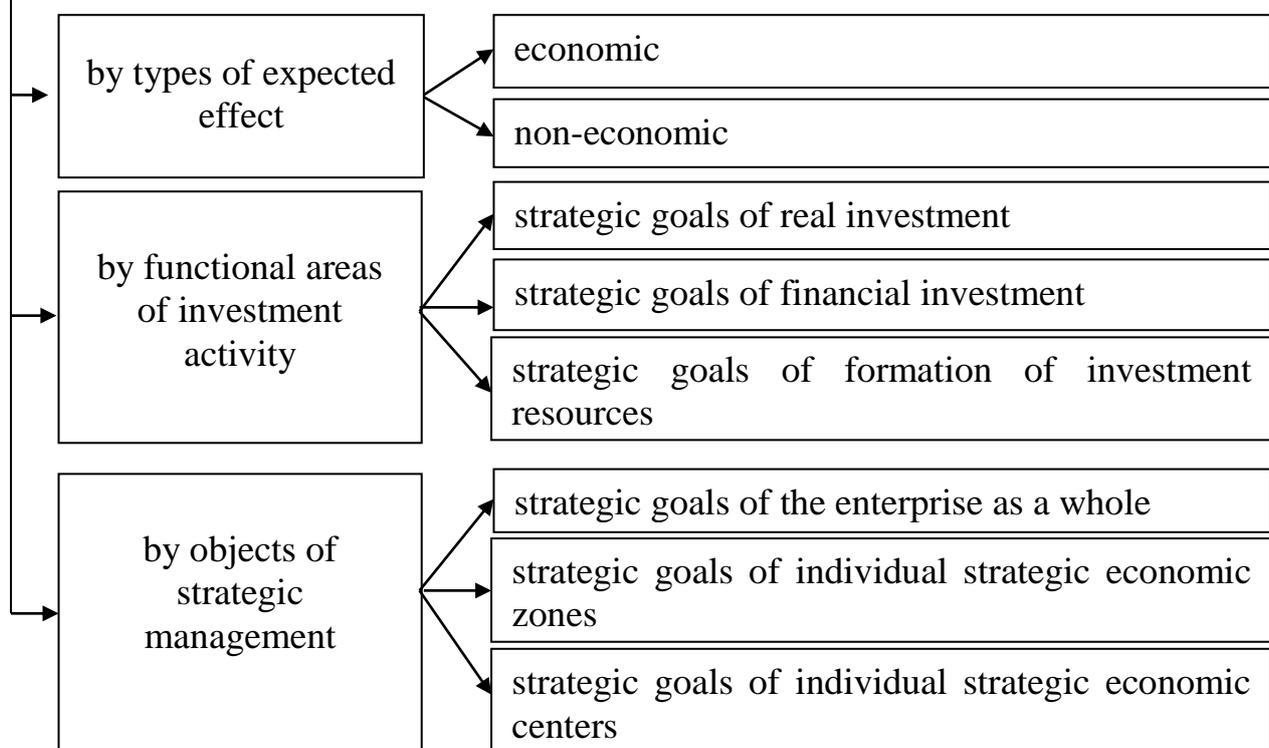
### 7. Interrelatedness.

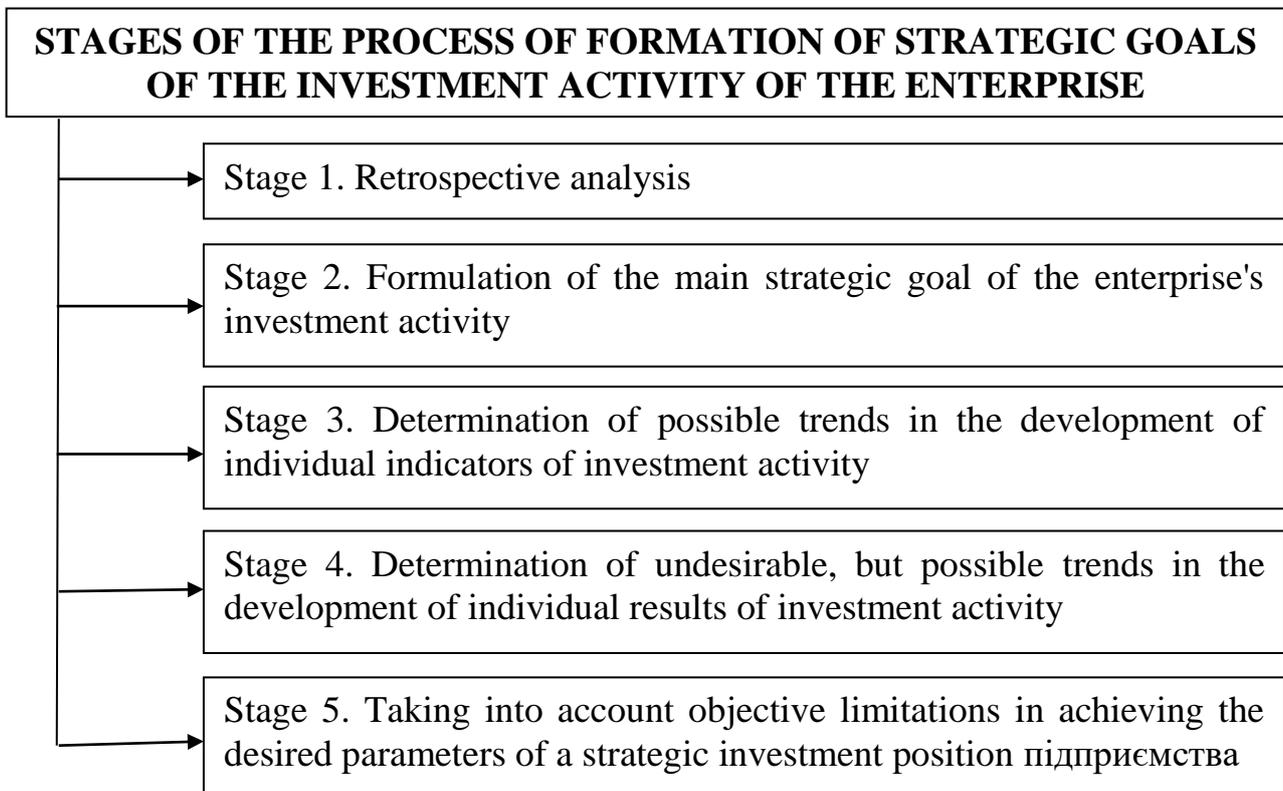
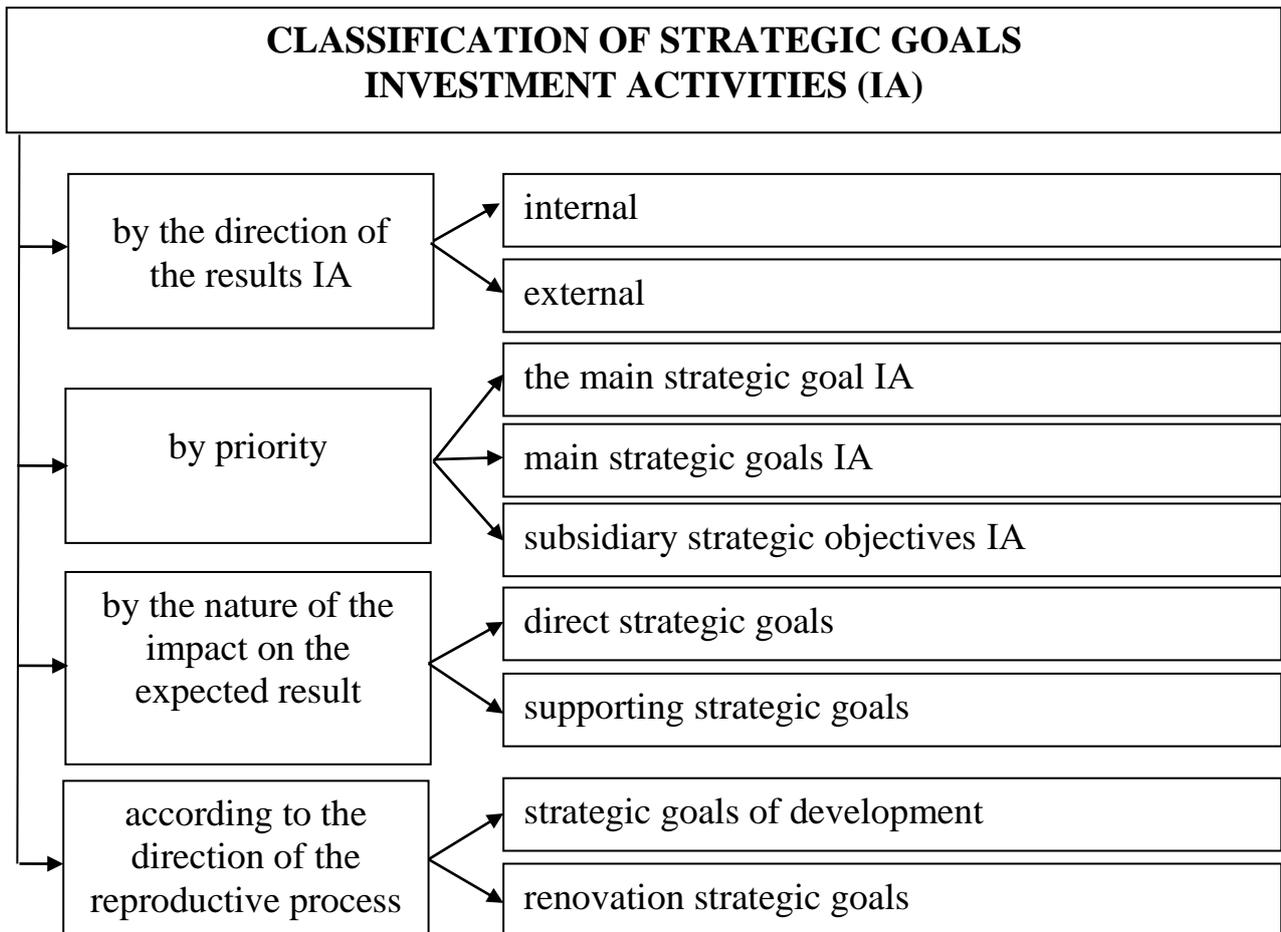
The system of strategic investment goals should be built in such a way that the implementation of some of these goals ensures the successful implementation of others. For this, it is necessary to rank strategic goals according to their priority level, dividing them in the general hierarchy into direct and supporting.

### 8. Flexibility.

The possibility of adjusting the system of strategic investment goals as a whole or individual quantitative parameters of each of them under the influence of changes in factors of the external investment environment or parameters of the internal investment potential is very important. The external flexibility of the system of strategic goals should ensure the minimization of the negative impact of individual factors on the efficiency of investment activities or the rapid implementation of new investment opportunities, and their internal flexibility should ensure quick maneuverability in the use of the investment potential of the enterprise.

## CLASSIFICATION OF STRATEGIC GOALS INVESTMENT ACTIVITIES









#### *4. Evaluation of the effectiveness of the developed investment strategy*

<b>EVALUATION OF THE PERFORMANCE OF THE INVESTMENT STRATEGY DEVELOPED BY THE COMPANY IS CARRIED OUT ACCORDING TO THE PARAMETERS:</b>
--

- |   |  |
|---|--|
| → | 1. <i>Consistency of the investment strategy of the enterprise with the general strategy of its development</i> - the degree of consistency of goals, directions and stages in the implementation of these strategies.   |
| → | 2. <i>Consistency of the enterprise's investment strategy with expected changes in the external investment environment</i> - to what extent the developed investment strategy corresponds to the forecasted development of the country's economy and changes in the investment market situation in terms of its individual segments. |

**EVALUATION OF THE PERFORMANCE OF THE INVESTMENT STRATEGY DEVELOPED BY THE COMPANY IS CARRIED OUT ACCORDING TO THE PARAMETERS:**

3. ***Consistency of the enterprise's investment strategy with its internal potential*** - allows you to assess the extent to which the volumes, directions and forms of the investment strategy are interconnected with the possibilities of internal investment resources formation, the qualifications of investment managers, the organizational structure of IP management and investment culture, etc.

4. ***Internal balance of the investment strategy***. When conducting such an assessment, it is determined to what extent individual goals and target strategic standards of the future ID are mutually agreed upon, to what extent they correspond with the content of the investment policy on individual aspects of ID; to what extent the measures to ensure its implementation are mutually agreed upon in terms of direction and time.

5. ***Implementation of the investment strategy***: potential opportunities of the enterprise in forming the required amount of investment resources from all sources and in all forms; technological feasibility of investment projects selected for implementation; sufficiency of financial instruments for the formation of an effective investment portfolio; organizational and technical capabilities of successful implementation of the chosen investment strategy.

6. ***Acceptability of the level of risks associated with the implementation of the investment strategy***: to what extent the level of forecasted investment risks of the enterprise ensures its financial balance and corresponds to the investment mentality of its owners and responsible investment managers, to what extent the level of these risks is permissible for the investment activities of this enterprise from the standpoint of the possible size of financial losses and the threat of bankruptcy.

7. ***Economic efficiency of investment strategy implementation***: forecast calculations of the previously considered system of main investment coefficients and set target strategic standards, compared with their basic level.

8. ***Non-economic effectiveness of investment strategy implementation is determined by indicators***:

- growth of the business reputation of the enterprise;
- increasing the level of manageability of IA of its structural subdivisions ("investment centers");
- increasing the level of material and social satisfaction of investment managers (due to an effective system of material incentives);
- a higher level of technical equipment of workplaces, etc.

### 3.2. Practical tasks

#### Game simulation of the formation of the company's profit analysis strategy

##### TASK.

Determine the influence of the following factors on the profit from the sale of products:

- change in the scope of implementation;
- changing the structure and assortment of sold products;
- change in the cost of goods sold (production cost);
- change in production costs;
- change in wholesale prices for products.

##### Initial data for six enterprises (in thousand hryvnias):

##### Enterprise № 1. Milk processing plant.

It consists of five structural units equipped with modern technological equipment. High-quality products are in steady demand in Ukraine and abroad. The expansion of the union due to the addition of production shops will allow to significantly increase the volume of activity.

Indexes	Base period (plan)	According to the plan for actual implementation	Reporting period
1. Production cost	6000	6600	6360
2. Non-production costs	90	99	95
3. Full cost (item 1 + item 2)	6090	6699	6455
4. Revenue from product sales	8400	9090	9050
5. VAT	400	450	450
6. The result is profit (p. 4-item 3-item 5) - damage	1910	1941	2145
	-	-	-

##### Enterprise №2. Microgreen farm.

Built in 2008. The equipment was updated during 2020-2021. The production technology has not changed significantly. The quality of products does not meet

global requirements. Demand for products is limited. Needs reconstruction and modernization of fixed assets.

<b>Indexes</b>	<b>Base period (plan)</b>	<b>According to the plan for actual implementation</b>	<b>Reporting period</b>
1. Production cost	1500	2100	2100
2. Non-production costs	100	110	115
3. Full cost (item 1 + item 2)	1600	2210	2215
4. Revenue from product sales	2200	2250	2500
5. VAT	100	150	130
6. The result is profit (p. 4-item 3-item 5) - damage	500 -	- -110	155 -

### **Enterprise №3. Plant for the production of compound feed.**

After reconstruction and technical re-equipment, it produces products that are in demand in the domestic market. The introduction of a modern technological line will allow the enterprise to produce products according to world standards and enter the foreign market.

<b>Indexes</b>	<b>Base period (plan)</b>	<b>According to the plan for actual implementation</b>	<b>Reporting period</b>
1. Production cost	10000	12000	11000
2. Non-production costs	180	190	185
3. Full cost (item 1 + item 2)	10180	12190	11185
4. Revenue from product sales	20000	25000	28000
5. VAT	1000	1200	1200
6. The result is profit (p. 4-item 3-item 5) - damage	8820 -	11610 -	15615 -

### **Enterprise №4. Cannery.**

Built in 1962. The possibilities of introducing modern technologies are limited due to the insufficient amount of financial resources at the plant. The equipment does not meet the requirements of a high level of canned food production. Needs reconstruction and technical re-equipment.

<b>Indexes</b>	<b>Base period (plan)</b>	<b>According to the plan for actual implementation</b>	<b>Reporting period</b>
1. Production cost	800	850	830
2. Non-production costs	50	55	60
3. Full cost (item 1 + item 2)	850	905	890
4. Revenue from product sales	1000	1100	1200
5. VAT	25	30	30
6. The result is profit (p. 4-item 3-item 5) - damage	125 -	165 -	280 -

#### **Enterprise №5. Store of agrochemicals and seed material.**

Built in 2004. Production areas are used inefficiently. The provision of premises for rent did not justify itself. The contingent of product consumers is stable, consisting of residents of the microdistrict.

<b>Indexes</b>	<b>Base period (plan)</b>	<b>According to the plan for actual implementation</b>	<b>Reporting period</b>
1. Production cost	500	600	550
2. Non-production costs	20	22	25
3. Full cost (item 1 + item 2)	520	622	575
4. Revenue from product sales	720	730	750
5. VAT	10	15	12
6. The result is profit (p. 4-item 3-item 5) - damage	190 -	93 -	163 -

#### **Enterprise №6. Farm goods store.**

Built in 2007 according to a modern project. The assortment of goods is diverse. Demand for goods is high. There are opportunities to increase the volume of sales, provided that a branch is opened in a new neighborhood.

<b>Indexes</b>	<b>Base period (plan)</b>	<b>According to the plan for actual implementation</b>	<b>Reporting period</b>
1. Production cost	6200	6600	6500
2. Non-production costs	120	130	125
3. Full cost (item 1 + item 2)	6320	6730	6625
4. Revenue from product sales	8500	9000	10000
5. VAT	350	300	400
6. The result is profit (p. 4-item 3-item 5) - damage	1830 -	1970 -	2975 -

### Methodical recommendations for performing situational tasks

1) The deviation of the actual profit from the base value is found according to the formula (3.1):

$$P_d = P_{rp} - P_{bp} \quad (3.1)$$

where  $P_d$  – is the deviation of the actual profit;

$P_{rp}$  – profit (loss) of the reporting period;

$P_{bp}$  – profit (loss) of the base period.

2) The impact on profit of a change in sales volume is determined (3.2):

$$R_c = [(R_{IP} - VAT_{IP}) : (R_{bp} - VAT_{bp})] \times 100 \quad (3.2)$$

where  $R_c$  – is the change in revenue from product sales;

$R_{IP}$  – revenue from the sale of products according to the plan;

$R_{bp}$  – revenue from the sale of products in the base period;

$VAT_{IP}$  – value added tax according to the plan;

$VAT_{bp}$  – value added tax of the base period.

3) The impact on profit from the implementation of a change in the structure of the product range is determined (3.3):

$$C_{s.a.} = R_{IP} - \left( R_{bp} \times \frac{R_c}{100} \right) \quad (3.3)$$

where  $C_{s.a.}$  – change in the structure of the assortment of products.

4) The impact of changes in the production cost of sold products is determined (3.4):

$$C_c = C_{IP} - C_P \quad (3.4)$$

where  $C_c$  – change in production cost from sold products;

$C_{IP}$  – production cost of the reporting period;

$C_P$  – is the production cost according to the plan.

5) The impact of a change in non-production costs is determined (3.5):

$$N_c = N_{IP} - N_P \quad (3.5)$$

where  $N_c$  – changes in production costs;

$N_{IP}$  – non-production costs of the reporting period;

$N_p$  – non-production costs according to the plan.

6) Change in wholesale prices for products (3.6):

$$W_{pc} = (P_{rp} - VAT_{IP}) - (P_{bp} - VAT_P) \quad (3.6)$$

where  $W_{pc}$  – change in wholesale prices for products/

### Example

#### Solution of the situational task for Enterprise № 1. Milk processing plant using software Microsoft Excel

B15    X    ✓    fx    =(D5-D6)-(C5-C6)				
	A	B	C	D
	Indexes	Base period (plan)	According to the plan for actual implementation	Reporting period
1				
2	1. Production cost	6000	6600	6360
3	2. Non-production costs	90	99	95
4	3. Full cost (item 1 + item 2)	6090	6699	6455
5	4. Revenue from product sales	8400	9090	9050
6	5. VAT	400	450	450
7	6. The result is profit	1910	1941	2145
8	(p. 4-item 3-item 5) - damage	0	0	0
9				
10	Deviation of the actual profit from the base value	<b>235</b>		
11	Impact on profit of changes in sales volume	<b>108</b>	<b>152,8</b>	
12	The impact on profit from the implementation of changes in the structural assortment	<b>-121,8</b>		
13	The impact of changes in the production cost of sold products	<b>-240</b>		
14	The impact of changes in non-production costs	<b>-4</b>		
15	Change in wholesale prices for products	<b>-40</b>		

**Conclusion:** Thus, the profit from sales was positively affected by such factors as a change in the volume of sales, a change in the production cost of products sold, non-production costs, due to which the profit increased by 152.8, respectively; 240

and 4 thousand UAH. The following factors had a negative impact: a change in the structure and assortment of sold products; change in wholesale prices for products, which reduced profit by 121.8 and 40 thousand hryvnias. in accordance.

### **3.3. Terminological dictionary of key concepts**

**Life cycle of the enterprise** – it is a set of stages that the enterprise goes through during its existence. The stage of the enterprise's life cycle affects the feasibility of implementing a certain project. Enterprises that are in the process of growth, that is, in the first four stages of their development, are considered attractive for investment for the implementation of the project. At the stage of "final maturity" investment is advisable only if the enterprise's products have sufficiently high marketing prospects, and the volume of investments in technical rearmament is small and the invested funds can pay off in the shortest possible time. At the "aging" stage, investing, as a rule, does not make sense, except for those cases when a wide diversification of the manufactured products is planned, that is, a certain repurposing of the enterprise. In this case, it is possible to save investment resources in comparison with new construction. The total period of all stages of the enterprise's life cycle is determined to be approximately 20-25 years, after which the enterprise ceases to exist or is revived on a new basis and with a new composition of owners and management personnel.

**Investments in non-financial assets** – capital investment, including investments in fixed capital, costs for capital repairs of fixed assets, investments in intangible assets, costs for the increase in stocks of tangible working capital, acquisition of other non-financial assets.

**Investments in fixed capital** – these are one-time costs for the creation, reproduction and acquisition of fixed assets: new construction, expansion, reconstruction and technical rearmament of existing enterprises, purchase of machines, equipment, tools, inventory, design and research work, formation of the main herd, perennial plantings and other costs.



**Investments in capital repairs of fixed assets** – these are costs for the repair of equipment, machines, vehicles, buildings and structures. Overhaul is expressed in the restoration and slight improvement of consumer properties of elements of fixed assets.

**Investments in intangible assets** – acquisition of patents, licenses, rights to use land and other natural resources, copyrights, trademarks, trademarks, software products, etc.

**Investments in the growth of stocks of tangible working capital** – these are costs for the formation of stocks of material working capital, necessary to ensure the stable operation of the enterprise, and which are defined as the difference between the receipts of working capital in stocks and their disposal.

**Investments in other non-financial assets** – expenses for the acquisition of ownership of land plots and objects of nature use, other non-financial assets.

**Investment strategy of the enterprise** – this is the formation of a system of long-term goals of the enterprise's investment activities and the selection of the most effective ways to achieve them.

**Strategic alternatives** – these are possible options for the development of the enterprise within the framework of each of the three basic corporate strategies: growth, stabilization, reduction.

**Financial investments** – is the purchase of securities; interest-bearing bonds and municipal loans, a share in the authorized capital of legal entities; loans to other legal entities.

### 3.4. Test tasks

#### 1. The process of developing an investment strategy is:

- 1) formation of directions of investment activity of the system of its long-term goals and selection of the most effective ways of development;
- 2) research of the external investment environment and forecasting of the investment market situation;

3) provision of the most effective ways of implementing the firm's investment activities;

4) formation of an investment portfolio and its evaluation according to the criteria of risk profitability and liquidity.

**2. For what period is short-term investment carried out?**

1) up to the 1st month;

2) up to the 1st year;

3) up to 10 years;

4) from 10 years old.

**3. The indicator of investment efficiency, which characterizes the period during which they are fully paid off, is called:**

1) profitability;

2) payback period;

3) net reduced income;

4) profitability.

**4. For what period are long-term investments made?**

1) for 1 month;

2) for 6 months;

3) is not carried out at all;

4) more than a year.

**5. An investment project is:**

1) a document that defines investment risks;

2) a document that determines the return on investment;

3) a document that determines the need for real investment;

4) all answers are correct.

**6. An investment strategy is:**

1) such a combination of investment portfolio elements that achieves minimum risk with minimum income;

2) the process of forming long-term goals of investment activity and choosing the most effective ways to achieve them based on the assessment of the available potential;

3) investment policy based on the acquisition of money market instruments;

4) creation of an adequate investment mechanism.

**7. The stages of development of an enterprise's investment policy include:**

1) formation of separate areas of investment activity of the enterprise in accordance with the strategy of its economic and financial development;

2) research and accounting of the conditions of the external investment environment and the investment market situation;

3) search for individual investment objects and assessment of their compliance with the directions of the enterprise's investment activities;

4) all answers are correct.

**8. The purpose of the investment strategy is...**

1) formation of a connection between corporate, business and functional level strategies for effective management of material, accompanying information and financial flows;

2) support of the enterprise's corporate, business and functional strategies in the management of material, accompanying information and financial flows, including investment flows;

3) movement of the investment flow with optimal costs;

4) all answers are correct.

**9. The main task of the investment strategy is...**

1) formation of a connection between corporate, business and functional level strategies for effective management of material, accompanying information and financial flows;

2) support of the enterprise's corporate, business and functional strategies in the management of material, accompanying information and financial flows, including investment flows;

- 3) movement of the investment flow with optimal costs;
- 4) all answers are correct.

**10. The direction of the investment strategy is...**

1) formation of a connection between corporate, business and functional level strategies for effective management of material, accompanying information and financial flows;

2) support of the enterprise's corporate, business and functional strategies in the management of material, accompanying information and financial flows, including investment flows;

- 3) movement of the investment flow with optimal costs;
- 4) all answers are correct.

**11. An investment strategy that ensures the growth of profitability to the average level of investments and provides for the selection and implementation of various innovative projects is called:**

- 1) passive;
- 2) active;
- 3) strategic;
- 4) mixed.

**12. An investment strategy that involves maintaining a constant level of enterprise development is called:**

- 1) passive;
- 2) active;
- 3) strategic;
- 4) mixed.

**13. The main condition for determining the investment strategy formation period is...**

1) the predictability of the development of the economy in general and the investment market in particular;

- 2) stability in the domestic market of this country;
- 3) stability of the national currency rate;

4) all answers are correct.

**14. Determine the sequence of stages in the development of an enterprise's investment strategy:**

- a. formation of strategic goals of investment activity;
- b. revision of the strategy depending on changes in external conditions and situation enterprises;
- c. assessment of the developed investment strategy;
- d. specification of investment programs and terms;
- e. determination of the general period of investment strategy formation;
- f. determination of investment directions and sources of financing.

**The correct sequence is:**

- 1) a, b, c, d, e, f;
- 2) b, d, c, e, f, a;
- 3) d, a, e, b, f, c;
- 4) a, d, b, e, f, c.

**15. The optimal investment strategy should meet the following criteria:**

- 1) adequate resource and organizational support of the strategy;
- 2) high level of investment and financial risks;
- 3) high sensitivity of the strategy to changes in the external environment;
- 4) the existence of significant obstacles on the way to the implementation of the strategy.

**16. Strategy development is designed to ensure:**

- 1) income to investors in the prescribed volumes;
- 2) rehabilitation of the enterprise;
- 3) financial stability of the enterprise in the long term;
- 4) all answers are correct.

**17. The initial prerequisite for the formation of the investment strategy of the enterprise is:**

- 1) the general strategy of its economic development;
- 2) the strategy of its industrial development;

- 3) availability of investors;
- 4) all answers are correct.

**18. Growth (development) strategy:**

- 1) used by large enterprises that already dominate this market;
- 2) is chosen as a basic corporate strategy in the event that the enterprise or its strategic business unit tries to use the opportunities of the external environment and its own strengths to increase the enterprise;
- 3) it is used in conditions of economic crisis, instability, high inflation or when goods are in the stage of saturation and decline of XCT;
- 4) there is no correct answer.

**19. Stabilization strategy (limited growth):**

- 1) used by large enterprises that already dominate this market;
- 2) is chosen as a basic corporate strategy in the event that the enterprise or its strategic business unit tries to use the opportunities of the external environment and its own strengths to increase the enterprise;
- 3) it is used in conditions of economic crisis, instability, high inflation or when goods are in the stage of saturation and decline of XCT;
- 4) there is no correct answer.

**20. Survival strategy (reduction):**

- 1) used by large enterprises that already dominate this market;
- 2) is chosen as a basic corporate strategy in the event that the enterprise or its strategic business unit tries to use the opportunities of the external environment and its own strengths to increase the enterprise;
- 3) it is used in conditions of economic crisis, instability, high inflation or when goods are in the stage of saturation and decline of XCT;
- 4) there is no correct answer.

**21. Possible options for the development of an enterprise or a strategic business unit within the framework of each of the three basic corporate strategies are...**

- 1) investment strategy of the enterprise;

- 2) investment activity of the enterprise;
- 3) strategic alternative;
- 4) strategic activity.

**22. A prerequisite for the implementation of the growth strategy is:**

- 1) strategic alternative "integration";
- 2) strategic alternative "technical and technological development";
- 3) strategic alternative "cost savings";
- 4) strategic alternative "intensification".

**23. Includes an analysis of current production costs and operating costs in order to identify reserves for their reduction:**

- 1) strategic alternative "integration";
- 2) strategic alternative "technical and technological development";
- 3) strategic alternative "cost savings";
- 4) strategic alternative "intensification".

**24. The strategic goals of investment activities by types of expected effectiveness include:**

- 1) economic goals of the investment strategy;
- 2) strategic goals of real investment;
- 3) strategic goals of the enterprise as a whole;
- 4) strategic development goals.

**25. The strategic goals of investment activity by functional areas of investment activity include:**

- 1) economic goals of the investment strategy;
- 2) strategic goals of real investment;
- 3) strategic goals of the enterprise as a whole;
- 4) strategic development goals.

**26. The strategic goals of investment activities for objects of strategic management include:**

- 1) economic goals of the investment strategy;
- 2) strategic goals of real investment;

- 3) strategic goals of the enterprise as a whole;
- 4) strategic development goals.

**27. The strategic goals of investment activity in the direction of the reproductive process include:**

- 1) economic goals of the investment strategy;
- 2) strategic goals of real investment;
- 3) strategic goals of the enterprise as a whole;
- 4) strategic development goals.

**28. The goal of the investment strategy of the first-level enterprise is...**

- 1) auxiliary strategic goal;
- 2) the main strategic goal;
- 3) the main strategic goal;
- 4) there is no correct answer.

**29. The main strategic goals of investment activity at the "youth" stage of the enterprise's life cycle include:**

- 1) support of the "critical" mass of investments;
- 2) diversification of real investment directions;
- 3) ensuring high rates of real investment;
- 4) ensuring timely renovation of depreciable assets.

**30. The main strategic goals of investment activity at the "aging" stage of the enterprise's life cycle include:**

- 1) support of the "critical" mass of investments;
- 2) diversification of real investment directions;
- 3) ensuring high rates of real investment;
- 4) ensuring timely renovation of depreciable assets.

### **3.5. Questions for self-control**

1. Reveal the essence of the investment strategy.
2. What role does the development of an investment strategy play for the development of the enterprise?



3. Describe the hierarchy of the relationship between the investment strategy and other main elements of the company's strategic choice.

3. What system of elements formulates the strategic investment level of the enterprise?

4. What are the principles and sequence of developing an enterprise's investment strategy?

5. How are the strategic goals of investment activity classified?

6. Describe the process of forming strategic goals of investment activities.

7. How to justify the strategic directions and forms of investment activity?

8. What factors determine the ratio of the main forms of enterprise investment?

9. What analytical indicators are used to assess the development of individual industries when determining the industry diversification of an investment strategy?

10. How to assess the investment attractiveness of the country's regions?

11. How to evaluate the effectiveness of the developed investment strategy: enterprises according to individual parameters?

12. What approaches to evaluating the effectiveness of investing in human potential and human capital do you know?

13. How to evaluate the impact of investments in human potential on the overall results of the enterprise?

14. Does the enterprise take into account the risk factor when investing in human capital?

## TOPIC 4.

### MANAGEMENT OF REAL INVESTMENTS OF THE ENTERPRISE

#### 4.1. Methodical recommendations for conducting practical classes

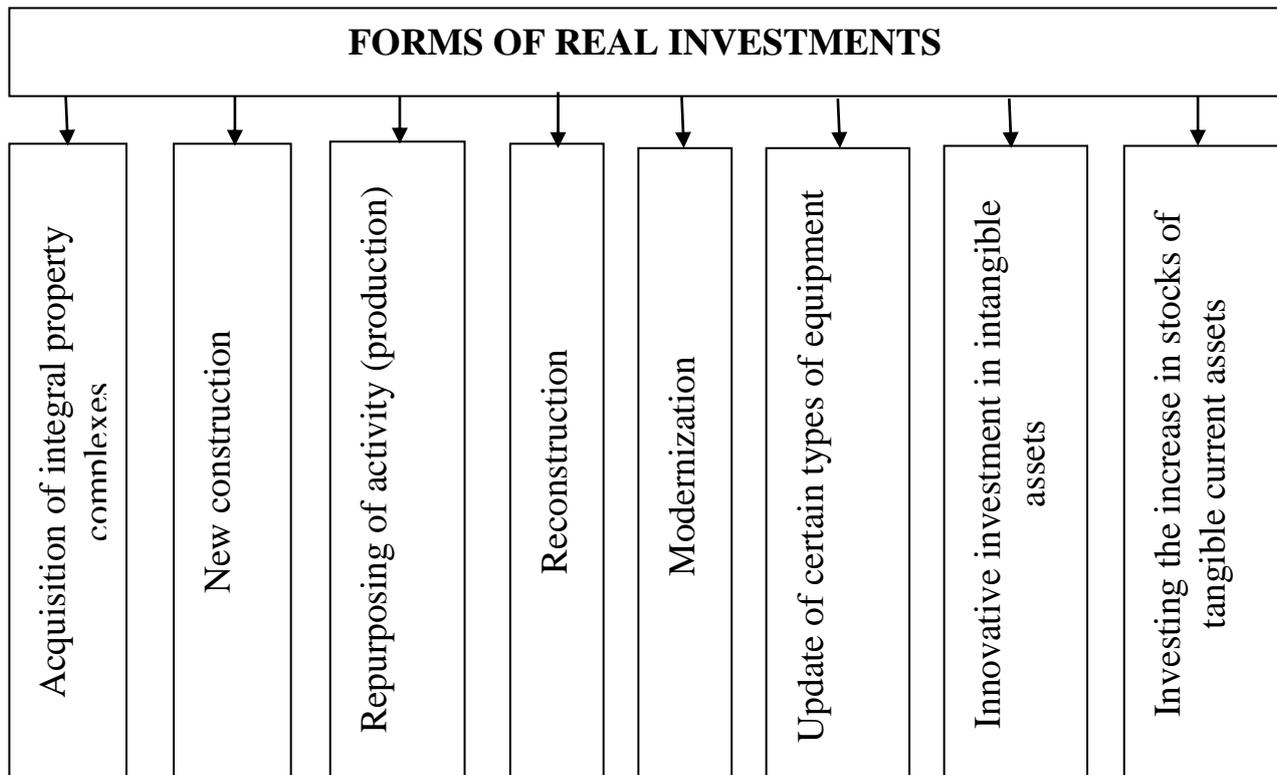
*The purpose of the lesson:* to find out the essence, principles, forms and policies of real investment management; selection of investment projects and formation of a real investment program.

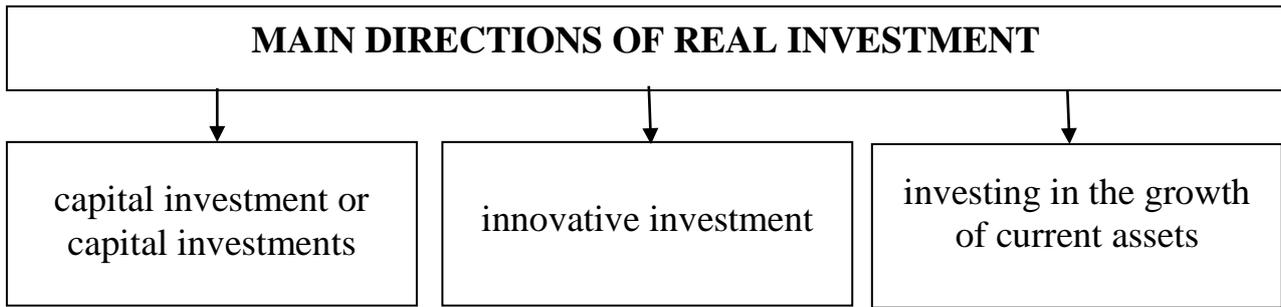
*Plan of the practical session:*

1. Forms of real investments
2. The policy of managing real investments of the enterprise
3. Evaluation of the effectiveness of real investment projects
4. Formation of a real investment program

*Theoretical information*

#### 1. Forms of real investments



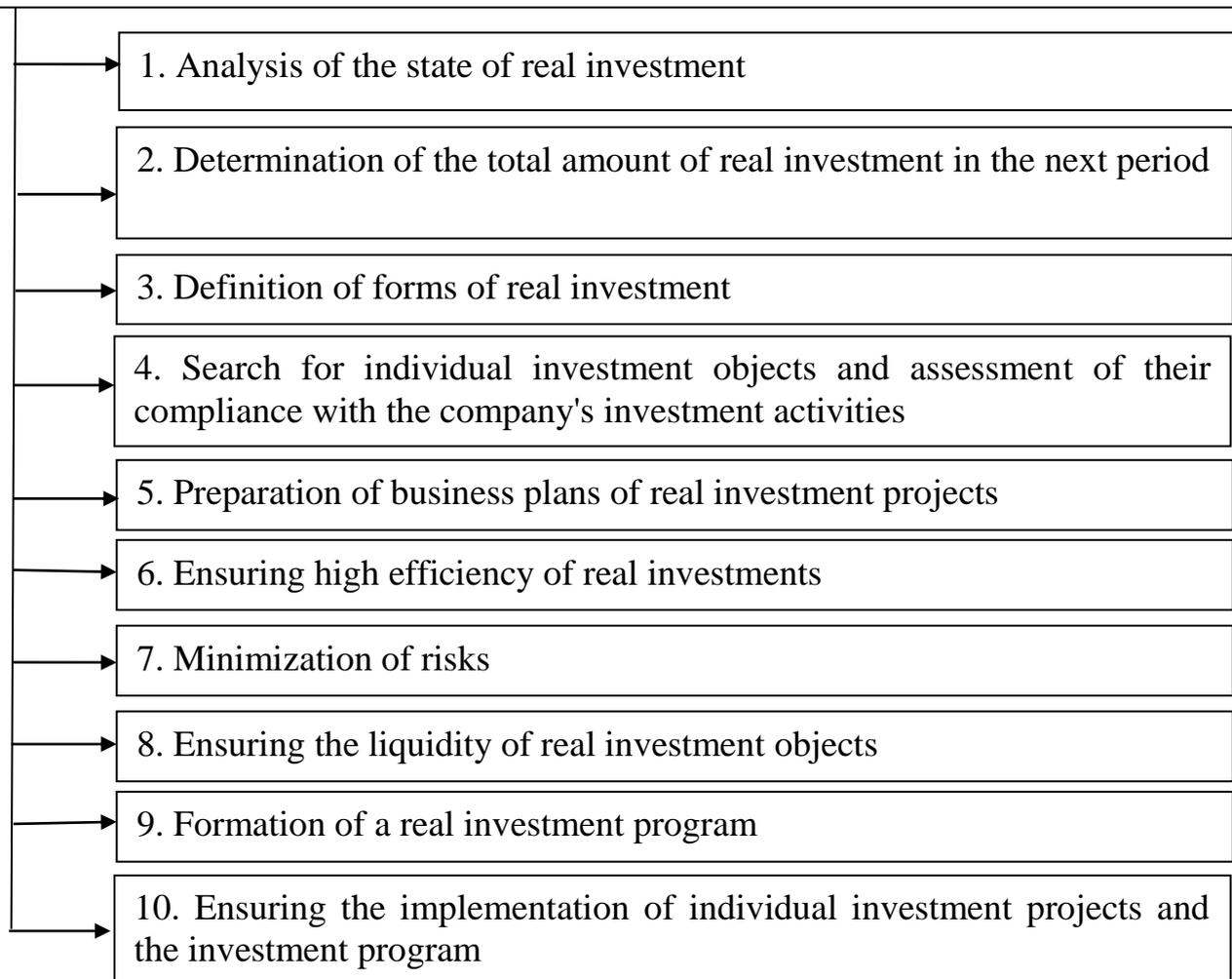


## *2. The policy of real investment management of the enterprise*

### **REAL INVESTMENT MANAGEMENT POLICY**

a component of the general investment strategy of the enterprise, which ensures the preparation, evaluation and implementation of the most effective real investment projects

### **STAGES OF THE PROCESS OF FORMING A POLICY OF MANAGEMENT OF REAL INVESTMENTS AT THE ENTERPRISE**



### 3. Evaluation of the effectiveness of real investment projects

**IN THE PROCESS OF PERFORMING AN EFFICIENCY ASSESSMENT, TO OBTAIN OBJECTIVE RESULTS, THE FOLLOWING POINTS SHOULD BE CONSIDERED:**

1) the assessment of the effectiveness of investment projects should be carried out on the basis of a comparison of the volume of investment costs, as well as the amounts of the planned profit and the terms of payback of the invested capital

2) the assessment of the volume of investment costs should cover all the used resources involved in the implementation of the project

3) the assessment of the payback of invested funds should be carried out on the basis of the net cash flow indicator, which is formed at the expense of the sums of net profit and depreciation deductions during the operation of the investment project

4) in the process of evaluating the amount of investment costs and net cash flow should be reduced to the true value with the help of a discount rate, which should be differentiated for different investment projects

*To calculate the performance indicator of the investment as the interest rate, which is chosen for discounting, can be used:*

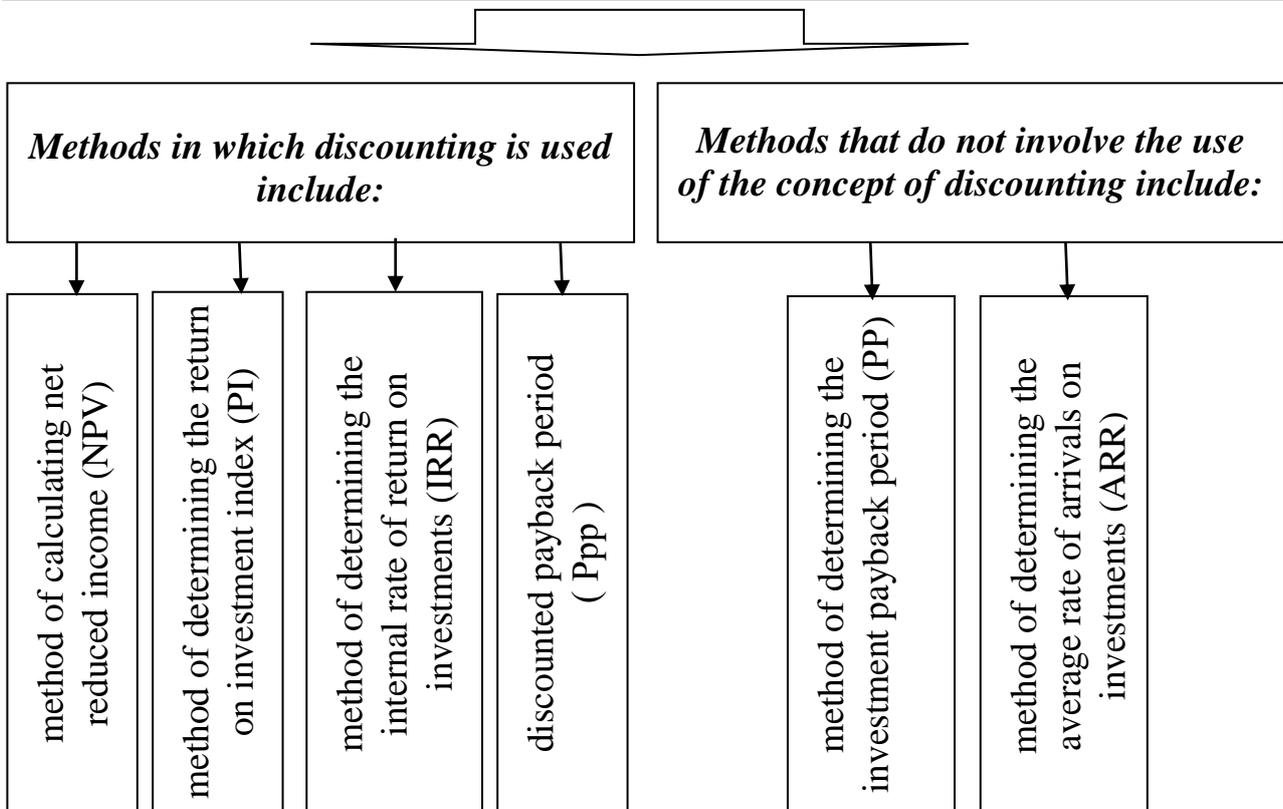
weighted  
average cost of  
capital

average deposit  
or loan rate

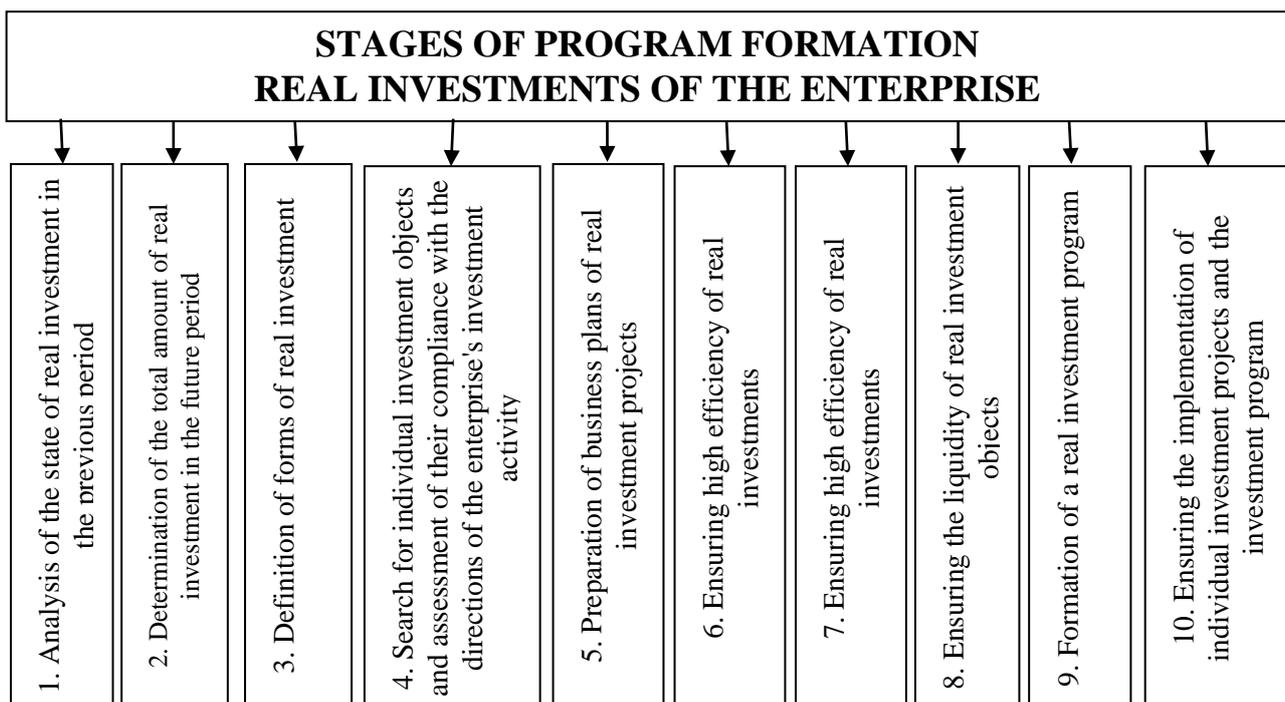
individual rate  
of return

the level of  
investment risks  
and liquidity

Depending on the main principles of evaluating the effectiveness of investment projects, a number of methods are used, which can be conventionally divided into those that use discounting and those that do not use discounting.



#### 4. Formation of a real investment program



## 4.2. Practical tasks

### *Solving typical tasks on the topic*

#### **Task 1.**

The corporation plans to allocate funds for the purchase of new equipment. Projected cash earnings and initial investment are shown in the table. Determine the payback period of the project.

<b>Period</b>	<b>Expected cash flows, hryvnias</b>
0	-10000
1	-4000
2-6	+2000
7-15	+5000
16	+2000

#### **Solution**

The investment payback period is defined as the period required to return the original investment through the accumulation of net real cash flows received by the project.

Since cash flows are variable over the life of the project, the payback period can be found as follows:

<b>Period</b>	<b>Expected cash flows</b>	<b>Net cash flow</b>
0	-10000	-10000
1	-4000	-14000
2	2000	-12000
3	2000	-10000
4	2000	-8000
5	2000	-6000
6	2000	-4000
7	5000	1000

The initial investment is recovered within the seventh year. Since 4,000 is left over at the beginning of the seventh year and 5,000 is expected to be received during the seventh year, the original investment will be covered over the term:

$(4000/5000) \times 12 = 10$  months of the seventh year.

Therefore, the payback period of the project will be equal to 6 years and 10 months.

### Task 2.

Determine the PTV of the investment project with the cash flows shown in the table. Discount rate – 15%.

Period	Cash flow
0	-1000
1	-700
2	-3500
3	-3500
4	7500

### Solution

The net present value of an investment project is the difference between the sum of the present values of cash flows from investments in each time period and the present value of the investments themselves.

If we define the net present value of the project as NPV, then we get:

$$NPV = \sum_{t=0}^n \frac{S_t}{(1+k)^t} - A_0 \quad (4.1)$$

where  $A_0$  – the present value of the initial investment in the project;

$S_t$  – cash flow in the period  $t$ ;

$k$  – required rate of return on investment;

$t$  – time;

$n$  – duration of the investment project.

If there is an intention to make investments in the project not all at once in the period), but also in other periods, then the formula turns into the following:

$$NPV = \sum_{t=0}^n \frac{S_t}{(1+k)^t} - \sum_{t=0}^n \frac{A_t}{(1+k)^t} \quad (4.2)$$

where  $A_t$  – cash investment flows in the period  $t$

If  $NPV > 0$ , it means that the rate of return of the project exceeds the required rate of return on investments (discount rate). If  $NPV = 0$ , then the rate of return of the project is exactly equal to the required rate, while if  $NPV < 0$ , then the profitability of the project is expected to be less than the required rate. Therefore, according to the  $NPV$  criterion, only those projects with a  $NPV$  of 0 can be selected.

$$NPV = \frac{7500}{(1+0,15)^4} - \left[ \frac{1000}{(1+0,15)^0} + \frac{700}{(1+0,15)^1} + \frac{3500}{(1+0,15)^2} + \frac{3500}{(1+0,15)^3} \right] =$$

$$= 4288 - (1000 + 609 + 2647 + 2301) = 4288 - 6557 = -2269$$

Conclusion: Since the  $NPV$  of the project is negative, this project cannot become a candidate for selection

### Task 3.

ABC Corporation evaluates 3 projects. The cash flows of each project are shown in the table. If the corporation's cost of capital is 12%, find the best project based on the Profitability Index (PI) criterion.

Time	Project A	Project B	Project C
0	-10000	-30000	-18000
1	2800	6000	6500
2	3000	10000	6500
3	4000	12000	6500
4	4000	16000	6500



### Solution

The profitability index of an investment project (profitability index) is the ratio of the present value of cash receipts from the project after taxation to the present value of investments.

If the IP of the project is marked as PI, then we will get:

$$PI = \frac{\sum_{t=0}^n \frac{S_t}{(1+k)^t}}{\sum_{t=0}^n \frac{A_t}{(1+k)^t}} \quad (4.3)$$

*PI* – this is a measure of project profitability per 1 monetary unit of investment.

If  $PI > 1$ , then the project under consideration has a positive net present value.

The relationship between *NPV*, *PI* and average rate of return (*ARR*) is as follows:

NPV	PI	ARR
< 0	< 1	Less than the required rate
= 0	= 1	Equal to the required rate
> 0	> 1	More than the required rate

so:

	Project A	Project B	Project C
Present value of investment	-10000	-30000	-18000

Calculation of *CVF* (current value of flows)

#### Project A:

$$CVF_A = \frac{2800}{(1+0,12)^1} + \frac{3000}{(1+0,12)^2} + \frac{4000}{(1+0,12)^3} + \frac{4000}{(1+0,12)^4} =$$

$$= 2500 + 2392 + 2847 + 2542 = 10281$$

**Project B:**

$$CVF_B = \frac{6000}{(1+0,12)^1} + \frac{10000}{(1+0,12)^2} + \frac{12000}{(1+0,12)^3} + \frac{16000}{(1+0,12)^4} =$$

$$= 5357 + 7972 + 8542 + 10168 = 32039$$

**Project C:**

$$CVF_C = \frac{6500}{(1+0,12)^1} + \frac{6500}{(1+0,12)^2} + \frac{6500}{(1+0,12)^3} + \frac{6500}{(1+0,12)^4} =$$

$$= 5804 + 5182 + 4627 + 4131 = 19744$$

**Calculation of the profitability index (PI):**

$$PI_A = \frac{10281}{10000} = 1,0281$$

$$PI_B = \frac{32040}{30000} = 1,068$$

$$PI_C = \frac{19743}{18000} = 1,0968$$

**Conclusion:**

Projects are ranked according to the PI criterion in the following order: C; B; A.

Project B has the highest NPV of all projects = 32039, but project C is the most profitable per 1 monetary unit of investment. All projects meet the required rate of return of 12%, as the  $PI > 1$ .

**Task 4.**

The new project has an initial investment of UAH 10,000, which will yield an after-tax cash flow of UAH 7,000. in the 1st year, UAH 5,000. — in the 2nd year. Determine the internal rate of return.

**Solution**

An investment project's internal rate of return (IRR) is the rate achieved when the present value of future cash flows from the investment after taxes is equal to the present value of the investment itself.

Equation IRR:

$$\sum_{t=0}^n \frac{S_t}{(1+r)^t} - \sum_{t=0}^n \frac{A_t}{(1+r)^t} = 0 \quad (4.4)$$

where  $IRR = r$  — internal rate of return. At  $k = r$   $IRR = 0$ .

So:

$$\frac{7000}{(1+r)} + \frac{5000}{(1+r)^2} = 10000$$

$$10 \times (1+r)^2 - 7(1+r) - 5 = 0$$

If marked  $(1+r) = X$ , to  $10X^2 - 7X - 5 = 0$ .

This quadratic equation has a single positive root — 1,14.

From here  $r = 0,14$  *P* 14%. Thus, the IRR of the project is equal to 14%.

### *Tasks for independent work*

#### **Task 1.**

The company plans to invest in new equipment. The initial costs of the project are UAH 10,000, and the annual cash flows from investing during the 6 years of the project's existence are UAH 2,500. Determine the payback period of the project.

#### **Task 2.**

The company is going to start production of new equipment. The cost of capital of the enterprise is 9%. Expected cash flows of the project:

Time	Cash flow, UAH
0	-28000
1	-12000
2	2000
3	8000
4	16000
5	18000

Determine the payback period of the project's cash flows.

#### **Task 3.**

A project with a life cycle of 4 years has an initial investment of UAH 20,000. and the following annual cash receipts (UAH): year 1 — 1,000, year 2 — 3,000, year 3 — 4,000, year 4 — 3,000. Determine the average rate of return on investments for this project.

#### **Task 4.**

The manager needs to evaluate an investment project with an initial investment of UAH 10,000. and annual cash flows of UAH 4,000. for 6 years. The company plans the required rate of return of the project at the level of 13%. Calculate the net present value (NPV) of the project. The investment project has the following annual cash flows:

Time	Cash flow, UAH
0	-10000
1	-20000
2	150000
3	-250000
4	100000

The net residual value of the project in period 5 is UAH 50,000. Determine the NPV of the project under the condition of the required rate of return 12%.

**Task 5.**

The company was offered three investment projects with such cash flows (UAH):

Time	Project A	Project B	Project C
0	-10000	-30000	-18000
4	3000	7000	-6000
2	4000	10000	8500
3	5000	13000	8500
4	5500	15000	9000

Determine the project profitability index and select the best of these projects, provided that the corporation's required rate of return is 12%.

**4.3. Terminological dictionary of key concepts**

**The internal rate of return (IRR)** is a weighted average value of the profitability of investments with different investment sources, which is not identical to the normative efficiency ratio.

**An investment project** is a set of combined intentions and practical actions for the purpose of making investment investments, with the aim of ensuring specific financial, economic, production and social measures for the purpose of obtaining profit. The customer of the investment project is the subject of investment activity (legal entity or natural person) who has financial resources and, at the request of the contractor, provides a guarantee of his solvency. The customer can be the state, ministry, department, corporation, association, union, enterprise, institution or private person.

**The profitability index (PI)** is the ratio of discounted cash income to the investment costs shown on the same date. PI determines how much income the investor will receive for one notional monetary unit. If  $PI > 1$ , then the project is efficient.

**The IRR of an investment** is the minimum allowable amount of net profit that accrues to each unit of investment costs.

**The payback period** is the amount of time required to cover the costs of a particular project or to return the funds invested by the enterprise at the expense of the funds received as a result of the main activity of this project.

**Real investment** is investing in real assets: both tangible and intangible (innovative investments).

**Net reduced income** is the sum of current effects for the entire calculation period, reduced to the initial step, or the excess of integral results over integral costs.

#### 4.4. Test tasks

##### 1. What is not an object of real investment?

- 1) securities;
- 2) movable property;
- 3) property rights;
- 4) material assets.

##### 2. What is not considered a real investment?

- 1) investment renewal
- 2) financial investments
- 3) expansion investments
- 4) gross investments

##### 3. What are real investments?

- 1) enterprises that independently search for the most profitable place to invest the investor's funds;
- 2) financial obligations intended for resale;
- 3) investments in the fixed capital of production enterprises and investments aimed at increasing material and technical reserves;
- 4) securities evidencing an unconditional monetary obligation under which one person is obliged to pay another a specified sum of money.

##### 4. What indicators are used to characterize real investments in international practice?

- 1) specific weight of real investments;

- 2) capital intensity ratio;
- 3) accumulation ratio;
- 4) rate of return on real investments.

**5. Real investments are made by enterprises in various forms, the main of which are:**

- 1) acquisition of integral property complexes;
- 2) restoration of certain types of equipment;
- 3) innovative investment in intangible assets;
- 4) all answers are correct.

**6. According to the amount of necessary investment resources, real investment projects are divided into:**

- 1) with a small degree of risk, the most risky projects related to the creation of new industries and technologies;
- 2) independent alternatives;
- 3) small, medium and large;
- 4) investment projects financed from internal sources, equity capital, credit resources, mixed sources of financing.

**7. According to the intended financing scheme, real investment projects are divided into:**

- 1) with a small degree of risk, the most risky projects related to the creation of new industries and technologies;
- 2) independent alternatives;
- 3) small, medium and large;
- 4) investment projects financed from internal sources, equity capital, credit resources, mixed sources of financing.

**8. According to the degree of risk, real investment projects are divided into:**

- 1) with a small degree of risk, the most risky projects related to the creation of new industries and technologies;
- 2) independent alternatives;

3) small, medium and large;

4) investment projects financed from internal sources, equity capital, credit resources, mixed sources of financing.

**9. According to the type of relationship, real investment projects are divided into:**

1) with a small degree of risk, the most risky projects related to the creation of new industries and technologies;

2) independent, alternative;

3) small, medium and large;

4) investment projects financed from internal sources, equity capital, credit resources, mixed sources of financing.

**10. Which of the following are classified as tangible objects of real investment?**

1) houses;

2) equipment;

3) land plots;

4) all answers are correct.

**11. The ability of real investments to generate a high rate of profit is one of the main motives of entrepreneurship. This investment feature is called:**

1) a high degree of inflation protection;

2) a high level of risk of moral aging;

3) the lowest liquidity;

4) ensuring a higher level of profitability.

**12. The company has UAH 150 million. There are three projects A, B, C worth 60 million UAH, 80 million UAH. and UAH 90 million. Which of these projects can be considered dependent?**

1) A and B;

2) A and C;

3) on the basis of these data alone, it is not possible to judge the dependence of projects;



4) all these projects are dependent.

**13. If the adoption of project A leads to an increase in income for another project B, then the following projects:**

- 1) independent;
- 2) alternative;
- 3) replace each other;
- 4) complimentary.

**14. If the adoption of project A leads to a decrease in income from another project B, then the following projects:**

- 1) independent;
- 2) alternative;
- 3) replace each other;
- 4) complimentary.

**15. If two or more analyzed projects cannot be implemented simultaneously, and the acceptance of one of them automatically means that the remaining projects cannot be implemented, then the following projects:**

- 1) independent;
- 2) alternative;
- 3) replace each other;
- 4) complimentary.

**16. If the decision to invest in one project does not affect the decision to finance another, then the following projects:**

- 1) independent;
- 2) alternative;
- 3) replace each other;
- 4) complimentary.

**17. There is an investment project, the term of which is calculated for 4 years. What type of projects does this project belong to?**

- 1) short-term;
- 2) medium term;

- 3) long-term;
- 4) with a limited implementation period.

**18. The stages of real investment include:**

- 1) pre-investment stage;
- 2) investment stage;
- 3) post-investment stage;
- 4) all answers are correct.

**19. The process of real investment begins with:**

- 1) search for potential investors;
- 2) search for an enterprise in which funds can be invested;
- 3) searching and choosing an investment idea, taking into account the goals of the enterprise's development;
- 4) all answers are correct.

**20. The company plans to replace old equipment with new equipment that has fundamentally new parameters. The price of the new equipment is UAH 77,700 million, UAH 6,300 million is required for installation, and UAH 8,400 million will be received for the sale of the equipment in the event of its disposal after the end of its useful life. The initial cash flow will be:**

- 1) UAH 84,000 million;
- 2) UAH 75,600 million;
- 3) UAH 77,700 million;
- 4) UAH 92,400 million.

**21. The project can be accepted if:**

- 1)  $NPV > 0$ ;
- 2)  $NPV < 0$ ;
- 3)  $NPV = 0$ ;
- 4)  $NPV \neq 0$ .

**22. The project, which requires investments in the amount of 16,000 million hryvnias, provides for the receipt of annual income in the amount of**

**3,000 million hryvnias. for fifteen years, the discount rate is 15%. Is such an investment worthwhile?**

- 1) the project can be accepted;
- 2) the project must be rejected;
- 3) the project is neither profitable nor unprofitable;
- 4) there is no correct answer.

**23. The project must be rejected if:**

- 1)  $RI > 1$ ;
- 2)  $RI < 1$ ;
- 3)  $RI = 1$ ;
- 4)  $RI \neq 0$ .

**24. The project must be accepted if:**

- 1)  $IRR < SS$ ;
- 2)  $IRR = SS$ ;
- 3)  $IRR > SS$ ;
- 4)  $IRR \neq SS$ .

**25. At the stage of formation of the real investment program of the enterprise:**

- 1) implementation of each specific real investment project is ensured;
- 2) the level of investment activity of the enterprise in the previous period and the degree of completion of previously started real investment projects and programs are evaluated;
- 3) reproduction of fixed assets and intangible assets is ensured, as well as expansion of the volume of own current assets;
- 4) projects are ranked according to the criterion of the level of profitability, risk and liquidity, compliance with the general goals of the enterprise's investment policy.

**26. At the stage of determining the forms of real investment:**

- 1) implementation of each specific real investment project is ensured;

2) the level of investment activity of the enterprise in the previous period and the degree of completion of previously started real investment projects and programs are assessed;

3) the reproduction of fixed assets and intangible assets is ensured, as well as the expansion of the volume of own current assets;

4) projects are ranked according to the criterion of the level of profitability, risk and liquidity, compliance with the general goals of the enterprise's investment policy.

**27. The net profit from operating activities is UAH 2,535.6 million, investment costs are UAH 14,000 million. A simple rate of return will be:**

- 1) 55,2%;
- 2) 18,11%;
- 3) 34,2%;
- 4) 9,06%.

**28. The rate of return on investment can be calculated using the formula:**

- 1)  $PI = \frac{NPV}{PV}$  ;
- 2)  $PI = \frac{PV}{NPV}$  ;
- 3)  $PI = \frac{PVP}{PVI}$  ;
- 4)  $PI = \frac{PVI}{PVP}$  .

**29. Determine which of the following statements is correct:**

- 1) real investments do not cover the costs of design and design-research works;
- 2) the main forms of real investment are external investment by the enterprise;
- 3) social problems are solved with the help of real investments;
- 4) real investments provide the company with the widest range of investment tools on the "return-risk" scale.

**30. Determine which of the following statements is false:**

- 1) if  $PI > 1$ , then  $NPV > 0$ ;
- 2) if  $PI < 0$ , then  $IRR < 1$ ;

3) if  $NPV > 0$ , then  $PI > 1$ ;

4) if  $NPV > 0$ , then  $PI > 2$ .

#### 4.5. Questions for self-control

1. What role does real investment play in the development of the enterprise?

2. What are the features of making real investments.

3. What forms of real investment are used by enterprises at the current stage?

4. What is the real investment management policy?

5. Describe the process of forming the policy of real investment management of the enterprise.

6. Describe the stages (phases) of real investing.

7. What methods can be used to evaluate the effectiveness of real investment projects in modern practice?

8. Describe the method of calculation and the conditions of use of the main indicators for evaluating the effectiveness of real investment projects.

9. What does the concept of "project risk" mean, what are its features?

10. What types of risks of real investment projects of the enterprise do you know? Describe them.

11. Name the stages of project risk assessment.

12. What objective and subjective factors affect the level of project risks?

13. How to ensure the neutralization of project risks?

14. How to evaluate the effectiveness of project risk neutralization?

15. In what case is it necessary to withdraw the project from the enterprise's investment program?

16. How to justify the exit forms of the project from the investment program of the enterprise.

17. Name the stages of substantiation of management decisions on the withdrawal of real projects from the investment program.

18. How is the real investment program formed? Name the principles and main stages of the formation of a real investment program.

## TOPIC 5.

### MANAGEMENT OF FINANCIAL INVESTMENTS OF THE ENTERPRISE

#### 5.1. Methodical recommendations for conducting practical classes

*The purpose of the lesson:* find out the essence, principles, forms and policies of financial investment management; the possibility of determining the assessment of the investment qualities of financial investment instruments; ways of forming and restructuring the portfolio of financial investments.

*Plan of the practical session:*

1. Forms of financial investments and their management policy
2. Assessment of investment qualities of financial investment instruments
3. Risk assessment of financial investment instruments
4. Management of the portfolio of financial investments

*Theoretical information*

*1. Forms of financial investments and their management policy*

**FINANCIAL INVESTMENTS**

investing funds in financial instruments, among which securities prevail, with the aim of obtaining income (profit) in the future

**FINANCIAL INVESTMENTS**

(Tax Code of Ukraine, Art. 14, item 12.1, item 14.1.81 b)

business operations involving the acquisition of corporate rights, securities, derivatives and/or other financial instruments.

## FINANCIAL INVESTMENTS ARE DIVIDED INTO:

### direct investment

economic transactions involving the contribution of funds or property in exchange for corporate rights issued by a legal entity upon their placement by such an entity

### portfolio investments

business transactions that involve the purchase of securities, derivatives and other financial assets for funds on the stock market or stock exchange commodity market

## CHARACTERISTICS OF THE FEATURES OF MAKING FINANCIAL INVESTMENTS

– financial investments - an independent type of economic activity of enterprises of the real sector of the economy.

– financial investments – form investment needs of the second level. They are carried out after meeting the enterprise's need for real capital investment.

– strategic financial investments of the enterprise can be a means of implementing the strategy of economic development with minimal expenditure of monetary resources and time.

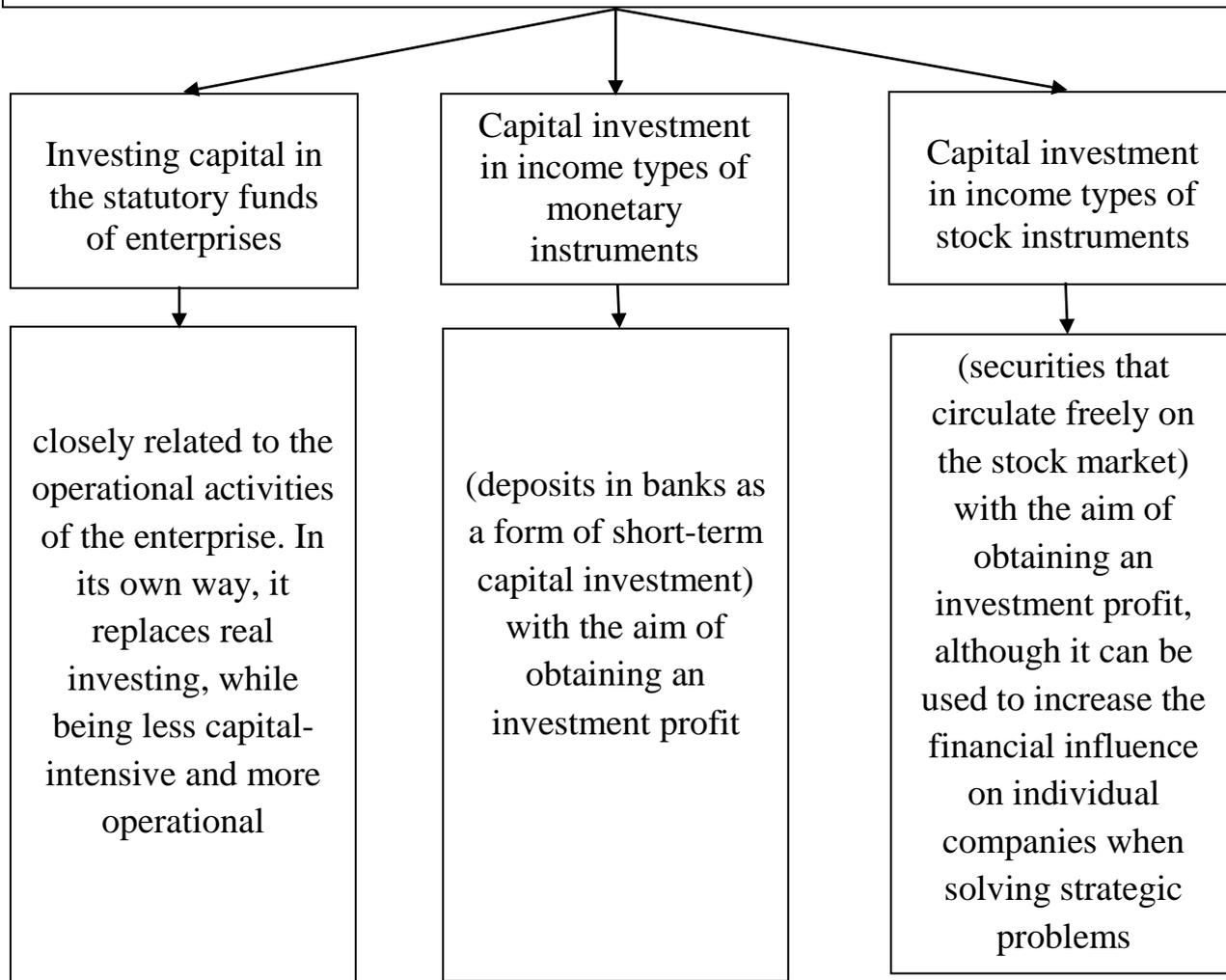
– portfolio financial investments of the enterprise of a non-institutional investor create the possibility of obtaining additional investment income from the use of temporarily free funds or provide their anti-inflationary protection.

– financial investments provide the enterprise with the widest range of investment tools according to the "return-risk" and "return-liquidity" scales.

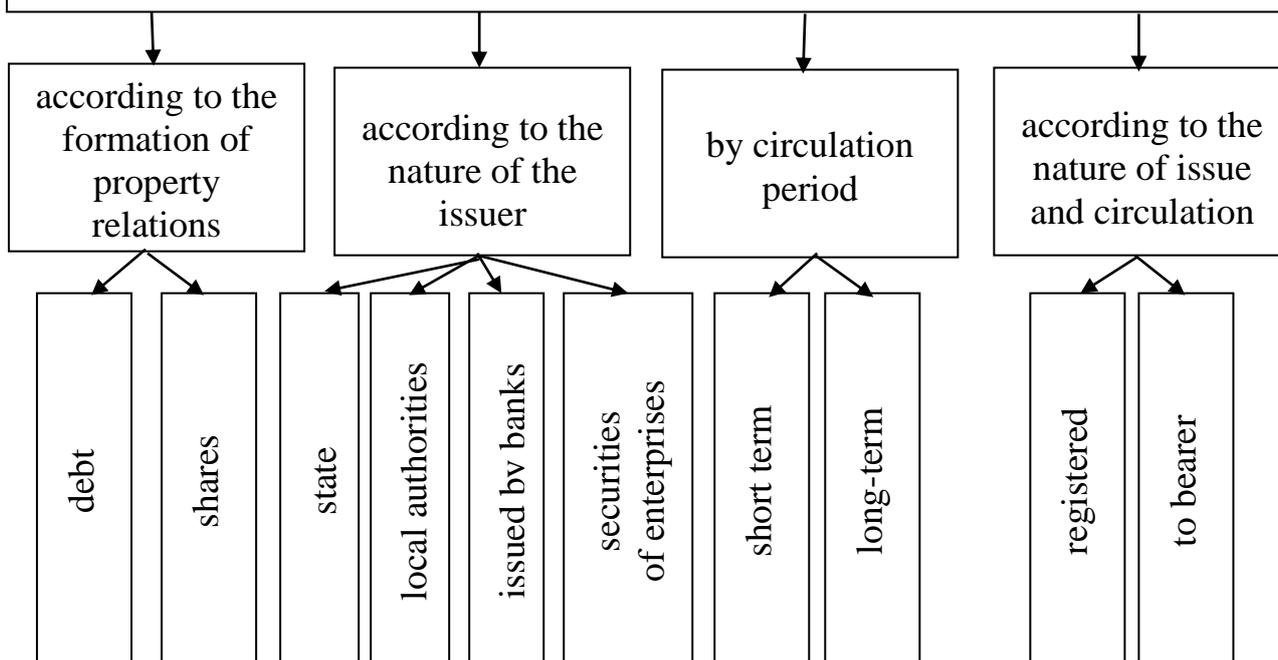
– the process of justifying management decisions related to the implementation of financial investments is simpler and less time-consuming.

– high fluctuations of the financial market situation, compared to the commodity market, determines the need for more active monitoring in the process of financial investment.

## FORMS OF FINANCIAL INVESTMENT



## CLASSIFICATION OF FUND INSTRUMENTS (STOCK INSTRUMENTS) ACCORDING TO THEIR INVESTMENT QUALITY





*With a fairly high frequency of financial investments, a special policy of such management is developed at the enterprise.*

## **FINANCIAL INVESTMENT MANAGEMENT POLICY**

part of the general investment policy of the enterprise, which ensures the selection of the most effective financial instruments for capital investment and its timely reinvestment

### **STAGES OF FINANCIAL INVESTMENT MANAGEMENT POLICY DEVELOPMENT**

- **1 STAGE**  
Analysis of the state of financial investment in the previous period
- **2 STAGE**  
Determination of the amount of financial investment for the next period
- **3 STAGE**  
The choice of forms of financial investment offered
- **4 STAGE**  
Assessment of investment qualities of individual financial instruments
- **5 STAGE**  
Forming a portfolio of financial investments
- **6 STAGE**  
Ensuring the effectiveness of operational management of the portfolio of financial investments

## 2. Assessment of investment qualities of financial investment instruments

### ASSESSMENT OF THE INVESTMENT QUALITY OF FINANCIAL INSTRUMENTS

integral characteristics of their individual types, which is carried out by the investor taking into account the goals of forming an investment portfolio

assessment of the effectiveness of a particular financial instrument consists in assessing its real value and ability to ensure the expected rate of investment profit

#### A principle model for estimating the real market value of a financial instrument

$$C_{FI} = \sum_{t=1}^n RCF_t / (1 + RR)$$

where  $C_{FI}$  – the real market value of the financial investment instrument;

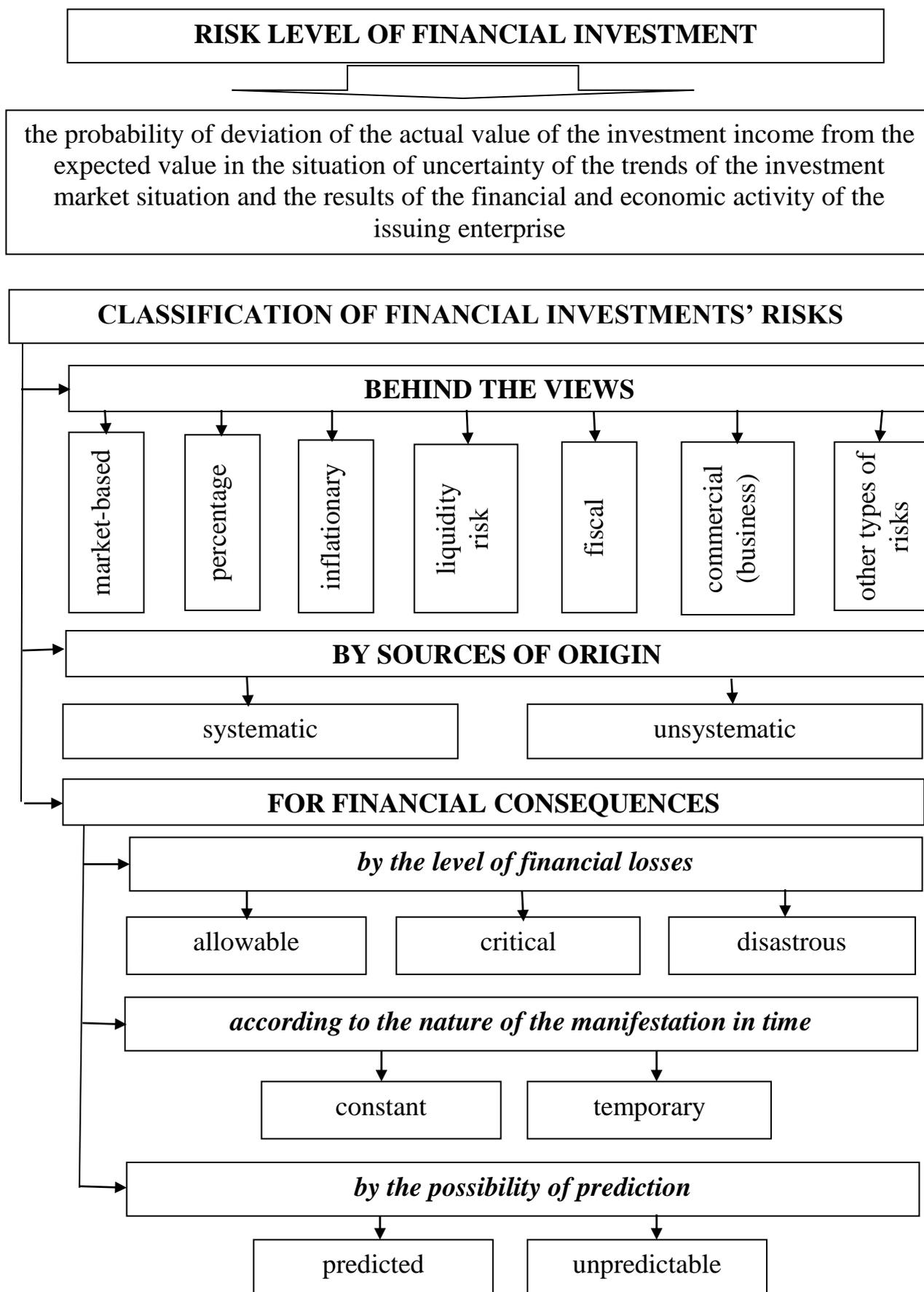
$RCF$  – expected return cash flow during the period of use of the financial instrument;

$RR$  - the expected rate of return of the financial instrument (decimal fraction) is determined by the investor himself, taking into account the risk;

$n$  - the number of periods of return flows from the investment.

The peculiarities of the formation of the reverse cash flow for certain types of financial instruments cause variations in the used models of their real value.

### 3. Risk assessment of financial investment instruments



## SEQUENCE OF THE RISK LEVEL ASSESSMENT PROCESS FOR INDIVIDUAL INVESTMENT INSTRUMENTS

1. Identification of individual types of risks for each financial investment instrument under consideration
2. Assessment of the probability of occurrence of a risk event for certain types of risks of investing in financial instruments
3. Determining the amount of possible financial losses upon the occurrence of certain risk events for certain financial investment instruments
4. Quantification of general, systematic and unsystematic risks in financial investment instruments
5. Comparison of the level of systematic risk of individual financial investment instruments with the expected level of return on them
6. Ranking of financial investment instruments considered by the level of risk

*Final investment decisions on the possibility of using individual financial investment instruments are made taking into account the risk factor based on the investor's attitude to risk and the ratio of the level of risk and return on these instruments*

#### 4. Management of a portfolio of financial investments

### PORTFOLIO OF FINANCIAL INVESTMENTS

a purposefully formed set of financial investment objects of various types, intended for the implementation of investment activities in a certain period in accordance with the developed investment strategy of the investor

### TYPES OF INVESTMENT PORTFOLIO

Aggressive  
(speculative)  
portfolio

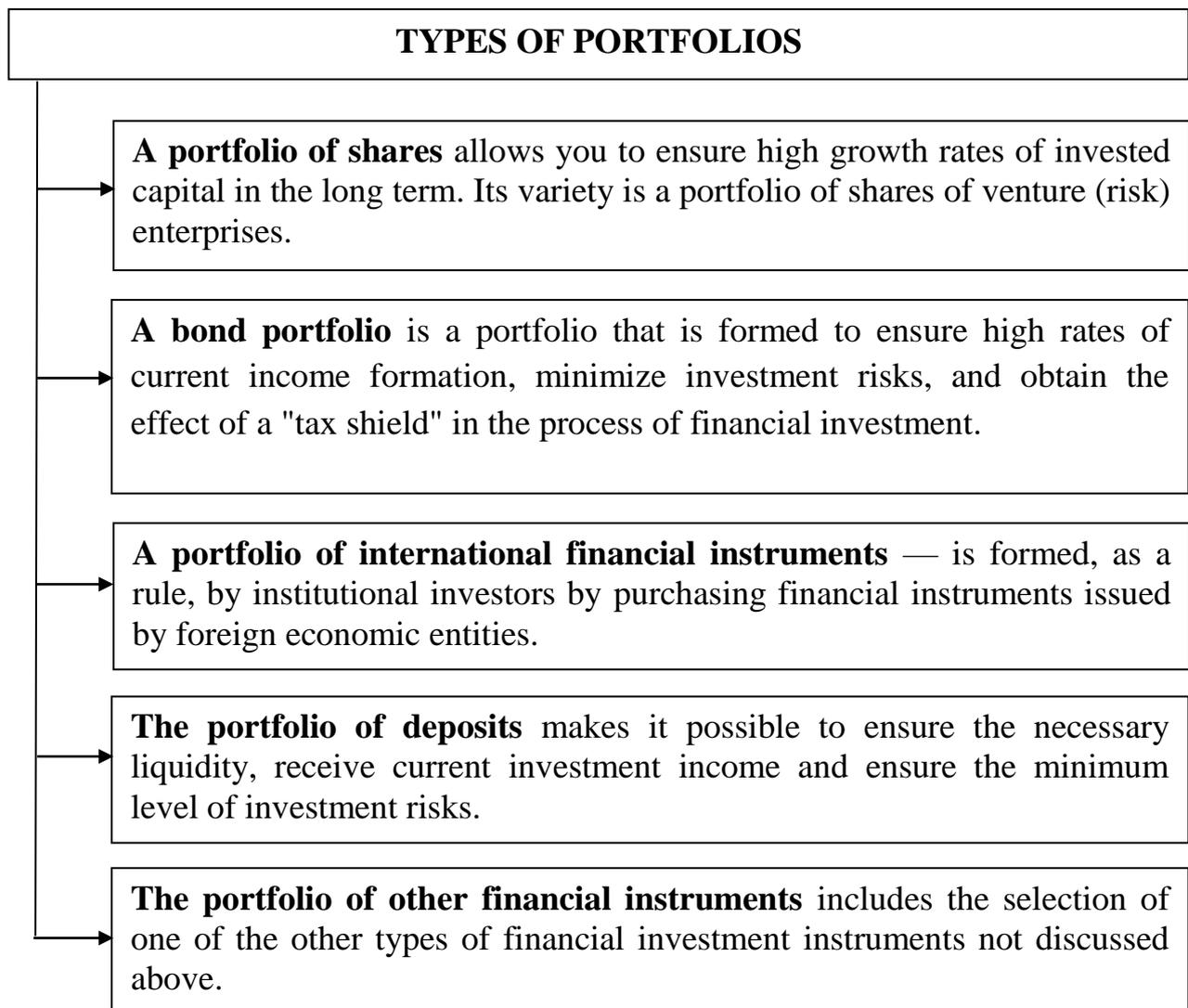
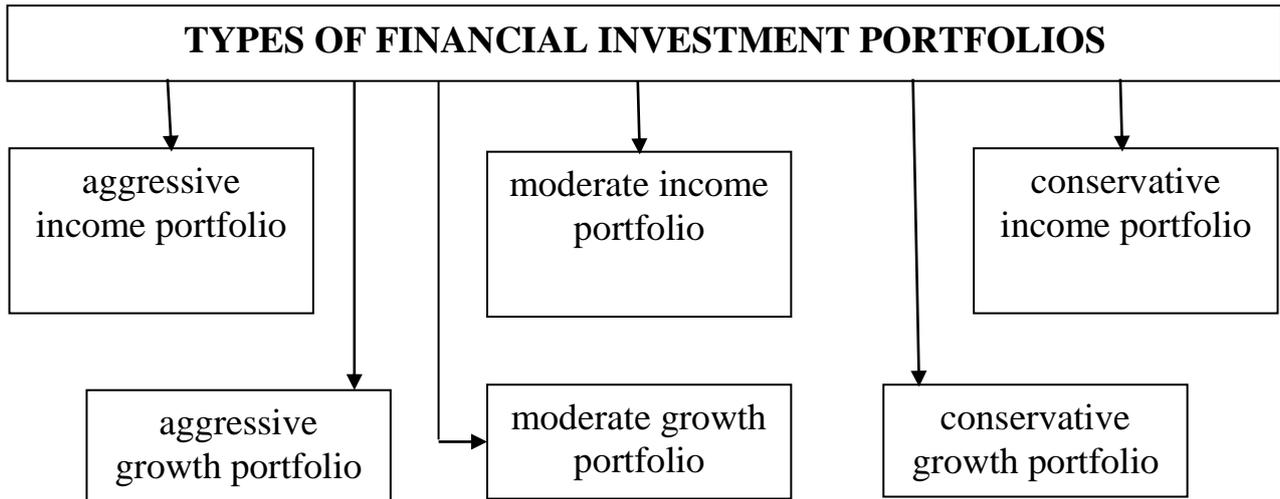
*an investment portfolio formed according to the criterion of maximizing current income or growth of invested capital, regardless of the accompanying level of investment risk. It allows you to get the maximum rate of investment profit on the invested capital, but it is accompanied by the highest level of investment risk, in which the invested capital can be lost completely or in a significant part*

Moderate  
(compromise)  
portfolio

*a set of financial investment instruments has been formed, according to which the overall level of portfolio risk is close to the market average. With such an investment portfolio, the rate of investment profit on invested capital will also be close to the market average*

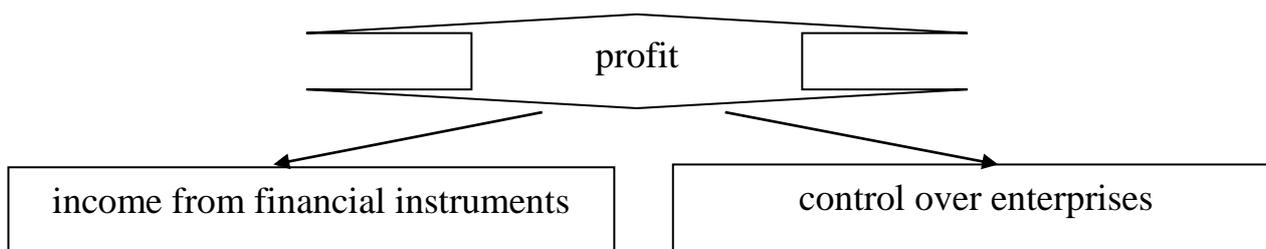
Conservative portfolio

*an investment portfolio formed according to the criterion of minimizing the level of investment risk. Such a portfolio, formed by the most cautious investors, practically excludes the use of financial instruments, the level of investment risk of which exceeds the market average. A conservative investment portfolio provides the highest level of financial investment security*



## THE PURPOSE OF THE INVESTOR'S INVESTMENT IN FINANCIAL INSTRUMENTS

obtaining income or other specific purpose (access through securities to scarce products, property rights; creation of holding structures; expansion of the sphere of influence and redistribution of property, etc.)



## PRINCIPLES OF FORMATION OF INVESTMENT PORTFOLIO

- – correspondence of the composition of the portfolio to the investment strategy of the company
- – the principle of ensuring compliance of the portfolio with investment resources
- – ensuring ratios acceptable to the investor between the main goals: profitability, capital growth, risk minimization and liquidity
- – collegiality (for the company) in making decisions about the composition of the portfolio
- – ensuring portfolio management, the ability to systematically monitor changes in the financial market and carry out the necessary reinvestment of funds (monitoring)

*The basis of traditional **portfolio management** is the idea of a balanced portfolio. According to this concept, portfolio managers include various financial instruments in them*

## 5.2. Practical tasks

### *Solving typical tasks on the topic*

#### **Task 1.**

The nominal value of the bond is UAH 1,000. For 10 years (the term before its repayment), they will be paid annual interest payments in the amount of UAH 100, which can be placed in the bank at 11% per annum. Find the market price of the bond and its market rate.

#### **Solution**

The principle model for estimating the real market value of a financial instrument is as follows:

$$C_{FI} = \sum_{t=1}^n RCF_t / (1 + RR) \quad (5.1)$$

where  $C_{FI}$  – the real market value of the financial investment instrument;

$RCF$  – expected return cash flow during the period of use of the financial instrument;

$RR$  - the expected rate of return of the financial instrument (decimal fraction) is determined by the investor himself, taking into account the risk;

$n$  - the number of periods of return flows from the investment.

$$C_{FI0} = \sum_{t=1}^{10} \frac{100}{(1 + 0,11)^t} + \frac{1000}{(1 + 0,11)^{10}} = 100(5,8892) + 352,18 = 941,1$$

$$C_{FIr} = \frac{941,1}{1000} = 94,11$$

The market price of the bond — 941,10 грн., market rate – 94,11 грн.



**Task 2.**

What will be the price of a preferred share of a corporation with a dividend of UAH 2.25, if the investor requires a required rate of return of 8%?

**Solution**

$$P_0 = \frac{D_p}{K} \quad (5.2)$$

$$P_0 = \frac{2,55}{0,08} = 31,88$$

The price of the preferred share is UAH 31.88.

**Task 3.**

An investor can buy shares of a corporation for UAH 25, expecting a dividend of UAH 2. in the first year and 4 UAH. in two years. In two years, he would like to sell shares at a price of UAH 28. The investor assumes the required rate of return — 20%. Should an investor buy shares of a corporation?

**Solution**

$$P_0 = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \frac{P_2}{(1+k)^2} \quad (5.3)$$

$$P_0 = \frac{2}{(1+0,2)^1} + \frac{4}{(1+0,2)^2} + \frac{28}{(1+0,2)^2} = 23,89$$

An investor should not buy corporation shares, because their price in two years will be lower than UAH 25, which he has to pay now.

**Task 4.**

The company pays current dividends per share in the amount of UAH 3.20. Annual dividend growth of 5% is expected. What will be the price of the stock if the required rate of return is 10%?

### Solution

We use the Gordon model to calculate the price of a share with a constant growth rate of dividends:

$$P_0 = \frac{D_1}{(k - g)} = \frac{D_0 \times (1 + g)}{(k - g)} \quad (5.4)$$

$$P_0 = \frac{3,2 \times (1 + 0,05)}{(0,1 - 0,05)} = \frac{3,36}{0,05} = 67,2$$

The price of a share with a constant growth rate of dividends is UAH 67.20.

### *Tasks for independent work*

**Task 1.** The joint-stock company issued 1,000 shares with a nominal value of UAH 1,000. and 500 shares with a nominal value of UAH 2,000. According to the results of the year's work, profit in the amount of UAH 300,000 can be used to pay dividends. What is the size of the dividend?

**Task 2.** How many shares did the joint-stock company issue, if the nominal price of the share is UAH 1,000, a total of UAH 100,000 was paid as dividends, the amount of dividends is 20%?

**Task 3.** The family bought 500 shares at UAH 2 each. Dividends - 40%. Issued in money - 10%, goods for 300 hryvnias, the rest of the money - in shares. How many shares will be issued?

**Task 4.** The family bought 200 shares for UAH 1 each. per share and 500 shares at UAH 2. per share The joint-stock company issued shares worth UAH 100,000. Part of the profit of the joint-stock company in the amount of UAH 40,000. went to pay dividends. Determine how much money the family will receive as dividends.

**Task 5.** Shares for UAH 50,000 were purchased. The nominal value of the share is UAH 5,  $D = 20\%$ . Issued in cash - UAH 1,000, in goods - 50% of the remaining amount. How many shares can you buy with the remaining money?

### 5.3. Terminological dictionary of key concepts

**Investment appraisal** is an estimate of possible future costs and revenues that may arise as a result of investments in this project during the expected term of its validity. Investment evaluation includes an assessment of project risks and sensitivity, that is, the degree to which possible errors in forecasts can affect the expected results of a given project. Such an assessment helps to make a decision about whether it is worth investing resources in this project.

**Operational management of the restructuring of the portfolio of financial investments** is the justification and implementation of management decisions that ensure the support of the target investment orientation of the formed portfolio according to the parameters of profitability, risk and liquidity by means of rotation of its individual instruments.

**An income portfolio** is an investment portfolio formed according to the criterion of maximizing the level of investment profit in the current period, regardless of the growth rate of the invested capital in the long term.

**A growth portfolio** is an investment portfolio formed according to the criterion of maximizing the rate of growth of invested capital for the long term, regardless of the level of profit in the current period. In other words, this portfolio is focused on ensuring high growth rates of the market value of the enterprise.

**An investment portfolio** is a set of real or financial investments. A set of securities of different types, duration and liquidity, owned by one investor and managed as a single entity to achieve certain goals.

### 5.4. Test tasks

#### 1. From a financial point of view, investments are:

- 1) expenses for the creation and expansion, reconstruction of the fixed capital, as well as for the change of working capital;
- 2) all types of assets that are invested in economic activity for the purpose of obtaining profit;

3) expenses for the creation, expansion, reconstruction of working capital for the purpose of obtaining profit;

4) all definitions are correct.

**2. Portfolio financial investments are used by enterprises of the real sector of the economy for the purpose of:**

1) obtaining additional investment income in the process of using free monetary assets and their anti-inflationary protection;

2) ensuring the maximum return on investment for individual investors;

3) stimulation of entrepreneurial activity through direct participation in the management of the company issuing securities;

4) bringing the parameters of investment resources to those that would simultaneously meet the demands of savings owners.

**3. The main forms of financial investment include:**

1) acquisition of integral property complexes;

2) investment of capital in the statutory funds of joint enterprises;

3) reconstruction;

4) investment of growth in stocks of tangible current assets.

**4. According to the degree of predictability of investment income, the following are distinguished:**

1) short-term and long-term securities;

2) registered securities;

3) debt and equity securities;

4) government securities.

**5. According to the level of risk and liquidity associated with the circulation period, the following stock investment instruments are distinguished:**

1) short-term and long-term securities;

2) registered securities;

3) debt and equity securities;

4) government securities.

**6. According to the level of liquidity, related to the nature of issue and circulation, the following stock investment instruments are distinguished:**

- 1) short-term and long-term securities;
- 2) registered securities;
- 3) debt and equity securities;
- 4) government securities.

**7. The main parameters for assessing the investment qualities of a bond include:**

- 1) assessment of the industry in which the issuer carries out its operational activities;
- 2) assessment of the investment attractiveness of the region;
- 3) assessment of the main indicators of economic activity and financial condition of the issuer;
- 4) assessment of the reliability of the issuing bank.

**8. The main parameters for assessing the investment qualities of savings (deposit) certificates include:**

- 1) assessment of the industry in which the issuer carries out its operational activities;
- 2) assessment of the investment attractiveness of the region;
- 3) assessment of the financial stability and solvency of the issuing enterprise;
- 4) assessment of the reliability of the issuing bank.

**9. The risk classification of individual financial investment instruments by type includes:**

- 1) critical risk;
- 2) systematic risk;
- 3) risk causing only financial losses;
- 4) inflation risk.

**10. The risk classification of individual financial investment instruments by the level of financial losses includes:**

- 1) critical risk;

- 2) systematic risk;
- 3) risk causing only financial losses;
- 4) inflation risk.

**11. Bonds are...**

1) short-term debt obligations with a fixed interest, with the help of which the state and local authorities mobilize financial resources;

2) open-ended debt obligations with a fixed interest, with the help of which the states mobilize financial resources;

3) non-refundable aid, with the help of which the state, local authorities, as well as enterprises mobilize financial resources;

4) term debt obligations with a fixed interest, with the help of which the state, local authorities, enterprises and individuals mobilize financial resources.

**12. The issuers of savings certificates can only be:**

- 1) banks;
- 2) the state;
- 3) various financial institutions;
- 4) companies (state).

**13. What are the names of the bonds that provide for the payment of interest income?**

- 1) discount;
- 2) targeted;
- 3) nominal;
- 4) interest.

**14. What does the term "financial investment" mean?**

- 1) capital investment in financial institutions;
- 2) investment of intangible resources in the production sphere;
- 3) investment of capital on an irrevocable and free basis;
- 4) release of money from circulation.

**15. A security issued exclusively by an investment fund or an investment company and which entitles its owner to receive income in the form of dividends is:**

- 1) bond;
- 2) investment certificate;
- 3) action;
- 4) voucher.

**16. Securities, the circulation of which is allowed on the territory of Ukraine, may be issued in the following forms:**

- 1) only in documentary form;
- 2) only in undocumented form;
- 3) in documentary and non-documentary forms;
- 4) there is no correct answer.

**17. In accordance with the current legislation of Ukraine, the form of issuance of securities is determined by:**

- 1) National Bank of Ukraine;
- 2) State Commission on Securities and the Stock Market;
- 3) investor;
- 4) issuer.

**18. The value of a package of shares, determined as a share of the shares of the statutory fund, in accordance with the share placement plan, is:**

- 1) estimated value of a package of shares;
- 2) nominal value of a package of shares;
- 3) market value of the share package;
- 4) investment value of a package of shares.

**19. The model for estimating the current value of stocks with constant dividend growth is known as:**

- 1) Dupont model;
- 2) Fisher's model;
- 3) the Sharpe model;

4) Gordon's model.

**20. Non-documentary form of securities is:**

1) an account made by the custodian, which is proof of ownership of the security;

2) a paper form of a security containing details of the corresponding type of security of a certain issue, data on the number of securities and certifying the set of rights granted by these securities;

3) a document that determines the need for real investment;

4) there is no correct answer.

**21. In accordance with the current legislation in Ukraine, the following types of securities may be issued and traded on the stock market:**

1) investment certificates;

2) treasury obligations of the republic;

3) bonds of internal and external state loans;

4) all answers are correct.

**22. A global certificate is:**

1) a document that determines the need for real investment;

2) a document drawn up for the entire issue of securities in non-documentary form confirming the right to carry out transactions with securities of this issue in the National Depository System;

3) a paper form of a security containing details of the corresponding type of security of a certain issue, data on the number of securities and certifying the set of rights granted by these securities;

4) an account made by the custodian, which is proof of ownership of the security.

**23. Forms of financial investment of the enterprise include:**

1) investment of capital in the statutory funds of joint enterprises;

2) capital investment in income types of monetary instruments;

3) capital investment in income types of financial instruments;

4) all answers are correct.



**24. The estimated amount of investment costs is:**

1) the real value of a financial investment instrument, which is formed under the conditions of the expected rate of return on it, taking into account the appropriate level of risk;

2) the real value of the financial instrument of investment, which is formed under the conditions of the expected rate of return on it without taking into account the corresponding level of risk;

3) the projected value of a financial investment instrument, which is formed in the conditions of the expected rate of return on it, taking into account the appropriate level of risk;

4) all answers are correct.

**25. A portfolio of securities is:**

1) a set of investment values used to achieve a specific investment goal of the depositor;

2) the amount of invested money;

3) net reduced income;

4) ratio of net discounted income and discounted value of investments.

**26. The principles of investment portfolio formation include:**

1) safety;

2) profitability;

3) liquidity;

4) all answers are correct.

**27. There are two types of securities portfolios:**

1) individual and enterprise;

2) independent and alternative;

3) long-term and short-term;

4) direct and reverse.

**28. According to the level of liquidity, the following types of investment portfolios of enterprises are distinguished:**

1) short-term and long-term;

- 2) liquid and illiquid;
- 3) highly liquid, medium liquid and low liquid;
- 4) taxable and exempt from taxation.

**29. When evaluating the portfolio and the expediency of operations with the assets included in it, the following indicators are used:**

- 1) expected profitability;
- 2) capital gain;
- 3) the risk of the investment portfolio as a whole;
- 4) there is no correct answer.

**30. The correlation coefficient can vary:**

- 1) from 0 to 1;
- 2) from -1 to +1;
- 3) from -1 to 0;
- 4) from 0 to 0.5.

### **5.5. Questions for self-control**

1. What are the peculiarities of making financial investments of the enterprise?
2. Name the main forms of financial investment of the enterprise and explain their essence.
3. What is the policy of financial investment management?
4. How is the formation of the financial investment management policy carried out?
5. How is the assessment of investment qualities of individual financial investment instruments carried out?
6. Name the main stages of forming a portfolio of financial investments.
7. How to ensure effective operational management of the portfolio of financial investments?
8. What factors determine the investment qualities of individual financial investment instruments?

9. Name the parameters for assessing the investment qualities of shares and bonds.
10. How to evaluate the performance of stocks and bonds?
11. What are the main features of the risk of individual financial investment instruments.
12. Describe the risks of individual financing instruments. How is their risk assessed?
13. Explain the concept of a portfolio of financial investments.
14. What is the main purpose of forming an investment portfolio.
15. What are the modern approaches to typification of enterprise investment portfolios?
16. Describe the traditional approach to forming a portfolio of financial investments.
17. Describe the main principles of modern portfolio theory.
18. How is the formation of a portfolio of financial investments based on modern portfolio theory?
19. How is the operational management of the restructuring of the portfolio of financial investments carried out?
20. Name the stages of the process of operational management of the portfolio restructuring of financial investments.

## TOPIC 6.

### MANAGEMENT OF THE FORMATION OF INVESTMENT RESOURCES OF THE ENTERPRISE

#### 6.1. Methodical recommendations for conducting practical classes

*The purpose of the lesson:* find out the essence of the enterprise's investment resources; classification of investment resources of the enterprise; learn the procedure for justifying the need for investment resources; project financing schemes.

*Plan of the practical session:*

1. The concept of investment resources of the enterprise and the order of their formation
2. Methods of calculating the total volume of investment resources
3. Optimizing the structure of investment resources
4. Evaluation of the effectiveness of investment projects

*Theoretical information*

1. *The concept of investment resources of the enterprise and the order of their formation*

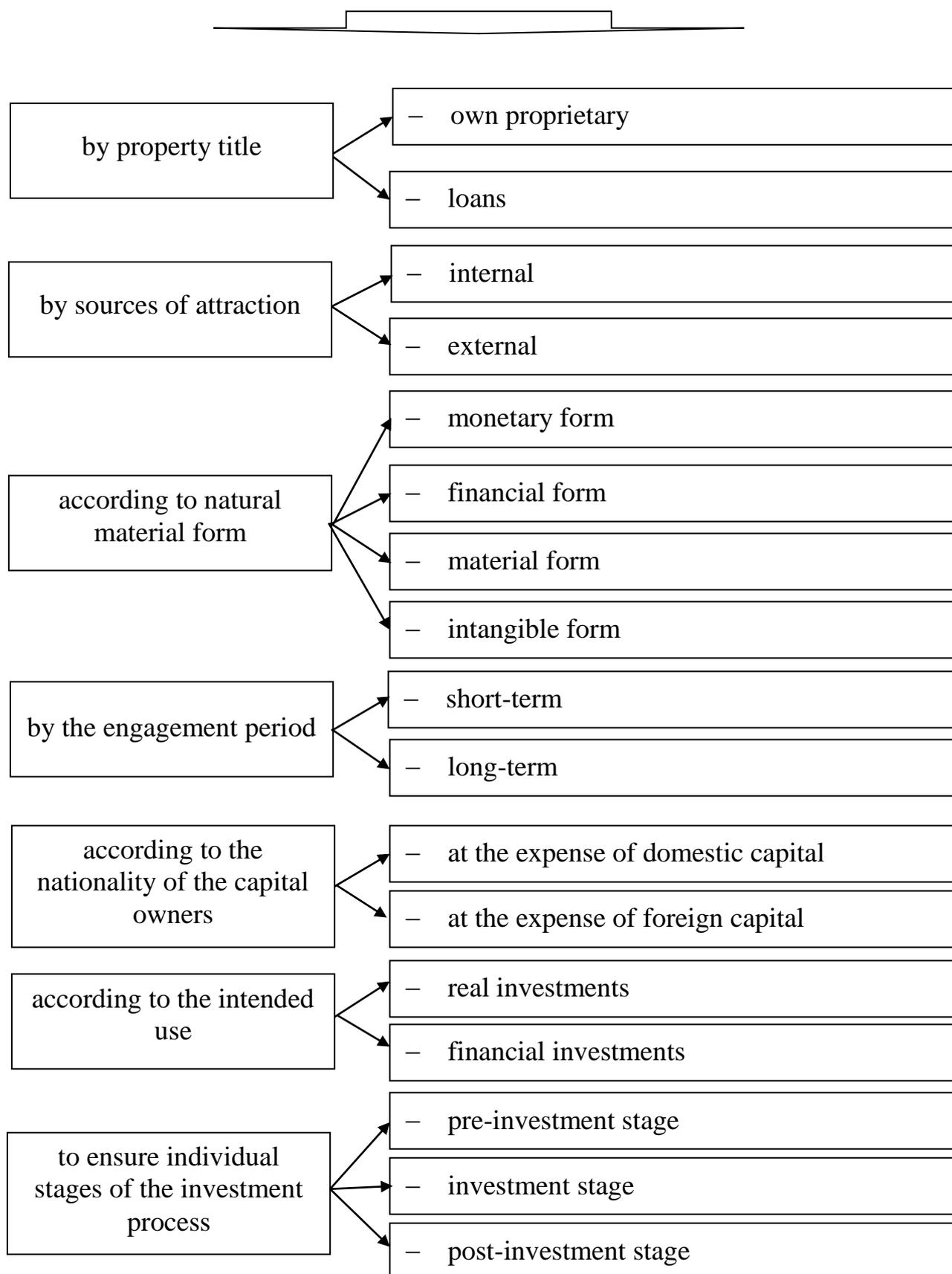
**INVESTMENT RESOURCES OF THE ENTERPRISE**

form of capital, which is attracted by him to make investments in objects of real and financial investment

**PURPOSE OF FORMATION OF INVESTMENT RESOURCES**

satisfaction of his needs in the acquisition of necessary investment assets and optimization of their structure from the standpoint of ensuring effective results of investment activities

## CLASSIFICATION OF INVESTMENT RESOURCES ARE FORMED BY THE ENTERPRISE



## PRINCIPLES OF THE PROCESS OF FORMATION OF INVESTMENT RESOURCES OF THE ENTERPRISE

**1. Taking into account the prospects for the development of investment activities.** In the process of forming the volume and structure of investment resources, it is necessary to take into account all stages of the investment process - pre-investment, investment and operational

**2. Correspondence of the amount of invested investment resources to the amount of investment needs of the enterprise.** The general need for investment resources of the enterprise is determined by calculations of the total volumes of real and financial investment

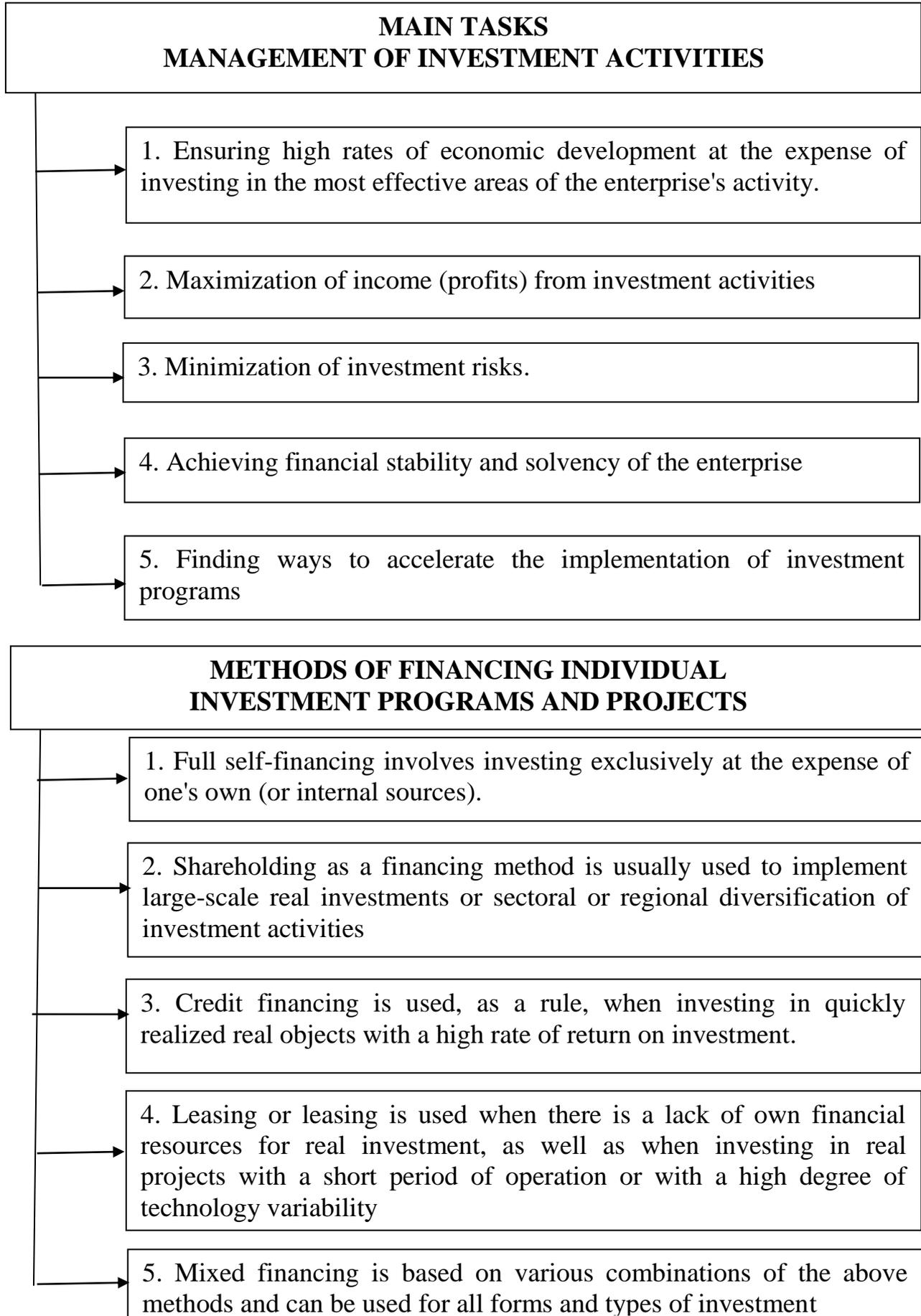
**3. Optimizing the structure of investment resources from the standpoint of effective investment activity.** The conditions for the formation of high final results of investment activity depend on the structure of the formed investment resources. The optimal structure ensures the financial balance of the enterprise's development in the process of investment activity, on the other hand, the suboptimal structure generates risks in the financial sphere of the enterprise.

**4. Minimization of costs for the formation of investment resources from various sources.** Such cost minimization is carried out in the process of managing the cost of capital, which is attracted for investment activities in order to obtain the maximum amount of net profit.

**5. Highly efficient use of investment resources in the process of investment activity.** Investment resources that are temporarily unused may lose their value over time. Therefore, investment resources should be formed taking into account inflation rates and other factors that will affect the value during the period of implementation of investment activities.

*The implementation of these principles is the basis of the process of managing the formation of investment resources of the enterprise*

## ***2. Methods of calculating the total volume of investment resources***



### 3. *Optimizing the structure of investment resources*

#### REQUIREMENTS REGARDING THE OPTIMAL STRUCTURE INVESTMENT RESOURCES

– full synchronization of the receipt of funds with the investment needs of the enterprise (this means that there should be no shortage of investment resources in any period)

– ensuring the effective use of investment resources (there should be no unused funds, and if there is a temporary surplus of free funds, they must be invested in highly liquid financial instruments)

– the need to reduce the total weighted average cost of capital involved in the investment project

*The optimal capital structure reflects the ratio of the use of equity and debt capital, which ensures the most effective relationship between the coefficients of profitability of equity capital and the coefficient of financial stability of the enterprise, that is, its market value is maximized.*

Any enterprise to finance its activities needs a sufficient volume of financing, which depends on the period of turnover of assets and corresponding liabilities.

The total amount of money paid for the use of a certain volume of financial resources is called the **cost of capital**

**The purpose of managing the capital structure** is to minimize the costs of attracting long-term sources of financing and thereby provide capital owners with the maximum market valuation of their invested funds.



## OPTIMIZATION PROCESS SEQUENCE CAPITAL STRUCTURES

1. Analysis of the composition of capital in dynamics over a number of periods (quarters, years) and trends in its structure change, as well as their impact on financial stability and efficiency of capital use.

2. Assessment of the main factors determining the capital structure:

- industry specifics of operational activity;
- stage of the life cycle of the enterprise;
- commodity market situation;
- financial market situation;
- tax pressure on the company;
- degree of concentration of share capital

*Taking into account the above and other factors, the management of the capital structure involves the solution of two key tasks:*

- a) establishment of acceptable proportions of the use of equity and loan capital;*
- b) provision in the event of the need to attract additional internal or external capital.*

3. Optimization of the capital structure according to the criterion of maximizing the level of financial profitability.

4. Optimization of the capital structure according to the criterion of minimizing its cost.

5. Optimization of the capital structure according to the criterion of minimizing the level of financial risks

6. Formation of the indicator of the target capital structure

#### 4. Evaluation of the effectiveness of investment projects

### ASSESSMENT OF THE EFFICIENCY OF INVESTMENT PROJECTS

the most important stage in the process of managing real investments. The final decision on the acceptability of a specific investment project for a specific enterprise depends on the quality of such assessment.

#### IN THE PROCESS OF PERFORMING AN EFFICIENCY ASSESSMENT, TO OBTAIN OBJECTIVE RESULTS, THE FOLLOWING POINTS SHOULD BE CONSIDERED:

– assessment of the efficiency of investment projects should be carried out on the basis of a comparison of the amount of investment costs, as well as the amounts and terms of payback of the invested capital

– the assessment of the volume of investment costs should cover all resources that were used in the implementation of the project

– assessment of the return of invested funds should be carried out on the basis of the net cash flow indicator, which is formed at the expense of the sums of net profit and depreciation deductions during the operation of the investment project

– in the evaluation process, the amounts of investment costs and net cash flow should be reduced to the present value using a discount rate, which should be differentiated for different investment projects

*The effectiveness of the project is characterized by a system of indicators that reflect the ratio of costs and results in relation to the participants in the process*

## POLICY OF FORMATION OF INVESTMENT RESOURCES

1. All directions and forms of investment activity are carried out at the expense of investment resources that are formed independently

2. The formation of investment resources is carried out due to the concentration of free funds with further use in investment activities

3. The basis of the formation of investment resources of the enterprise is to some extent its capital intended for reinvestment, the forms of such reinvested capital used in the process of formation of investment resources are depreciation deductions on fixed assets and depreciated tangible assets; funds received from the sale of capital assets that are disposed of; proceeds from the sale of certain financial investment instruments and others

4. The formation of investment resources accompanies all stages of the enterprise's life cycle related to its progressive economic development. Starting with the "birth" of the enterprise and ending with its "aging", the process of formation of investment resources has a regular character. At the same time, each stage of the enterprise's life cycle is characterized by distinctive features in the rates and sources of formation of investment resources

5. The formation and use of investment resources is related to all stages of the enterprise's investment process. At the pre-investment stage, investment resources are formed to finance the preparation of real projects, implementation of project works, their examination, etc. At the investment stage, investment resources are formed for the implementation of the necessary construction and installation works, the purchase of individual capital assets or integral property complexes. At the post-investment stage, investment resources are formed for operational purposes, in particular, for the financing of current assets for investment objects put into operation

## POLICY OF FORMATION OF INVESTMENT RESOURCES

6. Formation of investment resources of the enterprise is a continuous process. While real or financial investment can be carried out irregularly by an enterprise and differ in significant unevenness, the process of forming its investment resources is continuous. To the greatest extent, this continuity is characteristic of one's own internal sources of formation of investment resources - depreciation deductions and profit directed to industrial development. However, it should be noted that the continuity of the process of formation of investment resources does not mean the uniformity of the volume of their formation over time. These volumes can fluctuate significantly over time depending on the investment resources from external sources

7. The process of formation of investment resources has a deterministic and regulated nature. The determinism of this process is characterized by its quantitative determination in time, volume, structure, and other parameters. The regulation of this process is determined by the system of specific effective methods of investment management, which allow to achieve and maintain the set parameters of the formation of investment resources. Determinism and controllability of the process of formation of investment resources of the enterprise allow it to be carried out on a planned basis

8. The formation of investment resources is inextricably linked with the goals and directions of the enterprise's investment strategy. Being the financial basis for the implementation of the chosen investment strategy of the enterprise, the formation of investment resources is allocated, as a rule, to its independent target block, according to which strategic target standards are developed. In some cases, the company's ability to generate investment resources determines the pace of its strategic development

## POLICY OF FORMATION OF INVESTMENT RESOURCES

9. The rate of formation of investment resources of a functioning enterprise at the expense of profit is determined by the temporary advantage of its owners (managers). The process of such formation (accumulation of new own investment capital) is carried out through the mechanisms of dividend policy (policy of distribution of newly created profit). The level of profit capitalization, determined by the temporary advantage of its consumption, is formed at each enterprise individually, taking into account the specifics of its investment activity and the conditions of the external investment environment

10. Effective formation of investment resources in terms of their individual sources is the most important condition for the financial stability of the enterprise. The rational structure of the sources of formed investment resources allows to reduce the level of investment risks in the future activity of the enterprise, to prevent the possibility of its bankruptcy

11. The possibility of forming investment resources of the enterprise is largely determined by the structure of the capital achieved at the previous stage of its economic cycle. First of all, this refers to the formation of additional investment resources at the expense of loan sources. There is an inverse relationship between the specific weight of the loan capital actually used by the enterprise and the possible volumes of its additional attraction for investment purposes. This feature should be taken into account when forecasting the potential and rates of formation of investment resources

12. Volumes and sources of formation of investment resources are largely determined by the cost of their attraction (the cost of capital). At the same time, the weighted average value of the formed investment capital must necessarily be compared with the size of the effect of its use in the process of real or financial investment

## 6.2. Practical tasks

### *Solving typical tasks on the topic*

#### **Task 1.**

The joint-stock company issued 1,000 preferred shares with a nominal value of UAH 10,000. The minimum annual dividend when issuing shares was announced at the level of 25% of their nominal value. Determine the minimum amount that the company must pay annually in the form of a dividend on preferred shares.

#### **Solution**

The dividend on preferred shares is determined as a percentage of their nominal value. Its amount will be equal to:

$$D_{PS} = N \times f \quad (6.1)$$

where  $N$  – is the nominal value of the preferred share;

$f$  – is the interest rate paid in relative units.

$$D_1 = 10000 \times 0,25 = 2500 \text{ UAH}$$

$$D = 1000 \times 2500 = 2500000 \text{ UAH}$$

Therefore, the company will have to pay an annual dividend of 2.5 million hryvnias on preferred shares.

#### **Task 2.**

The share price of the joint-stock company as of June 1, 2022 was: purchase - UAH 7,300, sale - UAH 8,000. As of October 1, 2022, the price of the same shares was: purchase - UAH 11,750, sale - UAH 14,750. At the time of purchase, a tax on transactions with securities in the amount of UAH 3 was paid. for every thousand. Determine the income received from the purchase of 100 shares on 01.06.2022 and their subsequent sale on 01.10.2022, as well as the profitability of the purchase and sale in the form of an effective rate of simple interest.

#### **Solution**

The cost of buying 100 shares on June 1, 2022 was equal to:

$$p_1 = 100 \times 8000 = 800000 \text{ UAH}$$

The tax amount was:

$$T_i = 0,03 \times 800000 = 2400 \text{ UAH}$$

The total costs for the purchase of shares were equal to:

$$p = 800000 + 2400 = 802400 \text{ UAH}$$

The amount received from the sale of 100 shares on October 1, 2022 was:

$$p_2 = 100 \times 11750 = 1175000 \text{ UAH}$$

The amount of tax paid on transactions with securities when selling shares was equal to:

$$T_2 = 0,03 \times 1175000 = 3525 \text{ UAH}$$

The total amount of expenses for the purchase and sale operation was:

$$p = 800000 + 2400 + 3525 = 805925 \text{ UAH}$$

The income from the operation is equal to:

$$W = 1175000 - 805925 = 369075 \text{ UAH}$$

When calculating profitability, we will use the exact number of days during which the buyer owned the shares:

$$30 + 31 + 31 + 30 - 1 = 121 \text{ days}$$

The profitability of the operation in the form of an effective rate of simple interest will be equal to:

$$I_e = \frac{W}{P \times n} = \frac{W \times k}{P \times d} \quad (6.2)$$

where  $W$  – is income from a financial transaction;

$P$  – is the total amount of expenses;

$n$  – period;

$k$  – estimated number of days in a year;

$d$  – is the term of the operation in days.

$$I_e = \frac{369075}{805925} \times \frac{365}{121} = 0,46 \times 3,02 = 1,39 = 139\%$$

**Task 3.**

Shares with a nominal value of UAH 1,000 were purchased at a price of UAH 2,500 six months before the dividend was paid. Dividend on shares for the year was announced in the amount of 200% per annum. After the announcement of the dividend payment, the share price was UAH 2,800. Determine the current profitability of shares in the form of an effective interest rate.

**Solution**

The size of the annual dividend on shares according to formula (6.1) will be equal to:

$$D = 2 \times 1000 = 2000 \text{ UAH}$$

The current profitability of the share for the period from the moment of its purchase, determined by the amount of the annual dividend and possible income from the sale of shares, will be equal to:

$$I_e = \frac{2000 + 2800 - 2500}{2500 \times 0,5} = \frac{2300}{1250} = 1,84 = 184\%$$

In long-term transactions with stocks and other financial transactions, formulas can be used to determine the effective rates of both simple and compound interest. In the latter case, the amount "S" obtained as a result of investing the amount "P" for a period of n years can be represented in the form:

$$S = P \times (1 + i_e)^n \quad (6.3)$$

where  $i_e$  – is the effective compound interest rate.

The income from the financial transaction will be equal to:

$$W = S - P = P \times ((1 + i_e)^n - 1) \quad (6.4)$$

So, the effective compound interest rate will look like this:

$$i_e = \sqrt[n]{\frac{S}{P}} - 1 = \sqrt[n]{\frac{P + W}{P}} - 1 = \sqrt[n]{1 + \frac{W}{P}} - 1 \quad (6.5)$$



**Task 4.**

Short-term bonds with a denomination of UAH 100,000 with a maturity of 91 days are sold at a rate of 87.5. Determine the amount of income from the purchase of 10 bonds and the profitability of the financial transaction. For the estimated number of days in a year - 365.

**Solution**

The income from the purchase of bonds will be equal to:

$$W = N - P = N - \frac{P_K \times N}{100} = N \times \left(1 - \frac{P_K}{100}\right) \quad (6.6)$$

$$W = 100000 \times \left(1 - \frac{87,5}{100}\right) = 12500 \quad UAH$$

Income from the purchase of 10 bonds:

$$W = 10 \times 12500 = 125000 \quad UAH$$

Profitability of the purchase at the effective rate of simple interest according to the formula:

$$I_e = \frac{N - P}{P} \times \frac{K}{d} = \frac{100 - P_K}{P_K} \times \frac{K}{d} \quad (6.7)$$

$$I_e = \frac{100 - 87,5}{87,5} \times \frac{365}{91} = 0,573 = 57,3\%$$

**Task 5.**

5 bonds with a denomination of UAH 10,000 and a term of 10 years were purchased at a rate of 94. Interest on the bonds is paid at the end of the term at a compound rate of 25% per annum. Determine the total income from the financial transaction and its profitability.

**Solution**

If the bond was purchased at price "P", the total return on it will be equal:

$$W = I + N - P = N \times (1 + q)^n - P = N \times \left( (1 + q)^n - \frac{P_K}{100} \right) \quad (6.8)$$

$$W_1 = 10000 \times \left( (1 + 0,25)^{10} - \frac{94}{100} \right) = 83732 \quad \text{UAH}$$

Income from 5 bonds:

$$W = 5 \times 83732 = 418660 \quad \text{UAH}$$

The profitability of purchasing bonds is:

$$I_e = \sqrt[10]{1 + \frac{W}{P}} - 1 = \frac{1 + q}{\sqrt[10]{\frac{P}{100}}} - 1 \quad (6.9)$$

$$I_e = \frac{1 + 0,25}{\sqrt[10]{\frac{94}{100}}} - 1 = 0,26 = 26\%$$

If the interest on the bonds is paid periodically, the possibility of reinvesting the received interest should be taken into account when determining the total income.

***Tasks for independent work*****Task 1.**

The joint-stock company issued 800 preferred shares with a nominal value of UAH 25,000. The minimum annual dividend for the issue of shares was announced at the level of 12% of their face value. Determine the minimum amount that the company must pay annually in the form of a dividend on preferred shares.

**Task 2.**

The share price of the joint-stock company as of March 10, 2022 was: purchase - UAH 5,500, sale - UAH 6,500. As of August 1, 2022, the price of the same shares was: purchase - UAH 7,300, sale - UAH 9,200. At the time of purchase, a tax on transactions with securities in the amount of UAH 4 was paid. for every thousand. Determine the income received from the purchase of 250 shares on 03/10/2022 and their subsequent sale on 08/01/2022, as well as the profitability of the purchase and sale in the form of an effective simple interest rate.

**Task 3.**

Shares with a nominal value of UAH 3,000 were purchased at a price of UAH 4,800 six months before the dividend was paid. Dividend on shares for the year was announced in the amount of 150% per annum. After the announcement of the dividend payment, the share price was UAH 5,400. Determine the current profitability of shares in the form of an effective interest rate.

**Task 4.**

Short-term bonds with a nominal value of UAH 350,000 with a maturity of 84 days are sold at a rate of 84.3. Determine the amount of income from the purchase of 15 bonds and the profitability of the financial transaction. For the estimated number of days in a year - 360.

**Task 5.**

12 bonds with a face value of UAH 25,000 and a term of 7 years were purchased at a rate of 88. Interest on the bonds is paid at the end of the term at a compound rate of 14% per annum. Determine the total income from the financial transaction and its profitability.

### 6.3. Terminological dictionary of key concepts

**The cost of capital** is the annual rate of capital growth that the owner of the capital expects to receive by investing it. This indicator in percentage terms is used as a discount rate in calculations of the present value of cash flows in the analysis of investment projects.

**Investment resources of the enterprise** are all forms of capital of the enterprise, which are used to make investments in objects of real and financial investment. Consider in detail the classification of investment resources of the enterprise and the policy of their management, as well as the peculiarities of the process of formation of investment resources of the enterprise.

**The policy of forming investment resources of the enterprise** is to ensure the necessary level of self-financing of investment activities and the most effective forms of attracting capital from various sources for investment.

**Schemes of project financing** are full internal self-financing, equity financing, venture financing, credit financing, mixed (equity) financing.

**Financial leverage** is the ratio of debt capital to equity capital of the company and the impact of this ratio on net profit. A company with a high proportion of debt capital is called a financially dependent company. A company that finances its activities only through its own capital is called a financially independent company.

### 6.4. Test tasks

**1. What is the name of the sphere where the practical implementation of investments is carried out?**

- 1) investment;
- 2) banking;
- 3) innovative;
- 4) economic activity.

**2. What is the life cycle of an investment project?**

- 1) time from the conception of an idea to its implementation;
- 2) time from product release to its sale;

- 3) time from project preparation to its implementation;
- 4) time from the first salary to the last benefit of the project.

**3. What does not happen at the project implementation stage?**

- 1) implementation control;
- 2) inspection of works;
- 3) execution of works;
- 4) supervision of work performance.

**4. The set of measures from the moment of making the decision to invest to the final stage of the investment project and reaching the project indicators and the return on investment regime are:**

- 1) investment process;
- 2) investment cycle;
- 3) investment complex;
- 4) there is no correct answer.

**5. Which organizations conduct expert evaluation of projects?**

- 1) banks providing credit to the enterprise;
- 2) National Bank of Ukraine;
- 3) international organizations;
- 4) state financial organizations.

**6. The graph characterizing the classification of the firm's investment opportunities in order of change in the profit rates they provide is:**

- 1) schedule of the marginal cost of capital;
- 2) schedule of investment opportunities of the firm;
- 3) graph of the probability of earnings;
- 4) schedule of probability of expenses.

**7. What is the relationship between effective investment activity and the rate of economic development of the firm?**

- 1) direct;
- 2) reverse;
- 3) vertical;

4) horizontal.

**8. What will happen at the enterprise if the investment program is quickly implemented?**

- 1) increase in investment risks;
- 2) reduction of investment risks;
- 3) increase in high rates of economic development of the firm;
- 4) increasing the maximum profit of the firm.

**9. Due to what will the company quickly generate additional cash flow in the form of profit and depreciation deductions?**

- 1) high rates of development of the firm;
- 2) development of strategic areas of investment activity of the firm;
- 3) if the investment program will be quickly implemented;
- 4) reduction of operating costs.

**10. The investment policy is a part of the general financial strategy of the enterprise, which consists of:**

- 1) accumulation of investment financial resources;
- 2) selection and implementation of the most effective forms of real and financial investments for the purpose of ensuring high rates of its development and expanding the economic potential of economic activity;
- 3) organization of the process of bringing financial assets to the consumer;
- 4) acquisition of integral property complexes.

**11. The estimated amount of investment costs is:**

- 1) the real value of a financial investment instrument, which is formed under the conditions of the expected rate of return on it, taking into account the appropriate level of risk;
- 2) the real value of the financial instrument of investment, which is formed under the conditions of the expected rate of return on it without taking into account the corresponding level of risk;

3) the projected value of a financial investment instrument, which is formed in the conditions of the expected rate of return on it, taking into account the appropriate level of risk;

4) all answers are correct.

**12. Two investment projects are called independent if:**

1) the average yield exceeded the yield of the reference portfolio, and indicates inefficient portfolio management;

2) the share of securities of one issuer in the investment portfolio of a financial intermediary does not exceed 5%;

3) the decision to accept one of them does not affect the decision to accept the other;

4) the decision to accept one of them affects the decision to accept the other.

**13. In the process of making an investment decision, the following is of great importance:**

1) assessment of the attractiveness of the industry;

2) assessment of the attractiveness of the region;

3) assessment of the investment attractiveness of different levels and especially of business objects;

4) all answers are correct.

**14. Marketing monitoring of investments is carried out with the aim of:**

1) provision of timely supplies of material and technical resources for construction;

2) search (choice) of generalizing parameters and limitations of investment decisions in relation to the entire investment policy (priorities, basic parameters);

3) continuous painstaking analysis of the state and dynamics of the securities market and individual sectors, identifying market trends and researching the investment qualities of market instruments;

4) ensuring the compliance of volume-planning and constructive decisions made in the construction and technological parts of the project with the requirements of the National Building Code, technical conditions.

**15. Which of the following refers to investment values?**

- 1) movable and immovable property;
- 2) the right to use land;
- 3) funds, targeted bank contributions, loans, shares, and other securities;
- 4) all answers are correct.

**16. In what form are investments made in the reproduction of fixed assets?**

- 1) long-term financial investments;
- 2) capital investments;
- 3) investment investments;
- 4) there is no correct answer.

**17. The total amount of invested funds for a certain period of time, aimed at new construction, acquisition of means of production and the increase of commodity and material stocks, is:**

- 1) financial investments;
- 2) foreign investments;
- 3) gross investments;
- 4) real investments.

**18. Which of the types of innovation is aimed at creating new goods or services?**

- 1) social;
- 2) management;
- 3) marketing;
- 4) market.

**19. What are capital investments?**

- 1) investment of material assets for the purpose of obtaining profit;
- 2) funds invested in extended reproduction of fixed assets;
- 3) budget funds;
- 4) state loans.

**20. What are the sources of financing capital investments?**

- 1) state and private;



- 2) state and international;
- 3) centralized and decentralized;
- 4) private and international.

**21. Choose the incorrect statement:**

1) "investment project" - an activity that involves the implementation of a set of actions that ensure the achievement of certain goals;

2) "investment project" - a system of organizational-legal and accounting-financial documents necessary for the implementation of any actions or a description of such actions;

3) "business plan" is a document that is intended for external investors and analyzes a new project;

4) "business plan" is a document that can perform the function of planning the development of the enterprise itself or analyze a new project.

**22. The function of the net reduced income from the comparison rate is:**

- 1) descending;
- 2) increasing;
- 3) does not depend on the comparison rate;
- 4) can be both increasing and decreasing.

**23. Sources of capital investment financing are:**

- 1) state loans, bank loans, loans of international organizations;
- 2) only the investor's own funds;
- 3) depreciation deductions and bank loans;
- 4) short-term loans of international organizations.

**24. On the basis of what is the evaluation of the effectiveness of individual financial investment instruments?**

1) on the basis of a comparison of the amount of investment income and the amount of expenses;

2) on the basis of a comparison of the volume of investment costs, on the one hand, and the amount of cash flow returned for it, on the other;

3) on the basis of a comparison of the amount of investment costs and the amount of income;

4) there is no correct answer.

**25. If the actual amount of investment costs for a financial instrument will exceed its real value, then:**

1) the efficiency of financial investment will decrease;

2) the efficiency of financial investment will increase;

3) the effectiveness of financial investment will not change;

4) the efficiency of financial investment will either increase or will not change.

**26. The transformation of potential scientific and technical progress into a real result of activity by implementing it in new goods, products, and technologies is:**

1) innovation process;

2) innovation;

3) object of innovative activity;

4) subject of innovative activity.

**27. The main criteria for investment evaluation are:**

1) payback;

2) liquidation value;

3) amount of initial costs;

4) all answers are correct.

**28. Net reduced income is...**

1) the method of analysis, which calculates the difference between the present value (discounted) amount of cash flow during the period of operation of the investment object and the amount of funds invested in its realization;

2) the amount of investment funds, which are directed to the implementation of the investment project (for investing funds at different times), reduced to the present value;

3) the difference between the present value (discounting) amount of cash flow during the period of operation of the investment object and the amount of funds invested in its realization;

4) all definitions are incorrect.

**29. An active form of effective use of temporarily free capital is:**

1) foreign investments;

2) gross investments;

3) financial investments;

4) real investments.

**30. Part of the general investment policy of the enterprise, which ensures the selection of the most effective financial instruments for capital investment and its timely reinvestment, is...**

1) real investment management policy;

2) net investment management policy;

3) gross investment management policy;

4) financial investment management policy.

### **6.5. Questions for self-control**

1. Describe the essence of the enterprise's investment resources.

2. What are the peculiarities of the process of formation of investment resources of the enterprise.

3. How are the enterprise's investment resources classified?

4. What is the policy of formation of investment resources of the enterprise?

5. Describe the stages of development of the policy of formation of investment resources of the enterprise.

6. How is optimization of the general need for investment resources of the enterprise carried out?

7. Describe the methods of calculating the total volume of investment resources:

- Balance method.

- Method of analogies.
- Method of specific capital intensity.

8. Describe the financing schemes of real investment projects: full internal self-financing; equity financing, venture financing, credit financing, mixed (equity) financing.

9. What subjective and objective factors influence the choice of a specific financing scheme for an investment project and sources of investment resources?

10. What are the main aspects of the concept of cost of capital?

11. How is the value of investment resources formed by the enterprise evaluated?

12. What are the areas of use of capital cost assessment indicators?

13. What methodical approaches are used to estimate individual elements of the cost of capital?

14. Reveal the mechanism of assessment and management of the cost of capital.

**TOPIC 7.**  
**MANAGEMENT OF INVESTMENT RESOURCES OF AGRIBUSINESS**  
**ENTERPRISES**

**7.1. Methodical recommendations for conducting practical classes**

*The purpose of the lesson:* generalization and systematization of knowledge, application of abilities and skills in practice, deepening of knowledge of applicants on the formation of investment resources of agro-industrial complex enterprises

*Plan of the practical session:*

1. Investment as a prospect for the development of the agricultural industry of Ukraine
2. Investment resources of agribusiness enterprises
3. Capital investment of agricultural enterprises
4. State investments in the development of the agricultural industry of Ukraine

*Theoretical information*

*1. Investment as a prospect for the development of the agricultural industry of Ukraine*

**AGRICULTURAL INDUSTRY IS A BASIC SECTOR  
OF THE NATIONAL ECONOMY OF UKRAINE**

*investment resources are necessary for the effective functioning of the agricultural sector. Dynamic and effective development of investment activities of the agricultural sector is a necessary condition for the stable functioning and progress of the economy. The agro-industrial complex of Ukraine has every chance of becoming a rapidly growing and the most investment-attractive sphere of the Ukrainian economy.*

## RISKS OF IMPLEMENTATION OF INNOVATION AND INVESTMENT PROCESSES OF THE AGRICULTURAL COMPLEX

- the risk of funding research and production results
- uncertainty of demand for innovative products
- the risk of a temporary gap between costs and production results

*For an investor, one of the main features of agricultural enterprises as an investment object is the time difference between invested financial resources and obtaining profit from economic activity, which arises due to differences between the working period (land cultivation, planting and sowing, plant care, harvesting) and the period of product production, which occurs under the influence of natural factors (plant growth and maturation)*

*For potential investors, the low attractiveness of agricultural production is determined by the difficult financial situation of the vast majority of direct producers of agricultural products, the narrowness or absence at all of the subject of collateral, which is currently represented only by basic funds with low liquidity due to a high degree of moral and physical wear and tear.*

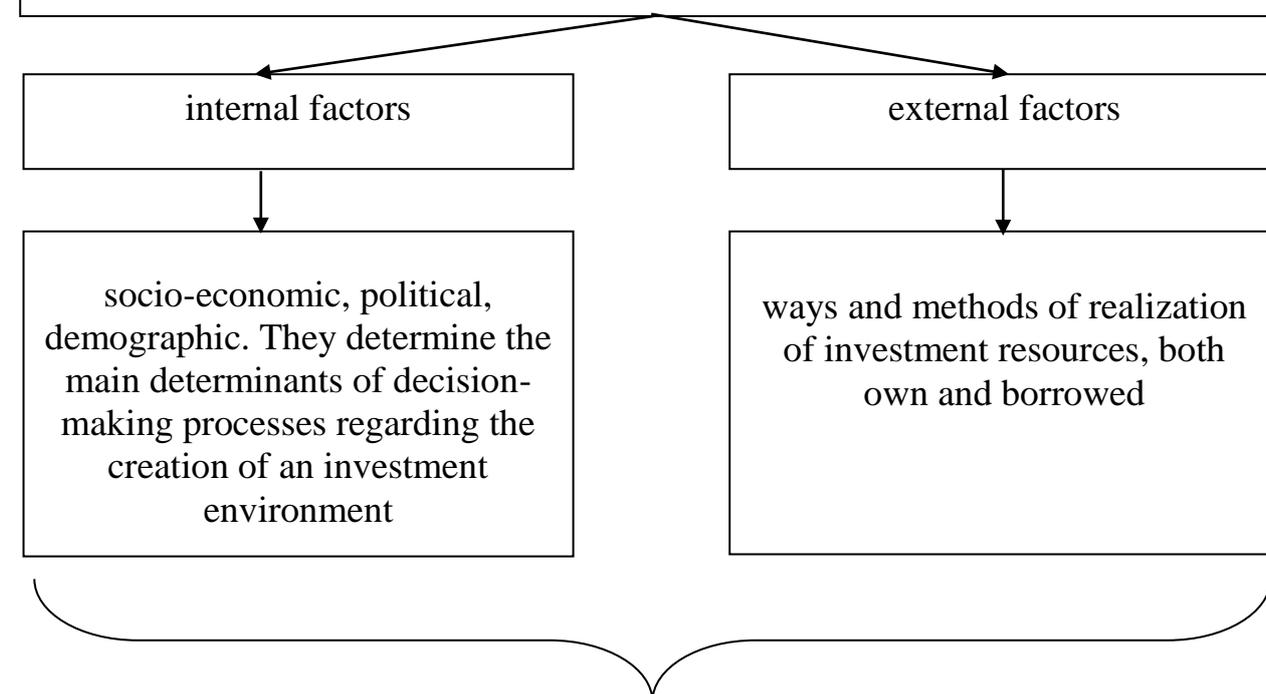
*The investment of most agrarian formations is characterized by an unstable financial situation and low solvency, which determines the peculiarities of investment activity management and the urgent need to attract investments for the purpose of financial recovery of economic entities.*

## 2. Investment resources of agribusiness enterprises

### INVESTMENT RESOURCES OF AGRICULTURAL COMPLEX

A variety of forms of involved capital investments, which appear both in monetary and in-kind forms. They are used as real and financial sources of investment. The formation of investment resources of agricultural enterprises is related to the processes that take place within the limits of the accumulation and reproduction of capital. These processes take place both at the level of an individual enterprise and at the level of an industry or the entire country. The size, pace and scale of accumulation and maintenance of investment resources are determined by the general level of economic development of the country, the level of financial support of enterprises and the level of income of the population.

### FORMATION OF INVESTMENT RESOURCES OF AGRICULTURAL ENTERPRISES



*The process of influencing these internal and external factors creates a suitable investment environment, in which the implementation of the investment toolkit takes place.*

### 3. Capital investment of agricultural enterprise

#### CAPITAL INVESTMENTS OF AGRICULTURAL ENTERPRISES

expenses for the construction of new livestock complexes, buildings, structures, processing plants, their expansion and reconstruction, the purchase of machinery, equipment, inventory, the laying of perennial crops and their cultivation, the formation of the main herd, land reclamation and environmental protection.

*With the help of capital investments, the main means of production are reproduced on a simple and expanded basis, therefore, a material basis is created for increasing the productivity of living labor on the basis of the introduction of complex mechanization and automation of production*

*Thanks to capital investments, more advanced forms of social organization of production are implemented*

specialization

cooperation

combining

*Depending on the functional purpose, they are distinguished*

production capital investments

non-productive capital investments

investment in the reproduction and expansion of the main production assets

expenses for residential, communal, household, cultural and educational construction



#### 4. *State investments in the development of the agricultural industry of Ukraine*

**Agrarian policy** - a course and system of measures aimed at the intensive development of the productive forces of the village, improvement or radical change of existing forms of ownership, improvement of the living conditions of its inhabitants, provision of raw materials for industry, etc.

*The agrarian policy of the state is an important constituent element of the socio-economic policy of the state and involves the scientific justification of the strategy and tactics of the development of agrarian relations, the economic justification of ways of village development.*

*The specificity of agricultural production requires a balanced state policy of protectionism. In most countries with a market economy, the main goal of such a policy is: maintaining the profitability of agricultural producers and a stable economic situation in the industry, ensuring food security, competitive producers in the international division of labor, prevention of negative migration processes, etc.*

*Effective use of budget funds requires an adequate long-term strategy for the development of the agrarian sector of the economy, concentration of financial resources of budgets of all levels for the implementation of priority areas of the state's agrarian policy*

*Improving the financing conditions of agricultural production requires the implementation of measures of a macroeconomic nature to stimulate the expansion of the capacity of the domestic food market and increase the purchasing power of the population. This is also due to the fact that most types of marketable agricultural products belong to goods of social purpose, for which stricter standards of restrictions and state regulation have been established*

## MAIN DIRECTIONS AND PRIORITIES OF STATE SUPPORT OF THE AGRICULTURAL COMPLEX

- support of the main activity of agricultural enterprises. The priorities of this should be: the production of plant and animal products that ensure the food security of the country; baby food products and for certain socially vulnerable segments of the population;
- support of investment activities - according to the following priorities: reproduction of the resource potential of agricultural enterprises to the level that ensures their competitiveness; creation of modern production infrastructure (melioration systems, enterprises for processing and storage of agricultural products, communication systems, etc.); creation of integration formations with the participation of industrial, banking capital, institutional and individual investors; development of new industries based on local resources and raw materials;
- support for innovative development of the industry - first of all, selection in plant and animal breeding, introduction of modern technologies, training of qualified personnel for the countryside, production of new types of products and expansion of their range, development of education and agricultural science;
- support for the development of territories and the agricultural market, which includes the following priorities: the development of social infrastructure enterprises in the village, the creation of conditions for the consolidation of youth in the village, the construction of transport communications, the development of the infrastructure of the agricultural market.

## STATE ASSISTANCE PROGRAM FOR 2022

1. Partial compensation of the cost of agricultural machinery;
2. Financial support for activities in the agricultural sector by reducing the cost of loans;
3. Financial support for the development of horticulture, viticulture and hops;
4. Financial support for the development of farms for 2022 (subsidy per unit of cultivated land, subsidy for keeping cows);
5. Financial support for the development of farms (partial compensation for the costs of provided advisory services, financial support for farms on a revolving basis, additional payments for the benefit of insured members/chairmen of the SFG EUV, financial support for newly created FGs to receive agricultural advisory services);
6. State support for the development of animal husbandry and processing of agricultural products (reimbursement of the cost of purchased breeding animals, bees, sperm and embryos);
7. State support for the development of animal husbandry and processing of agricultural products (reimbursement of the cost of livestock facilities (up to 50% of the cost, special budget subsidy for existing bee colonies);
8. State support for the development of animal husbandry and processing of agricultural products (special budget subsidy for the maintenance of goats, goats, ewes, special budget subsidy for the increase in the number of cows of own reproduction);
9. State support of niche cultures;
10. State support for the development of potato growing;
11. State support for insurance of agricultural products (insurance of winter wheat crops with state support against agricultural risks);
12. State support for the use of reclaimed land;
13. Development of cattle breeding;
14. State support for horticulture (labor-intensive industries);
15. State horticulture support program (support for small and medium-sized producers up to 20 hectares, compensation of up to 50% of the investment cost per hectare);
16. State support for organic production

**State support for the financial support of the agrarian sector  
in 2020 and the strategy for 2021-2023.**

List of programs	Financing, UAH billion			
	2020	2021	2022	2023
Support of the livestock industry	1	3,636	3,427	3,368
Support for activities in the agricultural sector (loans, insurance)	1,2	2,253	2,138	2,166
Lowering the price of compensation for domestically produced machinery and equipment	1	0,957	1,127	1,330
Development of farming	0,477	0,727	0,772	0,943
Support of horticulture, viticulture, hops	0,400	0,414	0,471	0,636
Support for the production of niche crops (food security)	-	0,295	0,295	0,295
Potato farming	-	8,442	8,480	8,988

**Financial support for the development of farms is provided:**

*(Resolution of the Cabinet of Ministers of Ukraine "On approval of the Procedure for the use of funds provided for in the state budget for providing financial support for the development of farms")*

- 1) a farm that has a net income (revenue) from the sale of products (goods, works, services) for the last year up to 2,000,000 hryvnias, which owns and/or uses agricultural land; to a farm registered in the current year, which owns and/or uses agricultural land, regardless of the amount of net income (revenue);
- 2) an agricultural cooperative, which includes one or more farms that meet the requirements specified in subsection 1 of this clause, and others are natural persons, each of which owns and/or uses agricultural land or animals, identified and registered in accordance with the law.

**Financial support for the development of farms is provided to recipients in the following directions:**



- *partial compensation of the cost of seeds of agricultural plants of domestic production, purchased from natural persons - entrepreneurs and legal entities that carry out production and/or its sale (further - partial compensation of the cost of seeds);*
- *partial compensation of costs related to the provided agricultural advisory services;*
- *financial support of agricultural cooperatives;*
- *partial compensation of the cost of purchased agricultural machinery and equipment of domestic production;*
- *budget subsidy per unit of cultivated land (1 hectare) - to newly created farms;*
- *budget subsidy per unit of cultivated land (1 hectare) for farms (except for newly established ones);*
- *cheaper loans;*
- *a special budget subsidy for the maintenance of dairy productivity cows to a farm that owns five or more cows, identified and registered in accordance with the law.*

## **7.2. Practical tasks**

### *Solving typical tasks on the topic*

The calculation of the need for investment resources of agricultural enterprises is carried out in terms of the following types of assets:

- fixed assets;
- intangible assets;
- stocks of goods and material values that ensure operational activity;
- monetary assets;
- other types of assets.

The calculation of the need for assets is related to the choice of alternative solutions:

- a) lease, construction or purchase of buildings;
- b) rent or purchase of machines, mechanisms, equipment;
- c) the formation of a smaller or larger stock of goods and material values;

d) purchase of ready-made technological solutions or their independent development;

e) the formation of a greater or lesser level of solvency, and, accordingly, the size of monetary assets, etc.

The balance method, the method of analogies, and the capital intensity method are used to calculate the actually required amount of investment resources.

When calculating, you can use the weighted average cost of capital model (WACC). The feasibility of the proposed alternatives can be evaluated using the method NPV.

It is advisable to solve situational exercises in teams. It is advisable to draw up the results of the work in tabular form (Table 7.1).

Table 7.1

**A form for filling in the results of a study on the need for investment resources of agro-industrial complex enterprises**

The main problems				
Causes of problems				
Methods of eliminating problems				
Economic levers	Positive consequences		Negative consequences	
	designation	%	designation	%
The cumulative effect of economic levers on solving the problem				
Administrative levers	Positive consequences		Negative consequences	
	designation	%	designation	%
Cumulative influence of administrative levers on solving the problem				
General conclusion				

To determine the importance of measures and the probability of their positive and negative impact, it is advisable to use expert evaluation methods.

### *Tasks for independent work*

#### **Task 1.**

The activities of agro-industrial enterprises require significant financial costs for the expansion, renewal and modernization of production. Research on the financial support of agricultural producers, including of agricultural enterprises, shows that they mostly work at the expense of their own resources, which are currently significant in terms of specific weight, but insufficient for self-financing. This fact forces agrarian enterprises to hope for support from the state and necessitates the development of banking and partnership forms of lending. Unfortunately, today agriculture is not very attractive for investors.

How to eliminate the problems that have arisen in the investment activity of an agro-industrial enterprise?

#### **Task 2.**

There are trends of decreasing investment activity in the country. This is expressed, first of all, in a decrease in the share of investment aimed at increasing the economic potential of agro-industrial complex enterprises, a decrease in the use of credit investment resources, primarily long-term. In addition, foreign participants in joint ventures do not use profits to expand production, but take them out of the country.

Develop a system of measures aimed at improving the structure and efficient use of capital of agro-industrial complex enterprises.

#### **Task 3.**

Until 1990, Ukraine saw an increase in the volume of capital investments in agriculture. However, during 1991-2000, the volume of capital investments in this industry decreased by 23 times due to the economic crisis and amounted to only UAH 12 per hectare of agricultural land. That is, due to the intensive development of inflationary processes, there was a sharp decline in the investment activity of enterprises. In the structure of capital investment financing sources, the largest

(dominant) specific weight began to be occupied by depreciation (about 78%). All this was the result of deepening price disparity and devaluation (due to inflation) of investment resources. Since 2000, the agro-industrial complex as a whole, including agriculture, has seen a trend towards revitalization of investment activity. The volume of capital investments for the purchase of new equipment began to grow, which is fully justified in view of the high degree of wear and tear of the machine and tractor fleet. What is the situation with investing in the development of the agro-industrial complex today (2022)?

Develop a system of measures aimed at attracting investment in agribusiness enterprises.

### 7.3. Terminological dictionary of key concepts

**The agro-industrial complex** is an integral part of the economy, which combines the production of agricultural products, their agricultural processing, and material and technical maintenance of the village.

**The agro-industrial complex** is a multi-branch production system in which a certain branch performs its specific function.

**A collective agricultural enterprise** is a voluntary association of citizens into an independent enterprise for the joint production of agricultural products and goods, operating on the basis of entrepreneurship and self-government. He is a legal entity, has current and other bank accounts, as well as a seal with his name. Such enterprises can voluntarily join unions (associations), be founders of joint-stock companies operating on the basis of their charters.

**An agricultural enterprise (including farming, fishing and fishery enterprises)** is a legal entity, the main activity of which is the cultivation and processing of agricultural products, the revenue from the sale of which is at least 50 percent of the total amount of revenue.

**The first sphere of agriculture** is tractor and agricultural machine building; mechanical engineering for the food industry; agrochemistry (production of mineral



fertilizers and microbiological industry); feed industry; system of material and technical service of agriculture; reclamation and rural construction.

**The second sphere of agro-industrial complex** is crop production, animal husbandry, fishing.

**The third area of the agricultural industry** is the food industry; refrigeration, storage, specialized transport industry; trading and other enterprises and organizations engaged in bringing the final product to the consumer, including wholesale markets, retail trade and catering. Each field should also include relevant fields of science and personnel training.

**Industrial agriculture** — intensive breeding of poultry and animals, intensive farming. Chickens (for meat and eggs) and calves are common objects for industrial farming. Some countries oppose the use of antibiotics and growth hormones in industrial farming because they can accumulate in animal meat. Many people oppose the industrial farming of animals for both moral and health reasons.

#### 7.4. Test tasks

**1. In the conditions of inflation, during the evaluation of the project, it is adjusted...**

- 1) exchange rate difference;
- 2) correlation index
- 3) projected cash flow
- 4) depreciation rate expressed in stable prices

**2. What are the types of investment projects?**

- 1) direct and reverse;
- 2) real and capital;
- 3) production and trade;
- 4) tactical and strategic.

**3. Internal factors influencing the investment attractiveness of the enterprise include:**

- 1) production potential;

- 2) investment program;
- 3) financial condition;
- 4) all answers are correct.

**4. External factors influencing the investment attractiveness of the enterprise include:**

- 1) investment program;
- 2) regional placement;
- 3) financial condition;
- 4) all answers are correct.

**5. Technical monitoring of investments is carried out with the aim of:**

1) provision of timely supplies of material and technical resources for construction;

2) search (choice) of generalizing parameters and limitations of investment decisions in relation to the entire investment policy (priorities, basic parameters);

3) continuous painstaking analysis of the state and dynamics of the securities market and individual sectors, identifying market trends and researching the investment qualities of market instruments;

4) ensuring compliance of volume-planning and constructive decisions made in the construction and technological parts of the project with the requirements of the State Building Norms, technical conditions.

**6. Industry analysis of investments involves:**

1) provision of timely supplies of material and technical resources for construction;

2) search (choice) of generalizing parameters and limitations of investment decisions in relation to the entire investment policy (priorities, basic parameters);

3) a detailed study of the profitability of the industry and its prospects;

4) ensuring the compliance of volume-planning and constructive decisions made in the construction and technological parts of the project with the requirements of the National Building Code, technical conditions.

**7. What are the main results of capital investments?**

- 1) acceleration of scientific and technological progress;
- 2) growth of jobs;
- 3) improvement of the standard of living;
- 4) reduction of inflation.

**8. Investment project for a period of 10 years and with an initial investment of UAH 1 million. brings 250 thousand hryvnias annually. The level of the internal rate of return of such a project is between:**

- 1) 5 and 10%;
- 2) 10 and 15%;
- 3) 15 and 20%;
- 4) 20 and 25%.

**9. Estimate the payback period of the project, the initial investment of which is UAH 2 million. The project will bring a profit of UAH 1 million. annually for three years. The level of profitability is 10%.**

- 1) 2.25 years;
- 2) 2.35 years;
- 3) 2.50 years;
- 4) 2.75 years.

**10. Preparatory costs for the project amount to UAH 5 million, the cost of technological equipment purchased at the end of the first year is UAH 14 million. Planned cash receipts at the end of the second, third, fourth year will amount to UAH 10, 15, 20 million. The discount rate is 10%. Determine the profitability index of the project:**

- 1) 0.99;
- 2) 1.81;
- 3) 1.10;
- 4) 1.54.

**11. The enterprise, having considered an investment project, for which the initial investment is UAH 100,000, and the income at the end of the first, second,**

third year, respectively, are UAH thousand 50, 60, and 40 at a discount rate of 8%, got the following value of net discounted income:

- 1) UAH 5.0 thousand;
- 2) UAH 17.9 thousand;
- 3) UAH 35.4 thousand;
- 4) UAH 29.5 thousand.

**12. According to what (what) criteria did the investor choose project № 1, if:**

<i>t</i>	<i>CF<sub>1</sub> according to the first project</i>	<i>CF<sub>2</sub> on another project</i>
<b>0</b>	<b>- 180</b>	<b>- 50</b>
<b>1</b>	<b>95</b>	<b>10</b>
<b>2</b>	<b>90</b>	<b>20</b>
<b>3</b>	<b>40</b>	<b>40</b>

**The discount rate is 10%:**

- 1) internal rate of return;
- 2) payback period;
- 3) net present value;
- 4) payback period and net present value.

**13. The company plans to invest money in the project with an initial investment of UAH 4,500 million. According to estimates, the project should provide stable cash flows in the first year of UAH 1,300 million; for the 2nd - UAH 2,000 million, for the 3rd - UAH 1,800 million and for the 4th – UAH 1,000 million. Is it necessary to accept this project if the required payback period of the enterprise is 3 years?**

- 1) the project should be accepted;
- 2) the project must be rejected;
- 3) the project is neither profitable nor unprofitable;
- 4) there is no correct answer.

**14. If the amount of dividends provided for the share is UAH 20 per year, the investor's expected annual rate of gross investment profit is 10%, the real value of the preferred share will be:**

- 1) UAH 20;
- 2) UAH 200;
- 3) UAH 2;
- 4) UAH 2000

**15. An annual permanent dividend in the amount of UAH 20 is paid for the shares. The expected rate of current profit of a share of this type is 25% per year. The real market value of the share will be:**

- 1) UAH 5;
- 2) UAH 133.3;
- 3) UAH 80;
- 4) UAH 160.

**16. The risk classification of individual financial investment instruments by sources of origin includes:**

- 1) critical risk;
- 2) systematic risk;
- 3) risk causing only financial losses;
- 4) inflation risk.

**17. A purposefully formed set of financial instruments intended for financial investment in accordance with the developed investment policy is:**

- 1) consumer basket;
- 2) investment portfolio;
- 3) investment fund;
- 4) investment situation.

**18. What will happen at the enterprise if the investment program is quickly implemented?**

- 1) increase in investment risks;
- 2) reduction of investment risks;
- 3) increase in high rates of economic development of the firm;
- 4) increasing the maximum profit of the firm.

**19. The main factors that reduce the level of profitability of share financial investment instruments include:**

- 1) general downturn of the stock market;
- 2) growth of the stock market situation;
- 3) constant quotation;
- 4) lowering the level of taxation of investment income on the share of financial instruments.

**20. To assess profitability, it is necessary to use a period with a monthly calculation of profitability:**

- 1) not less than 3 years;
- 2) not less than 2 years;
- 3) not less than 5 years old;
- 4) there is no correct answer.

**21. Portfolios called:**

- 1) reference portfolios;
- 2) investment portfolios;
- 3) independent portfolios;
- 4) alternative portfolios.

**22. Market risk of the portfolio (or systematic risk) is measured by calculating the ratio:**

- 1) "alpha";
- 2) "gamma";
- 3) "omega";
- 4) "beta".

**23. The difference between the average yield of the portfolio and its reference yield is called:**

- 1) reference;
- 2) a straight line;
- 3) posterior;
- 4) essential.

**24. If the value of historical alpha is greater than zero, this indicates that:**

- 1) the average yield did not exceed the yield of the reference portfolio, and indicates inefficient portfolio management;

2) the average yield exceeded the yield of the reference portfolio, and indicates effective portfolio management;

3) the average yield exceeded the yield of the reference portfolio, and indicates inefficient portfolio management;

4) there is no correct answer.

**25. What determines the "return-variability" ratio?**

1) yield of the reference portfolio;

2) efficiency of portfolio management;

3) the value of excess portfolio profitability adjusted for market risk;

4) market risk.

**26. In order to determine how successful the selection of a particular portfolio was in comparison with the market as a whole and other portfolios, it is necessary to calculate:**

1) efficiency of portfolio management;

2) profitability of the reference portfolio;

3) market risk;

4) posterior lines of the securities market.

**27. Two investment projects are called independent if:**

1) the average yield exceeded the yield of the reference portfolio, and indicates inefficient portfolio management;

2) the share of securities of one issuer in the investment portfolio of a financial intermediary does not exceed 5%;

3) the decision to accept one of them does not affect the decision to accept the other;

4) the decision to accept one of them affects the decision to accept the other.

**28. The principles of investment portfolio formation include:**

1) conformity of the composition of the portfolio with the investment strategy of the company;

2) ensuring acceptable ratios for the company between the main goals: profitability, capital growth, risk minimization and liquidity;

3) full provision of financial resources;

4) no correct answer.

**29. The second stage in the formation of an investment portfolio is:**

1) formation of investment policy;

- 2) selection of assets and analysis of investment decisions;
- 3) assessment of investment effectiveness;
- 4) formulation of investment goals (priorities).

**30. The last stage in the formation of an investment portfolio is:**

- 1) formation of investment policy;
- 2) selection of assets and analysis of investment decisions;
- 3) assessment of investment effectiveness;
- 4) formulation of investment goals (priorities).

### **7.5. Questions for self-control**

1. Name the methods of optimizing the structure of investment resources formed by the enterprise.
2. What is the essence of financial leverage?
3. What are the main stages of the process of optimizing the capital structure of agricultural enterprises?
4. How to evaluate the main factors that determine the formation of the capital structure?
5. How is the capital structure optimized according to the criterion of maximizing the level of financial profitability?
6. How is the capital structure optimized according to the criterion of minimizing its cost?
7. How is the capital structure optimized according to the criterion of minimizing the level of financial risks?
8. How is the target capital structure indicator formed?
9. What are direct budget payments to agricultural producers?
10. What are the main tools for implementing program goals in the agricultural sector?
11. How was state support for the agricultural sector implemented in 2019-2021?
12. What measures to improve the situation in the agricultural sector are expected to be implemented in 2022 and 2023



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# APPENDICES

**ADDITION A**  
**ANSWERS TO THE TEST TASKS FROM THE DISCIPLINE**  
**"INVESTMENT MANAGEMENT"**

**Topic 1. Theoretical and methodological foundations of investment management**

<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>
<b>1</b>	<i>3</i>	<b>7</b>	<i>1</i>	<b>13</b>	<i>2</i>	<b>19</b>	<i>2</i>	<b>25</b>	<i>4</i>
<b>2</b>	<i>1</i>	<b>8</b>	<i>2</i>	<b>14</b>	<i>1</i>	<b>20</b>	<i>1</i>	<b>26</b>	<i>4</i>
<b>3</b>	<i>1</i>	<b>9</b>	<i>3</i>	<b>15</b>	<i>4</i>	<b>21</b>	<i>1</i>	<b>27</b>	<i>1</i>
<b>4</b>	<i>2</i>	<b>10</b>	<i>4</i>	<b>16</b>	<i>2</i>	<b>22</b>	<i>3</i>	<b>28</b>	<i>2</i>
<b>5</b>	<i>3</i>	<b>11</b>	<i>1</i>	<b>17</b>	<i>2</i>	<b>23</b>	<i>3</i>	<b>29</b>	<i>1</i>
<b>6</b>	<i>3</i>	<b>12</b>	<i>1</i>	<b>18</b>	<i>2</i>	<b>24</b>	<i>1</i>	<b>30</b>	<i>2</i>

**Topic 2. Methodical tools of investment management**

<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>
<b>1</b>	<i>2</i>	<b>7</b>	<i>4</i>	<b>13</b>	<i>3</i>	<b>19</b>	<i>3</i>	<b>25</b>	<i>3</i>
<b>2</b>	<i>1</i>	<b>8</b>	<i>1</i>	<b>14</b>	<i>3</i>	<b>20</b>	<i>4</i>	<b>26</b>	<i>4</i>
<b>3</b>	<i>3</i>	<b>9</b>	<i>3</i>	<b>15</b>	<i>2</i>	<b>21</b>	<i>1</i>	<b>27</b>	<i>4</i>
<b>4</b>	<i>4</i>	<b>10</b>	<i>4</i>	<b>16</b>	<i>1</i>	<b>22</b>	<i>2</i>	<b>28</b>	<i>1</i>
<b>5</b>	<i>2</i>	<b>11</b>	<i>1</i>	<b>17</b>	<i>1</i>	<b>23</b>	<i>4</i>	<b>29</b>	<i>3</i>
<b>6</b>	<i>2</i>	<b>12</b>	<i>2</i>	<b>18</b>	<i>2</i>	<b>24</b>	<i>2</i>	<b>30</b>	<i>2</i>

**Topic 3. Investment strategy of the enterprise**

<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>
<b>1</b>	<i>1</i>	<b>7</b>	<i>2</i>	<b>13</b>	<i>1</i>	<b>19</b>	<i>2</i>	<b>25</b>	<i>1</i>
<b>2</b>	<i>2</i>	<b>8</b>	<i>1</i>	<b>14</b>	<i>1</i>	<b>20</b>	<i>1</i>	<b>26</b>	<i>2</i>
<b>3</b>	<i>2</i>	<b>9</b>	<i>2</i>	<b>15</b>	<i>3</i>	<b>21</b>	<i>3</i>	<b>27</b>	<i>3</i>
<b>4</b>	<i>2</i>	<b>10</b>	<i>1</i>	<b>16</b>	<i>1</i>	<b>22</b>	<i>2</i>	<b>28</b>	<i>4</i>
<b>5</b>	<i>2</i>	<b>11</b>	<i>3</i>	<b>17</b>	<i>3</i>	<b>23</b>	<i>2</i>	<b>29</b>	<i>2</i>
<b>6</b>	<i>3</i>	<b>12</b>	<i>2</i>	<b>18</b>	<i>1</i>	<b>24</b>	<i>3</i>	<b>30</b>	<i>2</i>

#### Topic 4. Management of real investments of the enterprise

<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>
<b>1</b>	<i>4</i>	<b>7</b>	<i>3</i>	<b>13</b>	<i>3</i>	<b>19</b>	<i>4</i>	<b>25</b>	<i>1</i>
<b>2</b>	<i>1</i>	<b>8</b>	<i>4</i>	<b>14</b>	<i>4</i>	<b>20</b>	<i>1</i>	<b>26</b>	<i>4</i>
<b>3</b>	<i>2</i>	<b>9</b>	<i>1</i>	<b>15</b>	<i>3</i>	<b>21</b>	<i>2</i>	<b>27</b>	<i>3</i>
<b>4</b>	<i>3</i>	<b>10</b>	<i>4</i>	<b>16</b>	<i>2</i>	<b>22</b>	<i>1</i>	<b>28</b>	<i>2</i>
<b>5</b>	<i>2</i>	<b>11</b>	<i>1</i>	<b>17</b>	<i>1</i>	<b>23</b>	<i>1</i>	<b>29</b>	<i>3</i>
<b>6</b>	<i>4</i>	<b>12</b>	<i>4</i>	<b>18</b>	<i>2</i>	<b>24</b>	<i>2</i>	<b>30</b>	<i>3</i>

#### Topic 5. Management of financial investments of the enterprise

<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>
<b>1</b>	<i>4</i>	<b>7</b>	<i>1</i>	<b>13</b>	<i>1</i>	<b>19</b>	<i>2</i>	<b>25</b>	<i>2</i>
<b>2</b>	<i>3</i>	<b>8</b>	<i>2</i>	<b>14</b>	<i>4</i>	<b>20</b>	<i>2</i>	<b>26</b>	<i>1</i>
<b>3</b>	<i>1</i>	<b>9</b>	<i>3</i>	<b>15</b>	<i>1</i>	<b>21</b>	<i>1</i>	<b>27</b>	<i>4</i>
<b>4</b>	<i>3</i>	<b>10</b>	<i>4</i>	<b>16</b>	<i>3</i>	<b>22</b>	<i>4</i>	<b>28</b>	<i>4</i>
<b>5</b>	<i>3</i>	<b>11</b>	<i>2</i>	<b>17</b>	<i>3</i>	<b>23</b>	<i>2</i>	<b>29</b>	<i>1</i>
<b>6</b>	<i>1</i>	<b>12</b>	<i>2</i>	<b>18</b>	<i>1</i>	<b>24</b>	<i>4</i>	<b>30</b>	<i>1</i>

#### Topic 6. Management of the formation of investment resources of the enterprise

<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>
<b>1</b>	<i>1</i>	<b>7</b>	<i>2</i>	<b>13</b>	<i>3</i>	<b>19</b>	<i>4</i>	<b>25</b>	<i>2</i>
<b>2</b>	<i>4</i>	<b>8</b>	<i>1</i>	<b>14</b>	<i>2</i>	<b>20</b>	<i>2</i>	<b>26</b>	<i>1</i>
<b>3</b>	<i>3</i>	<b>9</b>	<i>4</i>	<b>15</b>	<i>2</i>	<b>21</b>	<i>3</i>	<b>27</b>	<i>3</i>
<b>4</b>	<i>2</i>	<b>10</b>	<i>3</i>	<b>16</b>	<i>4</i>	<b>22</b>	<i>4</i>	<b>28</b>	<i>4</i>
<b>5</b>	<i>1</i>	<b>11</b>	<i>4</i>	<b>17</b>	<i>2</i>	<b>23</b>	<i>2</i>	<b>29</b>	<i>2</i>
<b>6</b>	<i>2</i>	<b>12</b>	<i>1</i>	<b>18</b>	<i>1</i>	<b>24</b>	<i>1</i>	<b>30</b>	<i>2</i>



**Topic 7. Management of investment resources of agribusiness enterprises**

<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>	<b>№ test</b>	<b>version</b>
<b>1</b>	<i>3</i>	<b>7</b>	<i>1</i>	<b>13</b>	<i>3</i>	<b>19</b>	<i>4</i>	<b>25</b>	<i>2</i>
<b>2</b>	<i>4</i>	<b>8</b>	<i>4</i>	<b>14</b>	<i>4</i>	<b>20</b>	<i>1</i>	<b>26</b>	<i>3</i>
<b>3</b>	<i>3</i>	<b>9</b>	<i>2</i>	<b>15</b>	<i>2</i>	<b>21</b>	<i>3</i>	<b>27</b>	<i>1</i>
<b>4</b>	<i>4</i>	<b>10</b>	<i>3</i>	<b>16</b>	<i>1</i>	<b>22</b>	<i>1</i>	<b>28</b>	<i>3</i>
<b>5</b>	<i>1</i>	<b>11</b>	<i>4</i>	<b>17</b>	<i>2</i>	<b>23</b>	<i>4</i>	<b>29</b>	<i>4</i>
<b>6</b>	<i>4</i>	<b>12</b>	<i>4</i>	<b>18</b>	<i>4</i>	<b>24</b>	<i>3</i>	<b>30</b>	<i>2</i>

## **ADDITION B**

### **LIST OF CONTROL QUESTIONS**

1. Characteristics of investments of the enterprise as an object of management.
2. The role of investments in ensuring the efficiency of the enterprise's functioning.
3. Characteristics of the enterprise's investment activity.
4. The investor enterprise. Classification of investors.
5. Model of investment behavior of the enterprise in the market environment.
6. The system of main macroeconomic factors affecting the investment activity of the enterprise.
7. Content of investment management. System of goals and objectives of investment management.
8. Classification of enterprises as objects of investment management.
9. Functions of investment management.
10. Mechanism of investment management.
11. System of organizational support of investment management.
12. Indicators of information provision of investment management, which are formed from external sources.
13. Indicators of information provision of investment management, which are formed from internal sources.
14. Basic forms of investment analysis at the enterprise.
15. Systems of investment planning and forms of implementation of its results at the enterprise.
16. Forms of implementing the results of the investment planning system. Current and operational planning of investment activities of enterprises.
17. Investment controlling. Principles of building an investment controlling system at the enterprise.
18. The need to take into account the inflation factor in investment calculations.

19. Investment market, its impact on investment activity. Consideration of the risk factor in investment calculations.

20. Consideration of the liquidity factor in the process of managing the enterprise's investment activities.

21. Concept of investment market. Investment market conditions. The task and sequence of studying the investment market situation.

22. Investment attractiveness of economic sectors. Life cycle of the industry and its stages.

23. Indicators of assessment of the investment attractiveness of the branches of the economy of Ukraine.

24. Investment attractiveness of regions. Indicators of assessment of the investment attractiveness of the regions of Ukraine.

25. Investment attractiveness of individual companies and firms. The life cycle of companies (firms) and its stages.

26. Indicators for assessing the investment attractiveness of companies (firms).

27. The concept of investment strategy and its role in the development of the enterprise. The relationship between the investment strategy and other main elements of the strategic choice of the enterprise. A system of elements forming the strategic investment level of the enterprise.

28. Principles and sequence of development of the enterprise's investment strategy.

29. Classification of strategic goals of the enterprise's investment activities. Formation of strategic goals of investment activity.

30. Justification of strategic directions and forms of investment activity.

31. Factors determining the ratio of the main forms of enterprise investment.

32. Evaluation of the effectiveness of the developed investment strategy of the enterprise according to individual parameters.

33. The role of real investment in the development of the enterprise. Features and forms of making real investments.

34. Real investment management policy. Formation of the policy of management of real investments of the enterprise.

35. Concept of investment project. Types of investment projects and requirements for their development. The structure of the investment project of the enterprise.

36. Business plan of an investment project, its characteristics. Principles and sequence of business plan development.

37. Evaluation of the effectiveness of real investment projects. The main performance indicators of real investment projects.

38. Risk assessment of real investment projects. Types of risks of real investment projects of the enterprise, their characteristics.

39. Formation of the real investment program. Principles and main stages of formation of the real investment program.

40. Investment project implementation schedule. Development of a calendar plan for the implementation of an investment project.

41. Capital budget for investment project implementation. Development of the investment project implementation budget.

42. Provision and development of means to neutralize project risks. Assessment of effectiveness of project risk neutralization.

43. Justification of the forms of exit of the project from the investment program of the enterprise.

44. Stages of justifying management decisions on the exit of real projects from the investment program.

45. Peculiarities of making financial investments of the enterprise. The main forms of financial investment of the enterprise.

46. Financial investment management policy. Formation of financial investment management policy.

47. Factors determining the investment quality of shares. Parameters for assessing the investment qualities of shares.

48. Evaluation of bond performance. Basic models for estimating the real value of bonds.

49. The concept of bond risk and its main features. Types of bond risks.

50. Evaluation of the performance of shares. The main models for estimating the real value of shares.

51. The concept of stock risk and its main features. Types of stock risks.

52. Risk assessment of individual financial investment instruments.

53. Concept of portfolio of financial investments. The main goal of forming an investment portfolio.

54. Modern approaches to typification of enterprise investment portfolios.

55. Traditional approach to portfolio formation. Principles of modern portfolio theory.

56. Forming a portfolio of financial investments based on modern portfolio theory.

57. Operational management of the restructuring of the portfolio of financial investments. Stages of the process of operational management of the portfolio restructuring of financial investments.

58. Concept of investment resources of the enterprise. Peculiarities of the process of formation of investment resources of the enterprise.

59. Classification of investment resources of the enterprise.

60. The policy of formation of investment resources of the enterprise. Stages of development of the policy of formation of investment resources of the enterprise.

61. Optimizing the general need for investment resources.

62. Methods of calculating the total volume of investment resources. Balance method. The method of analogies. Method of specific capital intensity.

63. Financing schemes for real investment projects. Full internal self-financing. Promotion. Venture financing. Credit financing. Mixed (equity) financing.

64. Selection of new business financing schemes.

65. Subjective and objective factors affecting the choice of a specific investment project financing scheme and sources of investment resources.

66. Basic aspects of the concept of the cost of capital.

67. Evaluation of the value of investment resources formed by the enterprise.

68. Areas of use of capital value assessment indicators. Methodical approaches to the assessment of individual elements of the cost of capital. Mechanism of assessment and management of capital cost.

69. Methods of optimizing the structure of investment resources formed by the enterprise. Financial leverage.

70. The main stages of the optimization process of the capital structure of the enterprise: analysis of the capital of the enterprise.

71. Assessment of the main factors that determine the formation of the capital structure.

72. Methods of capital structure optimization.

## ADDITION C

### FINANCIAL TABLES

Table C.1

#### TABLE OF VALUES OF THE PRESENT VALUE FACTOR

<b>t \ r</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>	<b>4%</b>	<b>5%</b>	<b>6%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>	<b>11%</b>	<b>12%</b>	<b>13%</b>	<b>14%</b>	<b>15%</b>
<b>1</b>	0,990	0,980	0,971	0,962	0,952	0,943	0,935	0,926	0,917	0,909	0,901	0,893	0,885	0,877	0,870
<b>2</b>	0,980	0,961	0,943	0,925	0,907	0,890	0,873	0,857	0,842	0,826	0,812	0,797	0,783	0,769	0,756
<b>3</b>	0,971	0,942	0,915	0,889	0,864	0,840	0,816	0,794	0,772	0,751	0,731	0,712	0,693	0,675	0,658
<b>4</b>	0,961	0,924	0,888	0,855	0,823	0,792	0,763	0,735	0,708	0,683	0,659	0,636	0,613	0,592	0,572
<b>5</b>	0,951	0,906	0,863	0,822	0,784	0,747	0,713	0,681	0,650	0,621	0,593	0,567	0,543	0,519	0,497
<b>6</b>	0,942	0,888	0,837	0,790	0,746	0,705	0,666	0,630	0,596	0,564	0,535	0,507	0,480	0,456	0,432
<b>7</b>	0,933	0,871	0,813	0,760	0,711	0,665	0,623	0,583	0,547	0,513	0,482	0,452	0,425	0,400	0,376
<b>8</b>	0,923	0,853	0,789	0,731	0,677	0,627	0,582	0,540	0,502	0,467	0,434	0,404	0,376	0,351	0,327
<b>9</b>	0,914	0,837	0,766	0,703	0,645	0,592	0,544	0,500	0,460	0,424	0,391	0,361	0,333	0,308	0,284
<b>10</b>	0,905	0,820	0,744	0,676	0,614	0,558	0,508	0,463	0,422	0,386	0,352	0,322	0,295	0,270	0,247
<b>11</b>	0,896	0,804	0,722	0,650	0,585	0,527	0,475	0,429	0,388	0,350	0,317	0,287	0,261	0,237	0,215
<b>12</b>	0,887	0,788	0,701	0,625	0,557	0,497	0,444	0,397	0,356	0,319	0,286	0,257	0,231	0,208	0,187
<b>13</b>	0,879	0,773	0,681	0,601	0,530	0,469	0,415	0,368	0,326	0,290	0,258	0,229	0,204	0,182	0,163
<b>14</b>	0,870	0,758	0,661	0,577	0,505	0,442	0,388	0,340	0,299	0,263	0,232	0,205	0,181	0,160	0,141
<b>15</b>	0,861	0,743	0,624	0,555	0,481	0,417	0,362	0,315	0,275	0,239	0,209	0,183	0,160	0,140	0,123

Source [3]

*Continuation of Table C.1*

<b>t \ r</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>	<b>4%</b>	<b>5%</b>	<b>6%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>	<b>11%</b>	<b>12%</b>	<b>13%</b>	<b>14%</b>	<b>15%</b>
<b>16</b>	0,853	0,728	0,623	0,534	0,458	0,394	0,339	0,292	0,252	0,218	0,188	0,163	0,141	0,123	0,107
<b>17</b>	0,844	0,714	0,605	0,513	0,436	0,371	0,317	0,270	0,231	0,198	0,170	0,146	0,125	0,108	0,093
<b>18</b>	0,836	0,700	0,587	0,494	0,416	0,350	0,296	0,250	0,212	0,180	0,153	0,130	0,111	0,095	0,081
<b>19</b>	0,828	0,686	0,570	0,475	0,396	0,331	0,277	0,232	0,194	0,164	0,138	0,116	0,098	0,083	0,070
<b>20</b>	0,820	0,673	0,554	0,456	0,377	0,312	0,258	0,215	0,178	0,149	0,124	0,104	0,087	0,073	0,061
<b>21</b>	0,811	0,660	0,538	0,439	0,359	0,294	0,242	0,199	0,164	0,135	0,112	0,093	0,077	0,064	0,053
<b>22</b>	0,803	0,647	0,522	0,422	0,342	0,278	0,226	0,184	0,150	0,123	0,101	0,083	0,068	0,056	0,046
<b>23</b>	0,795	0,634	0,507	0,406	0,326	0,262	0,211	0,170	0,138	0,112	0,091	0,074	0,060	0,049	0,040
<b>24</b>	0,788	0,622	0,492	0,390	0,310	0,247	0,197	0,158	0,126	0,102	0,082	0,066	0,053	0,043	0,035
<b>25</b>	0,780	0,610	0,478	0,375	0,295	0,233	0,184	0,146	0,116	0,092	0,074	0,059	0,047	0,038	0,030
<b>26</b>	0,772	0,598	0,464	0,361	0,281	0,220	0,172	0,135	0,106	0,084	0,066	0,053	0,042	0,033	0,026
<b>27</b>	0,764	0,586	0,450	0,347	0,268	0,207	0,161	0,125	0,098	0,076	0,060	0,047	0,037	0,029	0,023
<b>28</b>	0,757	0,574	0,437	0,333	0,255	0,196	0,150	0,116	0,090	0,069	0,054	0,042	0,033	0,026	0,020
<b>29</b>	0,749	0,563	0,424	0,321	0,243	0,185	0,141	0,107	0,082	0,063	0,048	0,037	0,029	0,022	0,017
<b>30</b>	0,742	0,552	0,412	0,308	0,231	0,174	0,131	0,099	0,075	0,057	0,044	0,033	0,026	0,020	0,015
<b>35</b>	0,706	0,500	0,355	0,253	0,181	0,130	0,094	0,068	0,049	0,036	0,026	0,019	0,014	0,010	0,008
<b>40</b>	0,672	0,453	0,307	0,208	0,142	0,097	0,067	0,046	0,032	0,022	0,015	0,011	0,008	0,005	0,004



*Continuation of Table C.1*

<b>t \ r</b>	<b>16%</b>	<b>17%</b>	<b>18%</b>	<b>19%</b>	<b>20%</b>	<b>21%</b>	<b>22%</b>	<b>23%</b>	<b>24%</b>	<b>25%</b>	<b>26%</b>	<b>27%</b>	<b>28%</b>	<b>29%</b>	<b>30%</b>
<b>1</b>	0,862	0,855	0,847	0,840	0,833	0,826	0,820	0,813	0,806	0,800	0,794	0,787	0,781	0,775	0,769
<b>2</b>	0,743	0,731	0,718	0,706	0,794	0,683	0,672	0,661	0,650	0,640	0,630	0,620	0,610	0,601	0,592
<b>3</b>	0,641	0,624	0,609	0,593	0,579	0,564	0,551	0,537	0,524	0,512	0,500	0,488	0,477	0,466	0,455
<b>4</b>	0,552	0,534	0,516	0,499	0,482	0,467	0,451	0,437	0,423	0,410	0,397	0,384	0,373	0,361	0,350
<b>5</b>	0,476	0,456	0,437	0,419	0,402	0,386	0,370	0,355	0,341	0,328	0,315	0,303	0,291	0,280	0,269
<b>6</b>	0,410	0,390	0,370	0,352	0,335	0,319	0,303	0,289	0,275	0,262	0,250	0,238	0,227	0,217	0,207
<b>7</b>	0,354	0,333	0,314	0,296	0,279	0,263	0,249	0,235	0,221	0,207	0,194	0,181	0,168	0,155	0,142
<b>8</b>	0,305	0,285	0,266	0,249	0,233	0,218	0,204	0,191	0,179	0,168	0,157	0,148	0,139	0,130	0,123
<b>9</b>	0,263	0,243	0,225	0,209	0,194	0,180	0,167	0,155	0,144	0,134	0,125	0,116	0,108	0,101	0,094
<b>10</b>	0,227	0,208	0,191	0,176	0,162	0,149	0,137	0,126	0,116	0,107	0,099	0,092	0,085	0,078	0,073
<b>11</b>	0,195	0,178	0,162	0,148	0,135	0,123	0,112	0,103	0,094	0,086	0,079	0,072	0,066	0,061	0,059
<b>12</b>	0,168	0,152	0,137	0,124	0,112	0,102	0,092	0,083	0,076	0,069	0,062	0,057	0,052	0,047	0,043
<b>13</b>	0,145	0,130	0,116	0,104	0,093	0,084	0,075	0,068	0,061	0,055	0,050	0,045	0,040	0,037	0,033
<b>14</b>	0,125	0,111	0,099	0,088	0,078	0,069	0,062	0,055	0,049	0,044	0,039	0,035	0,032	0,028	0,025
<b>15</b>	0,108	0,095	0,084	0,074	0,065	0,057	0,051	0,045	0,040	0,035	0,031	0,028	0,032	0,028	0,020
<b>16</b>	0,093	0,081	0,071	0,062	0,054	0,047	0,042	0,036	0,032	0,028	0,025	0,022	0,019	0,017	0,015
<b>17</b>	0,080	0,069	0,060	0,052	0,045	0,039	0,034	0,030	0,026	0,023	0,020	0,017	0,015	0,013	0,012
<b>18</b>	0,069	0,059	0,051	0,044	0,038	0,032	0,028	0,024	0,021	0,018	0,016	0,014	0,012	0,010	0,009
<b>19</b>	0,060	0,051	0,043	0,037	0,031	0,027	0,023	0,020	0,017	0,014	0,012	0,011	0,009	0,008	0,007
<b>20</b>	0,051	0,043	0,037	0,031	0,026	0,022	0,019	0,016	0,014	0,012	0,010	0,008	0,007	0,006	0,005

Source [3]

*End of the table C.1*

$\begin{matrix} r \\ t \end{matrix}$	31%	32%	33%	34%	35%	36%	37%	38%	39%	40%	45%	48%	50%	55%	60%
<b>1</b>	0,763	0,758	0,752	0,746	0,741	0,735	0,730	0,725	0,719	0,714	0,690	0,676	0,667	0,645	0,625
<b>2</b>	0,583	0,574	0,565	0,557	0,549	0,541	0,533	0,525	0,518	0,510	0,476	0,457	0,444	0,416	0,391
<b>3</b>	0,445	0,435	0,425	0,416	0,406	0,398	0,389	0,381	0,372	0,364	0,328	0,308	0,296	0,269	0,244
<b>4</b>	0,340	0,329	0,320	0,310	0,301	0,292	0,284	0,279	0,268	0,260	0,226	0,208	0,198	0,173	0,153
<b>5</b>	0,259	0,250	0,240	0,231	0,225	0,215	0,207	0,200	0,198	0,180	0,156	0,141	0,132	0,112	0,095
<b>6</b>	0,198	0,189	0,181	0,173	0,165	0,158	0,151	0,145	0,139	0,133	0,108	0,095	0,088	0,072	0,060
<b>7</b>	0,151	0,143	0,136	0,129	0,122	0,116	0,110	0,105	0,100	0,095	0,074	0,064	0,059	0,047	0,037
<b>8</b>	0,115	0,108	0,102	0,096	0,091	0,085	0,081	0,076	0,072	0,068	0,051	0,043	0,039	0,030	0,023
<b>9</b>	0,088	0,082	0,077	0,072	0,067	0,063	0,059	0,055	0,052	0,048	0,035	0,029	0,026	0,019	0,015
<b>10</b>	0,067	0,062	0,058	0,054	0,050	0,046	0,043	0,040	0,037	0,035	0,024	0,020	0,017	0,012	0,009

Source [3]

**Table C.2****TABLE OF VALUES OF THE FUTURE VALUE FACTOR**

<b>t \ r</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>	<b>4%</b>	<b>5%</b>	<b>6%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>	<b>11%</b>	<b>12%</b>	<b>13%</b>	<b>14%</b>	<b>15%</b>
<b>1</b>	1,010	1,020	1,030	1,040	1,050	1,060	1,070	1,080	1,090	1,100	1,110	1,120	1,130	1,140	1,150
<b>2</b>	1,020	1,040	1,061	1,082	1,103	1,124	1,145	1,166	1,188	1,210	1,232	1,254	1,277	1,300	1,323
<b>3</b>	1,030	1,061	1,093	1,125	1,158	1,191	1,225	1,260	1,295	1,331	1,368	1,405	1,443	1,482	1,521
<b>4</b>	1,041	1,082	1,126	1,170	1,216	1,262	1,311	1,360	1,412	1,464	1,518	1,574	1,630	1,689	1,749
<b>5</b>	1,051	1,104	1,159	1,217	1,276	1,338	1,403	1,469	1,539	1,611	1,685	1,762	1,842	1,925	1,011
<b>6</b>	1,062	1,126	1,194	1,265	1,340	1,419	1,501	1,587	1,677	1,772	1,870	1,974	2,082	2,195	2,313
<b>7</b>	1,072	1,149	1,230	1,316	1,407	1,504	1,606	1,714	,1828	1,949	2,076	2,211	2,353	2,502	2,660
<b>8</b>	1,083	1,172	1,267	1,369	1,477	1,594	1,718	1,851	1,993	2,144	2,305	2,476	2,658	2,853	3,059
<b>9</b>	1,094	1,195	1,305	1,423	1,551	1,689	1,838	1,999	2,172	2,358	2,558	2,773	3,004	3,252	3,518
<b>10</b>	1,105	1,219	1,344	1,480	1,629	1,791	1,967	2,159	2,367	2,594	2,839	3,106	3,395	3,707	4,046
<b>11</b>	1,116	1,243	1,384	1,539	1,710	1,898	2,105	2,332	2,580	2,853	3,152	3,479	3,836	4,226	4,652
<b>12</b>	1,127	1,268	1,426	1,601	1,796	2,012	2,252	2,518	2,813	3,138	3,498	3,896	4,335	4,818	5,350
<b>13</b>	1,138	1,294	1,469	1,665	1,886	2,133	2,410	2,720	3,066	3,452	3,883	4,363	4,898	5,492	6,153
<b>14</b>	1,149	1,319	1,513	1,732	1,980	2,261	2,579	2,937	3,342	3,797	4,310	4,887	5,535	6,261	7,076
<b>15</b>	1,161	1,346	1,558	1,801	2,079	2,397	2,759	3,172	3,642	4,177	4,785	5,474	6,254	7,138	8,137
<b>16</b>	1,173	1,373	1,605	1,873	2,183	2,540	2,952	3,426	3,970	4,595	5,311	6,130	7,067	8,137	9,358

Source [3]

Continuation of Table C.2

<b>t \ r</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>	<b>4%</b>	<b>5%</b>	<b>6%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>	<b>11%</b>	<b>12%</b>	<b>13%</b>	<b>14%</b>	<b>15%</b>
<b>18</b>	1,196	1,428	1,702	2,026	2,407	2,854	3,380	3,996	4,717	5,560	6,544	7,690	9,024	10,575	12,375
<b>19</b>	1,208	1,457	1,754	2,107	2,527	3,026	3,617	4,316	5,142	6,116	7,263	8,613	10,197	12,056	14,232
<b>20</b>	1,220	1,486	1,806	2,191	2,653	3,207	3,870	4,661	5,604	6,727	8,062	9,646	11,523	13,743	16,367
<b>21</b>	1,232	1,516	1,860	2,279	2,786	3,400	4,141	5,034	6,109	7,400	8,949	10,804	13,021	15,668	18,822
<b>22</b>	1,245	1,546	1,916	2,370	2,925	3,604	4,430	5,437	6,659	8,140	9,934	12,100	14,714	17,861	21,645
<b>23</b>	1,257	1,577	1,974	2,465	3,072	3,820	4,741	5,871	7,258	8,954	11,026	13,552	16,627	20,362	24,891
<b>24</b>	1,270	1,608	2,033	2,563	3,225	4,049	5,072	6,341	7,911	9,850	12,239	15,179	18,788	23,212	28,625
<b>25</b>	1,282	1,641	2,094	2,666	3,386	4,292	5,427	6,848	8,623	10,83	13,585	17,000	21,231	26,462	32,919
<b>26</b>	1,295	1,673	2,157	2,772	3,556	4,549	5,807	7,396	9,399	11,91	15,080	19,040	23,991	30,167	37,857
<b>27</b>	1,308	1,707	2,221	2,883	3,733	4,822	6,214	7,988	10,24	13,11	16,739	21,325	27,109	34,390	43,535
<b>28</b>	1,321	1,741	2,288	2,999	3,920	5,112	6,649	8,627	11,16	14,42	18,580	23,884	30,633	39,204	50,066
<b>29</b>	1,335	1,776	2,357	3,119	4,116	5,418	7,114	9,317	12,17	15,86	20,624	26,750	34,616	44,693	57,575
<b>30</b>	1,348	1,811	2,427	3,243	4,322	5,743	7,612	10,06	13,26	17,44	22,89	29,960	39,116	50,950	66,212
<b>35</b>	1,417	2,000	2,814	3,946	5,516	7,686	10,67	14,78	20,41	28,10	38,575	52,800	72,069	98,100	133,176
<b>40</b>	1,489	2,208	3,262	4,801	7,040	10,28	14,97	21,72	31,40	45,25	65,001	93,051	132,782	188,88	267,864

Continuation of Table C.2

<b>t \ r</b>	<b>16%</b>	<b>17%</b>	<b>18%</b>	<b>19%</b>	<b>20%</b>	<b>21%</b>	<b>22%</b>	<b>23%</b>	<b>24%</b>	<b>25%</b>	<b>26%</b>	<b>27%</b>	<b>28%</b>	<b>29%</b>	<b>30%</b>
<b>1</b>	1,160	1,170	1,180	1,190	1,200	1,210	1,220	1,230	1,240	1,250	1,260	1,270	1,280	1,290	1,300
<b>2</b>	1,346	1,369	1,392	1,416	1,440	1,464	1,488	1,513	1,538	1,563	1,588	1,613	1,638	1,664	1,690
<b>3</b>	1,561	1,602	1,643	1,685	1,728	1,772	1,816	1,861	1,907	1,953	2,000	2,048	2,097	2,147	2,197
<b>4</b>	1,811	1,874	1,939	2,005	2,074	2,144	2,215	2,289	2,364	2,441	2,520	2,601	2,684	2,769	2,856
<b>5</b>	2,100	2,192	2,288	2,386	2,488	2,594	2,703	2,815	2,932	3,052	3,176	3,304	3,436	3,572	3,713
<b>6</b>	2,436	2,565	2,700	2,840	2,986	3,138	3,297	3,463	3,635	3,815	4,002	4,196	4,398	4,608	4,827
<b>7</b>	2,826	3,001	3,185	3,379	3,583	3,797	4,023	4,259	4,508	4,768	5,042	5,329	5,629	5,945	6,275
<b>8</b>	3,278	3,511	3,759	4,021	4,300	4,595	4,908	5,239	5,590	5,960	6,353	6,768	7,206	7,669	8,157
<b>9</b>	3,803	4,108	4,435	4,785	5,160	5,560	5,987	6,444	6,931	7,451	8,005	8,595	9,223	9,893	10,604
<b>10</b>	4,411	4,807	5,234	5,695	6,192	6,727	7,305	7,926	8,594	9,313	10,08	10,915	11,80 6	12,76	13,78 6
<b>11</b>	5,117	5,624	6,176	6,777	7,430	8,140	8,912	9,749	10,657	11,642	12,70	13,862	15,112	16,46	17,92 2
<b>12</b>	5,936	6,580	7,288	8,064	8,916	9,850	10,872	11,991	13,215	14,552	16,01	17,605	19,343	21,23	23,29 8
<b>13</b>	6,886	7,699	8,599	9,596	10,699	11,918	13,264	14,749	16,386	18,190	20,17	22,35	24,75	27,39	30,28
<b>14</b>	7,988	9,007	10,147	11,420	12,839	14,421	16,182	18,141	20,319	22,737	25,42	28,39 6	31,691	35,33	39,374
<b>15</b>	9,266	10,539	11,974	13,590	15,407	17,449	19,742	22,314	25,196	28,422	32,03	36,062	40,565	45,58	51,186
<b>16</b>	10,748	12,330	14,129	16,172	18,488	21,114	24,086	27,446	31,243	35,527	40,35	45,799	51,923	58,80	66,542
<b>17</b>	12,468	14,426	16,672	19,244	22,186	25,548	29,384	33,759	38,741	44,409	50,85	58,165	66,461	75,86	86,504
<b>18</b>	14,463	16,879	19,673	22,901	26,623	30,913	35,849	41,523	48,039	55,511	64,07	73,870	85,071	97,86	112,455
<b>19</b>	16,777	19,748	23,214	27,252	31,948	37,404	43,736	51,074	59,568	69,389	80,73	93,815	108,8 9	126,2	146,192
<b>20</b>	19,461	23,106	27,393	32,429	38,338	45,259	53,358	62,821	73,864	86,736	101,7	119,145	139,3 8	162,8	190,050

Source [3]

*End of the table C.2*

<b>t \ r</b>	<b>31%</b>	<b>32%</b>	<b>33%</b>	<b>34%</b>	<b>35%</b>	<b>36%</b>	<b>37%</b>	<b>38%</b>	<b>39%</b>	<b>40%</b>	<b>45%</b>	<b>48%</b>	<b>50%</b>	<b>55%</b>	<b>60%</b>
<b>1</b>	1,310	1,320	1,330	1,340	1,350	1,360	1,370	1,380	1,390	1,400	1,450	1,480	1,500	1,550	1,600
<b>2</b>	1,716	1,742	1,769	1,796	1,823	1,850	1,877	1,904	1,932	1,960	2,103	2,190	2,250	2,403	2,560
<b>3</b>	2,248	2,300	2,353	2,406	2,460	2,515	2,571	2,628	2,686	2,744	3,049	3,242	3,375	3,724	4,096
<b>4</b>	2,945	3,036	3,129	3,224	3,322	3,421	3,523	3,627	3,733	3,842	4,421	4,798	5,063	5,772	6,554
<b>5</b>	3,858	4,007	4,162	4,320	4,484	4,653	4,826	5,005	5,189	5,378	6,410	7,101	7,594	8,947	10,486
<b>6</b>	5,054	5,290	5,535	5,789	6,053	6,328	6,612	6,907	7,213	7,530	9,294	10,509	11,39	13,867	16,777
<b>7</b>	6,621	6,983	7,361	7,758	8,172	8,605	9,058	9,531	10,02	10,54	13,476	15,554	17,08	21,494	26,844
<b>8</b>	8,673	9,217	9,791	10,395	11,03	11,70	12,41	13,15	13,93	14,75	19,541	23,019	25,62	33,316	42,950
<b>9</b>	11,36	12,16	13,022	13,930	14,89	15,91	17,00	18,15	19,37	20,66	28,334	34,069	38,44	51,640	68,719
<b>10</b>	14,88	16,06	17,319	18,666	20,10	21,64	23,29	25,04	26,92	28,92	41,085	50,422	57,66	80,042	109,951

Source [3]

Table C.3

## TABLE OF VALUES OF THE PRESENT VALUE OF ANNUITY

$t \backslash r$	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	0,990	0,980	0,971	0,962	0,952	0,943	0,935	0,926	0,917	0,909	0,901	0,893	0,885	0,877	0,870
2	1,970	1,942	1,913	1,886	1,859	1,833	1,808	1,783	1,759	1,736	1,713	1,690	1,668	1,647	1,626
3	2,941	2,884	2,829	2,775	2,723	2,673	2,624	2,577	2,531	2,487	2,444	2,402	2,361	2,322	2,283
4	3,902	3,808	3,717	3,630	3,546	3,465	3,387	3,312	3,240	3,170	3,102	3,037	2,974	2,914	2,855
5	4,853	4,713	4,580	4,452	4,329	4,212	4,100	3,993	3,890	3,791	3,696	3,605	3,517	3,433	3,352
6	5,795	5,601	5,417	5,242	5,076	4,917	4,767	4,623	4,486	4,355	4,231	4,111	3,998	3,889	3,784
7	6,728	6,472	6,230	6,002	5,786	5,582	5,389	5,206	5,033	4,868	4,712	4,564	4,423	4,288	4,160
8	7,652	7,325	7,020	6,733	6,463	6,210	5,971	5,747	5,535	5,335	5,146	4,968	4,799	4,639	4,487
9	8,566	8,162	7,786	7,435	7,108	6,802	6,515	6,247	5,995	5,759	5,537	5,328	5,132	4,946	4,772
10	9,471	8,983	8,530	8,111	7,722	7,360	7,024	6,710	6,418	6,145	5,889	5,650	5,426	5,216	5,019
11	10,369	9,787	9,253	8,760	8,306	7,887	7,499	7,139	6,805	6,495	6,207	5,938	5,687	5,453	5,234
12	11,255	10,575	9,954	9,385	8,863	8,384	7,943	7,536	7,161	6,814	6,492	6,194	5,918	5,660	5,424
13	12,134	11,348	10,635	9,986	9,394	8,853	8,358	7,904	7,487	7,103	6,750	6,424	6,122	5,842	5,583
14	13,004	12,106	11,296	10,563	9,899	9,295	8,745	8,244	7,786	7,367	6,982	6,628	6,302	6,002	5,724
15	13,865	12,849	11,938	11,118	10,380	9,712	9,108	8,559	8,061	7,606	7,191	6,811	6,462	6,142	5,847
16	14,718	13,578	12,561	11,652	10,838	10,106	9,447	8,851	8,313	7,824	7,379	6,974	6,604	6,265	5,954

Continuation of Table C.3

<b>t \ r</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>	<b>4%</b>	<b>5%</b>	<b>6%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>	<b>11%</b>	<b>12%</b>	<b>13%</b>	<b>14%</b>	<b>15%</b>
<b>17</b>	15,562	14,292	13,166	12,166	11,274	10,477	9,763	9,122	8,544	8,022	7,549	7,120	6,729	6,373	6,047
<b>18</b>	16,398	14,992	13,754	12,659	11,690	10,828	10,059	9,372	8,756	8,201	7,702	7,250	6,840	6,467	6,128
<b>19</b>	17,226	15,678	14,324	13,134	12,085	11,158	10,336	9,604	8,950	8,365	7,839	7,366	6,938	6,550	6,198
<b>20</b>	18,046	16,351	14,877	13,590	12,462	11,470	10,594	9,818	9,129	8,514	7,963	7,469	7,025	6,623	6,259
<b>21</b>	18,857	17,011	15,415	14,029	12,821	11,764	10,836	10,017	9,292	8,649	8,075	7,562	7,102	6,687	6,312
<b>22</b>	19,660	17,658	15,937	14,451	13,163	12,042	11,061	10,201	9,442	8,772	8,176	7,645	7,170	6,743	6,359
<b>23</b>	20,456	18,292	16,444	14,857	13,489	12,303	11,272	10,371	9,580	8,883	8,266	7,718	7,230	6,792	6,399
<b>24</b>	21,243	18,914	16,936	15,247	13,799	12,550	11,469	10,529	9,707	8,985	8,348	7,784	7,283	6,835	6,434
<b>25</b>	22,023	19,523	17,413	15,622	14,094	12,783	11,654	10,675	9,823	9,077	8,422	7,843	7,330	6,873	6,464
<b>26</b>	22,795	20,121	17,877	15,983	14,375	13,003	11,826	10,810	9,929	9,161	8,488	7,896	7,372	6,906	6,497
<b>27</b>	23,560	20,707	18,327	16,330	14,643	13,211	11,987	10,935	10,027	9,237	8,548	7,943	7,409	6,935	6,514
<b>28</b>	24,316	21,281	18,764	16,663	14,898	13,406	12,137	11,051	10,116	9,307	8,602	7,984	7,441	6,961	6,534
<b>29</b>	25,066	21,844	19,188	16,984	15,141	13,591	12,278	11,158	10,198	9,370	8,650	8,022	7,470	6,983	6,551
<b>30</b>	25,808	22,396	19,600	17,292	15,372	13,765	12,409	11,258	10,274	9,427	8,694	8,055	7,496	7,003	6,566
<b>35</b>	26,514	22,896	19,956	17,545	15,554	13,895	12,503	11,325	10,323	9,462	8,720	8,054	7,510	7,013	6,5731
<b>40</b>	27,185	23,349	20,262	17,754	15,696	13,992	12,659	11,371	10,354	9,485	8,735	8,085	7,517	7,018	6,577



Continuation of Table C.3

<b>t \ r</b>	<b>16%</b>	<b>17%</b>	<b>18%</b>	<b>19%</b>	<b>20%</b>	<b>21%</b>	<b>22%</b>	<b>23%</b>	<b>24%</b>	<b>25%</b>	<b>26%</b>	<b>27%</b>	<b>28%</b>	<b>29%</b>	<b>30%</b>
<b>1</b>	0,862	0,855	0,847	0,840	0,833	0,826	0,820	0,813	0,806	0,800	0,794	0,787	0,781	0,775	0,769
<b>2</b>	1,605	1,585	1,566	1,547	1,528	1,509	1,492	1,474	1,457	1,440	1,424	1,407	1,392	1,376	1,361
<b>3</b>	2,246	2,210	1,174	2,140	2,106	2,074	2,042	2,011	1,981	1,952	1,923	1,896	1,868	1,842	1,816
<b>4</b>	2,798	2,743	2,690	2,639	2,589	2,540	2,494	2,448	2,404	2,362	2,320	2,280	2,241	2,203	2,166
<b>5</b>	3,274	3,199	3,127	3,058	2,991	2,926	2,864	2,803	2,745	2,689	2,635	2,583	2,532	2,483	2,436
<b>6</b>	3,685	3,589	3,498	3,410	3,326	3,245	3,167	3,092	3,020	2,951	2,885	2,821	2,759	2,700	2,643
<b>7</b>	4,039	3,922	3,812	3,706	3,605	3,508	3,416	3,327	3,242	3,161	3,083	3,009	2,937	2,868	2,802
<b>8</b>	4,344	4,207	4,078	3,954	3,837	3,726	3,619	3,518	3,421	3,329	3,241	3,156	3,076	2,999	2,925
<b>9</b>	4,607	4,451	4,303	4,163	4,031	3,905	3,786	3,673	3,566	3,463	3,366	3,273	3,184	3,100	3,019
<b>10</b>	4,833	4,659	4,494	4,339	4,192	4,054	3,923	3,799	3,682	3,571	3,465	3,364	3,269	3,178	3,092
<b>11</b>	5,029	4,836	4,656	4,486	4,327	4,177	4,035	3,902	3,776	3,656	3,543	3,437	3,335	3,239	3,147
<b>12</b>	5,197	4,988	4,793	4,611	4,439	4,278	4,127	3,985	3,851	3,725	3,606	3,493	3,387	3,286	3,190
<b>13</b>	5,342	5,118	4,910	4,715	4,533	4,362	4,203	4,053	3,912	3,780	3,656	3,538	3,427	3,322	3,223
<b>14</b>	5,468	5,229	5,008	4,802	4,611	4,432	4,265	4,108	3,962	3,824	3,695	3,573	3,459	3,351	3,249
<b>15</b>	5,575	5,324	5,092	4,876	4,675	4,489	4,315	4,153	4,001	3,859	3,726	3,601	3,483	3,373	3,268
<b>16</b>	5,668	5,405	5,162	4,938	4,730	4,536	4,357	4,189	4,033	3,887	3,751	3,623	3,503	3,390	3,283
<b>17</b>	5,749	5,475	5,222	4,990	4,775	4,576	4,391	4,219	4,059	3,910	3,771	3,640	3,518	3,403	3,295
<b>18</b>	5,818	5,534	5,273	5,033	4,812	4,608	4,419	4,243	4,080	3,928	3,786	3,654	3,529	3,413	3,304
<b>19</b>	5,877	5,584	5,316	5,070	4,843	4,635	4,442	4,263	4,097	3,942	3,799	3,664	3,539	3,421	3,311
<b>20</b>	5,929	5,628	5,353	5,101	4,870	4,657	4,460	4,279	4,110	3,954	3,808	3,673	3,546	3,427	3,316

*End of the table C.3*

<b>t \ r</b>	<b>31%</b>	<b>32%</b>	<b>33%</b>	<b>34%</b>	<b>35%</b>	<b>36%</b>	<b>37%</b>	<b>38%</b>	<b>39%</b>	<b>40%</b>	<b>45%</b>	<b>48%</b>	<b>50%</b>	<b>55%</b>	<b>60%</b>
<b>1</b>	0,763	0,758	0,752	0,746	0,741	0,735	0,73(P	0,725	0,719	0,714	0,690	0,676	0,667	0,645	0,625
<b>2</b>	1,346	1,331	1,317	1,303	1,289	1,276	1,263	1,250	1,237	1,224	1,165	1,132	1,111	1,061	1,016
<b>3</b>	1,791	1,766	1,742	1,719	1,696	1,673	1,652	1,630	1,609	1,589	1,493	1,441	1,407	1,330	1,260
<b>4</b>	2,130	2,096	2,062	2,029	1,997	1,966	1,935	1,906	1,877	1,849	1,720	1,649	1,605	1,503	1,412
<b>5</b>	2,390	2,345	2,302	2,260	2,220	2,181	2,143	2,106	2,070	2,035	1,876	1,790	ч/7зТ	1,615	1,508
<b>6</b>	2,588	2,534	2,483	2,433	2,385	2,339	2,294	2,251	2,209	2,168	1,983	1,885	1,824	1,687	1,567
<b>7</b>	2,739	2,677	2,619	2,562	2,508	2,455	2,404	2,355	2,308	2,263	2,057	1,949	1,883	1,734	1,605
<b>8</b>	2,854	2,786	2,721	2,658	2,598	2,540	2,485	2,432	2,380	2,331	2,109	1,993	1,922	1,764	1,628
<b>9</b>	2,942	2,868	2,798	2,730	2,665	2,603	2,544	2,487	2,432	2,379	2,144	2,022	1,948	1,783	1,642
<b>10</b>	3,009	2,930	2,855	2,784	2,715	2,649	2,587	2,527	2,469	2,414	2,168	2,042	1,965	1,795	1,652

Source [3]

Table C.4

## TABLE OF VALUES OF FUTURE VALUE

<b>t \ r</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>	<b>4%</b>	<b>5%</b>	<b>6%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>	<b>11%</b>	<b>12%</b>	<b>13%</b>	<b>14%</b>	<b>15%</b>
<b>1</b>	1,010	1,020	1,030	1,040	1,050	1,060	1,070	1,080	1,090	1,100	1,110	1,120	1,130	1,140	1,150
<b>2</b>	2,030	2,060	2,091	2,122	2,153	2,184	2,215	2,246	2,278	2,310	2,342	2,374	2,407	2,440	2,473
<b>3</b>	3,060	3,122	3,184	3,246	3,310	3,375	3,440	3,506	3,573	3,641	3,710	3,779	3,850	3,921	3,993
<b>4</b>	4,101	4,204	4,309	4,416	4,526	4,637	4,751	4,867	4,985	5,105	5,228	5,353	5,480	5,610	5,742
<b>5</b>	5,152	5,308	5,468	5,633	5,802	5,975	6,153	6,336	6,523	6,716	6,913	7,115	7,323	7,536	7,754
<b>6</b>	6,214	6,434	6,662	6,898	7,142	7,394	7,654	7,923	8,200	8,487	8,783	9,089	9,405	9,730	10,067
<b>7</b>	7,286	7,583	7,892	8,214	8,549	8,897	9,260	9,637	10,028	10,436	10,859	11,300	11,757	12,233	12,727
<b>B</b>	8,369	8,755	9,159	9,583	10,027	10,491	10,978	11,488	12,021	12,579	13,164	13,776	14,416	15,085	15,786
<b>9</b>	9,462	9,950	10,464	11,006	11,578	12,181	12,816	13,487	14,193	14,937	15,722	16,549	17,420	18,337	19,304
<b>10</b>	10,567	11,169	11,808	12,486	13,207	13,972	14,784	15,645	16,560	17,531	18,561	19,655	20,814	22,045	23,349
<b>11</b>	11,683	12,412	13,192	14,026	14,917	15,870	16,888	17,977	19,141	20,384	21,713	23,133	24,650	26,271	28,002
<b>12</b>	12,809	13,680	14,618	15,627	16,713	17,882	19,141	20,495	21,953	23,523	25,212	27,029	28,985	31,089	33,352
<b>13</b>	13,947	14,974	16,086	17,292	18,599	20,015	21,550	23,215	25,019	26,975	29,095	31,393	33,883	36,581	39,505
<b>14</b>	15,097	16,293	17,599	19,024	20,579	22,276	24,129	26,152	28,361	30,772	33,405	36,280	39,417	42,842	46,580
<b>15</b>	16,258	17,639	19,157	20,825	22,657	24,673	26,888	29,324	32,003	34,950	38,190	41,753	45,672	49,980	54,717
<b>16</b>	17,430	19,012	20,762	22,698	24,840	27,213	29,840	32,750	35,974	39,545	43,501	47,884	52,739	58,118	64,075
<b>17</b>	18,615	20,412	22,414	24,645	27,132	29,906	32,999	36,450	40,301	44,599	49,396	54,750	60,725	67,394	74,836
<b>18</b>	19,811	21,841	24,117	26,671	29,539	32,760	36,379	40,446	45,018	50,159	55,939	62,440	69,749	77,969	87,212
<b>19</b>	21,019	23,297	25,870	28,778	32,066	35,786	39,995	44,762	50,160	56,275	63,203	71,052	79,947	90,025	101,444

Source [3]

Continuation of Table C.4

<b>t \ r</b>	<b>1%</b>	<b>2%</b>	<b>3%</b>	<b>4%</b>	<b>5%</b>	<b>6%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>	<b>11%</b>	<b>12%</b>	<b>13%</b>	<b>14%</b>	<b>15%</b>
<b>20</b>	22,239	24,783	27,676	30,969	34,719	38,993	43,865	49,423	55,765	63,002	71,265	80,699	91,470	103,768	117,810
<b>21</b>	23,472	26,299	29,537	33,248	37,505	42,392	48,006	54,457	61,873	70,403	80,214	91,503	104,49	119,436	136,632
<b>22</b>	24,716	27,845	31,453	35,618	40,430	45,996	52,436	59,893	68,532	78,543	90,148	103,603	119,20	137,297	158,276
<b>23</b>	25,973	29,422	33,426	38,083	43,502	49,816	57,177	65,765	75,790	87,497	101,174	117,155	135,83	157,659	183,168
<b>24</b>	27,243	31,030	35,459	40,646	46,727	53,865	62,249	72,106	83,701	97,347	113,413	132,334	154,62	180,871	211,793
<b>25</b>	28,526	32,671	37,553	43,312	50,113	58,156	67,676	78,954	92,324	108,182	126,999	149,334	175,85	207,333	244,712
<b>26</b>	29,821	34,344	39,710	46,084	53,669	62,706	73,484	86,351	101,723	120,100	142,079	168,374	199,84	237,499	282,569
<b>27</b>	31,129	36,051	41,931	48,968	57,403	67,528	79,698	94,339	111,968	133,210	158,817	189,699	226,95	271,889	326,104
<b>28</b>	32,450	37,792	44,219	51,966	61,323	72,640	86,347	102,966	123,135	147,631	177,397	213,583	257,58	311,094	376,170
<b>29</b>	33,785	39,568	46,575	55,085	65,439	78,058	93,461	112,283	135,308	163,494	198,021	240,333	292,19	355,787	433,745
<b>30</b>	35,133	41,379	49,003	58,328	69,761	83,802	101,073	122,346	148,575	180,943	220,913	270,293	331,31	406,737	499,957
<b>35</b>	36,549	43,379	51,817	62,274	75,277	91,488	111,750	137,131	168,989	209,046	259,488	323,092	403,38	504,837	633,132
<b>40</b>	38,038	45,587	55,079	67,075	82,317	101,773	126,724	158,856	200,399	254,489	324,489	416,143	536,16	693,721	900,996

Continuation of Table C.4

<b>t \ r</b>	<b>16%</b>	<b>17%</b>	<b>18%</b>	<b>19%</b>	<b>20%</b>	<b>21%</b>	<b>22%</b>	<b>23%</b>	<b>24%</b>	<b>25%</b>	<b>26%</b>	<b>27%</b>	<b>28%</b>	<b>29%</b>	<b>30%</b>
<b>1</b>	1,160	1,170	1,180	1,190	1,200	1,210	1,220	1,230	1,240	1,250	1,260	1,270	1,280	1,290	1,300
<b>2</b>	2,506	2,539	2,572	2,606	2,640	2,674	2,708	2,743	2,778	2,813	2,848	2,883	2,918	2,954	2,990
<b>3</b>	4,066	4,141	4,215	4,291	4,368	4,446	4,524	4,604	4,684	4,766	4,848	4,931	5,016	5,101	5,187
<b>4</b>	5,877	6,014	6,154	6,297	6,442	6,589	6,740	6,893	7,048	7,207	7,368	7,533	7,700	7,870	8,043
<b>5</b>	7,977	8,207	8,442	8,683	8,930	9,183	9,442	9,708	9,980	10,259	10,544	10,837	11,136	11,442	11,756
<b>6</b>	10,414	10,772	11,142	11,523	11,916	12,321	12,740	13,171	13,615	14,073	14,546	15,032	15,534	16,051	16,583
<b>7</b>	13,240	13,773	14,327	14,902	15,499	16,119	16,762	17,430	18,123	18,842	19,588	20,361	21,163	21,995	22,858
<b>8</b>	16,519	17,258	18,086	18,923	19,799	20,714	21,670	22,669	23,712	24,802	25,940	27,129	28,369	29,664	31,015
<b>9</b>	20,321	21,393	22,521	23,709	24,959	26,274	27,657	29,113	30,643	32,253	33,945	35,723	37,593	39,556	41,619
<b>10</b>	24,733	26,200	27,755	29,404	31,150	33,001	34,962	37,039	39,238	41,566	44,031	46,639	49,398	52,318	55,405
<b>11</b>	29,850	31,824	33,931	36,180	38,581	41,142	43,874	46,788	49,895	53,208	56,739	60,501	64,510	68,780	73,327
<b>12</b>	35,786	38,404	41,219	44,244	47,497	50,991	54,746	58,779	63,110	67,760	72,751	78,107	83,853	90,016	96,625
<b>13</b>	42,672	46,103	49,818	53,841	58,196	62,909	68,010	73,528	79,496	85,949	92,926	100,465	108,612	117,411	126,913
<b>14</b>	50,660	55,110	59,965	65,261	71,035	77,330	84,192	91,669	99,815	108,687	118,347	128,861	140,303	152,750	166,286
<b>15</b>	59,925	65,649	71,939	78,850	86,442	94,780	103,935	113,983	125,011	137,109	150,377	164,924	180,868	198,337	217,472
<b>16</b>	70,673	77,979	86,068	95,022	104,931	115,894	128,020	141,430	156,253	172,636	190,735	210,723	232,791	257,145	284,014
<b>17</b>	83,141	92,406	102,740	114,266	127,117	141,441	157,405	175,188	194,994	217,045	241,585	268,888	299,252	333,007	370,518
<b>18</b>	97,603	109,285	122,414	137,166	153,740	172,354	193,254	216,712	243,033	272,556	305,658	342,758	384,323	430,870	482,973
<b>19</b>	114,380	129,033	145,628	164,418	185,688	209,758	236,989	267,785	302,601	341,945	386,389	436,573	493,213	557,112	629,165
<b>20</b>	133,841	152,139	173,021	196,847	224,026	255,018	290,347	330,606	376,465	428,681	488,110	555,717	632,593	719,964	819,215

*End of the table C.4*

<b>t \ r</b>	<b>31%</b>	<b>32%</b>	<b>33%</b>	<b>34%</b>	<b>35%</b>	<b>36%</b>	<b>37%</b>	<b>38%</b>	<b>39%</b>	<b>40%</b>	<b>45%</b>	<b>48%</b>	<b>50%</b>	<b>55%</b>	<b>60%</b>
<b>1</b>	1,30	1,320	1,330	1,340	1,350	1,360	1,370	1,380	1,390	1,400	1,450	1,480	1,500	1,550	1,600
<b>2</b>	3,026	3,062	3,099	3,136	3,173	3,210	3,247	3,284	3,322	3,360	3,553	3,670	3,750	3,953	4,160
<b>3</b>	5,274	5,362	5,452	5,542	5,633	5,725	5,818	5,912	6,008	6,104	6,601	6,912	7,125	7,676	8,256
<b>4</b>	8,219	8,398	8,581	8,766	8,954	9,146	9,341	9,539	9,741	9,946	11,022	11,710	12,188	13,448	14,810
<b>5</b>	12,077	12,406	12,742	13,086	13,438	13,799	14,167	14,544	14,930	15,324	17,431	18,811	19,781	22,395	25,295
<b>6</b>	17,131	17,696	18,277	18,876	19,492	20,126	20,779	21,451	22,142	22,853	26,725	29,320	31,172	36,262	42,073
<b>7</b>	23,752	24,678	25,638	26,633	27,664	28,732	29,837	30,982	32,168	33,395	40,202	44,874	48,258	57,756	68,916
<b>8</b>	32,425	33,895	35,429	37,029	38,696	40,435	42,247	44,135	46,103	48,153	59,743	67,893	73,887	91,073	111,866
<b>9</b>	43,786	46,062	48,451	50,958	53,590	56,352	59,248	62,287	65,473	68,814	88,077	101,962	112,33	142,71	180,585
<b>10</b>	58,670	62,122	65,769	69,624	73,697	77,998	82,540	87,336	92,398	97,739	129,16	152,383	169,99	222,75	290,536

Source [3]

Training manual

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Editor: Oleshkevych V.V.

Publisher and producer PE «MONOLIT»

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## **ІНВЕСТИЦІЙНИЙ МЕНЕДЖМЕНТ ПРАКТИКУМ**

Редактор: Олешкевич В.В.

Підписано до друку 01.04.24. Формат 60x84/16.

Папір друкарський. Гарнітура таймс. Ум.друк.арк. 11,62.

Обл.-вид.арк. 7,51 Тираж 300 прим. Вид. № 268. Зам. № 121.

Дніпровський державний аграрно-економічний університет  
49600, м. Дніпро, вул. Сергія Єфремова, 25

Видавець і виготовлювач ПП «Монолит»

49038, м. Дніпро, вул. Ярослава Мудрого, 56.

Свідоцтво про внесення видавця видавничої продукції  
до Державного реєстру видавців, виготівників і розповсюджувачів  
видавничої продукції ДК № 273 від 08.12.2000 р.