Міністерство освіти і науки України
Чорноморський національний університет імені Петра Могили

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Методичні рекомендації

для виконання практичних завдань з дисципліни
«Ринок фінансових послуг» (англійською мовою)
для студентів спеціальності 072 «Фінанси, банківська справа, страхування та фондовий ринок»

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Д72 **Дранус В. В.** Методичні рекомендації для виконання практичних завдань з дисципліни «Ринок фінансових послуг» (англійською мовою) для студентів спец. 072 «Фінанси, банківська справа, страхування та фондовий ринок» : метод. рек. / В. В. Дранус, Т. І. Чернюк. – Миколаїв : Вид-во ЧНУ ім. Петра Могили, 2023. – 100 с. – (Методична серія ; вип. 428)

Methodical instructions for the discipline "Financial Services Market" reveal its content and main provisions. For each topic of the course, students are offered situational tasks with algorithms for solving them and tasks for testing their knowledge.
The methodological instructions are intended for students of all forms of study under the programme.
Master's degree programme in specialty 072 "Finance, Banking, Insurance and Stock Market".

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CONTENT

PREFACE

The educational discipline "Financial services market" is important for the preparation of masters in the specialty 072 "Finance, banking, insurance and the stock market" and is aimed at the study and assimilation of modern methods of activity in the financial services market by students of higher education.

The purpose of studying the discipline is to provide students with basic knowledge and the formation of a set of competencies of theoretical and practical aspects of financial management using the services of financial intermediaries, the functioning features of the financial services market, the effectiveness analysis of the such services using.

The subject of the discipline is the system of financial and economic relations that arise in the process of formation, distribution, redistribution and movement of financial resources between subjects of the financial services market regarding the purchase and sale of financial assets.

Prerequisites for the course: knowledge gained in the process of studying the disciplines at the first (bachelor's) level of higher education - "Finance", "Banking", "Investing", "Insurance", "Financial Market", "International Finance", "Financial Activities of Business Entities".

Expected learning outcomes: demonstration of theories knowledge, methods and functions of the financial services market; disclosure of the socio-economic essence of the financial services market; highlighting the trends in the development of the domestic financial services market; the stages determination of development, formation and implementation of the financial services market to the end user; search for ways of innovation in the conditions of competition in the financial services market; the role determination of financial intermediaries in the system of financial services sales; reflection of the regulatory framework for the regulation of financial services.

As a result of studying this course, the student should **know:**

- the essence, content, functions and place of the financial services market in the financial system;
- classification and characterization of subjects, mechanism and instruments of the financial services market;
- segmental and institutional infrastructure of the financial services market, its professional participants and features of financial intermediation;

- essence, mechanism of provision, financial instruments, technology of financial settlements in various segments of the financial services market
- main directions, features and methods of state regulation and self-regulation of the financial services market.

The student should be able to:

- navigate in innovative for Ukraine and various concepts and terms inherent in the financial services market;
- to carry out financial and analytical calculations on forecasts of price movements and the choice of a portfolio of securities;
- evaluate and forecast the financial services market using special methods;
- independently analyze and make informed investment decisions;
- navigate the legislative and regulatory acts governing the sphere of stock exchange, banking, insurance, investment and other financial services;
- analyze the current state of the domestic and international financial services markets and make forecasts using technical and fundamental analysis methods;
- evaluate financial instruments and choose the most effective ways to use them;
- evaluate the effectiveness of financial services, formulate and calculate forecast cash flows and develop forecast financial plans;
- perform alternative analysis and assess the financial condition of financial services market participants on its basis;
- identify financial services risks at all stages of their implementation, effectively apply mechanisms and tools to prevent and minimize the consequences of their manifestation;
- to carry out financial monitoring and control in the activities of financial institutions.

Methodological recommendations for the discipline "Financial Services Market" are intended to enable higher education students to deepen their theoretical knowledge of the fundamental financial and economic disciplines of the professional training cycle, to obtain the necessary competencies of fundamental and specific knowledge provided by the study of this discipline and include: thematic plan and structure of the discipline, general methodological recommendations for organizing independent work, methodological recommendations for practical classes, control questions and questions for review, which are given for each topic, the procedure and criteria for evaluation by the types of work performed by higher education students in the process of studying the discipline, a list of references, a glossary.

PROGRAM COMPETENCIES FOR SPECIALTY 072 «FINANCE, BANKING, INSURANCE AND STOCK EXCHANGE»

General competencies:

GC1. Ability to abstract thinking, analysis and synthesis.

GC4. Ability to identify, pose and solve problems.

GC5. Ability to make informed decisions.

Special (professional) competencies:

SC1. Ability to use the fundamental laws of finance development, banking and insurance in combination with research and management tools for professional and scientific activities.

SC3. Ability to apply management skills in the field of finance, banking and insurance.

SC4. Ability to evaluate the effectiveness of scientific, analytical and methodological tools to substantiate management decisions in the field of finance, banking and insurance.

SC6. Ability to apply interdisciplinary approaches to solving complex problems in the field of finance, banking and insurance.

Program learning outcomes:

PLO3. Identify the features of the modern world functioning and national financial systems and their structure.

PLO7. Understand the principles, methods and tools of state and activities market regulation in the field of finance, banking and insurance.

PLO10. Identify sources and understand the methodology for determining and methods of obtaining economic data, collect and analyze the necessary financial information, calculate indicators that characterize the state of financial systems.

PLO11. Possess methodological tools for the implementation of control functions in the field of finance, banking and insurance.

PLO12. To use professional argumentation to convey information, ideas, problems and ways to solve them to specialists and non-specialists in the financial sector.

PLO13. Possess general scientific and special methods of researching financial processes.

THEMATIC CONTENT OF THE DISCIPLINE «FINANCIAL SERVICES MARKET»

№	Topic / plan
1	**Topic 1: Fundamentals of the financial services market** 1.1. The essence and importance of the financial services market 1.2. Content, features and classification of financial services 1.3. Structure of the financial services market 1.4. The mechanism of the financial services market functioning
2	**Topic 2. Financial services in the equity capital market** 2.1. General characteristics of services in the equity capital market 2.2. The formation features of the equity capital market 2.3. Indicators characterizing the quality of shares 2.4. The value of shares formation in the stock market
3	**Topic 3. Financial services in the debt capital market** 3.1. General characteristics of services in the debt capital market 3.2. Bank lending 3.3 Factoring and forfeiting services 3.4. Leasing services
4	**Topic 4. The market of banking services** 4.1 Services of commercial banks and their types 4.2. Settlement and cash services for clients of commercial banks 4.3. Intermediary and guarantee services of commercial banks 4.4. Consulting services, trust (fiduciary) services 4.5. Financial engineering
5	**Topic 5. Financial services of non-bank financial institutions** 5.1. Economic essence and functions of non-bank financial institutions 5.2. Services of financial companies 5.3. Activities of credit unions in the financial services market 5.4. Services of pawnshops 5.5. Activities of funded pension institutions 5.6. Activities of collective investment institutions 5.7. Financial services in the insurance market

Continuation of table

6	**Topic 6. Financial services in the securities market** 6.1. General characteristics of financial services in the securities market 6.2. Services for servicing the issuance and trading of securities 6.3. Activities on the provision of services for storage, registers maintenance owners of registered securities and settlement and clearing services 6.4. Services for the organization of trade and management of securities 6.5. General characteristics of services in the markets of derivative financial instruments 6.6 Hedging services with futures and forward contracts
7	**Topic 7. Financial services in the foreign exchange market** 7.1. Foreign exchange market and its participants 7.2. Opening and maintaining accounts in foreign currency 7.3. Services in the interbank foreign exchange market 7.4. Services in the foreign exchange market 7.5. Services of financial institutions in international settlements 7.7. Other services in the foreign exchange market
8	**Topic 8: State regulation of the financial services market. Financial monitoring** 8.1. The essence and forms of state regulation of the financial services market 8.2. Bodies that carry out state regulation of financial services markets 8.3. Powers of the National Bank of Ukraine in the financial services market 8.4. Powers of the National Securities and Stock Market Commission 8.5. Procedure for conducting financial monitoring

METHODICAL RECOMMENDATIONS FOR PREPARATION FOR PRACTICAL TASKS

Before starting the practical work, the higher education applicant needs to carry out a theoretical analysis of the recommended scientific sources of information related to the topic, taking into account the need to study the regulatory framework related to the tasks, familiarize themselves with scientific approaches to the issues on this topic, which are reflected in textbooks, manuals, scientific articles and other sources of information, and then begin to perform the practical task.

When completing the tasks, it is recommended that the applicant for higher education adhere to the following sequence:

1. Familiarize yourself with the content of the topic by studying the recommended sources of information.
2. Analyze the conditions of the task, choose a methodology.
3. Complete the task, following a logical sequence in making decisions and justifying them.
4. Analyze the results obtained, formulate appropriate conclusions.

GUIDELINES FOR SELF-WORK

When completing the tasks assigned for self-preparation, it is proposed to write an essay on a given topic. An essay is an independent written work, the distinctive features of which are creativity, personal nature of understanding, comprehension and perception of the problem, relatively small size, free choice of composition, emotionality and ease of presentation.

Requirements for Essay Writing

Basic technical requirements for writing an essay:

- A4 paper, font - Times New Roman, size 14;
- line spacing - 1.5;
- the number of pages varies from 5 to 10;
- language of writing - Ukrainian, English;
- the text should be located on one side;
- the essay should contain a title that reflects the subject of the text;
- margins from the edges - 2 cm on the left and top and 1.5 cm on the bottom and right;
- the sources used in the process of writing the essay must be referenced (for example, [1, p. 8]).

General requirements for writing an essay in terms of its text, content, and structure:

1. The essay should be reasoned, with appropriate substantiation of the problematic issues by confirmed and verified facts, convincing, concise in the presentation of materials.
2. The essay must be original; it is forbidden to use other people's scientific works, copying them in full or in part.
3. The essay should contain the author's analysis of the problem, the author's subjective position.
4. The essay must follow a logical structure and contain the following parts: introduction (description of the problem), main body or argumentation (analysis, confirmation or refutation of existing statements using quotations, examples from life, laws, etc.), conclusion (final author's position on the problematic issue).

PLAN OF PRACTICAL CLASSES

Topic 1: Fundamentals of the financial services market

1.1. The essence and importance of the financial services market
1.2. Content, features and classification of financial services
1.3. Structure of the financial services market
1.4. The mechanism of functioning of the financial services market

Issues for control:

- preconditions for the emergence of the financial services market;
- movement of financial flows in the economy and the importance of the financial services market for the economic development of the state;
- the essence of the concepts of "service" and "financial service";
- methods for determining the market share of financial services for financial institutions of different types;
- analysis of financial services in the market, types of financial services;
- essence and structure of the financial services market;
- place, role and functions of the financial services market in the financial system;
- composition of financial services market participants;
- advantages of financial intermediation, types and functions of financial intermediaries in the financial services market;
- characteristics of the main services of financial institutions, consumers and providers of financial services;
- general characteristics of financial services market participants;
- system of interaction between financial services market participants in the processes of capital accumulation and movement;
- foreign experience of financial intermediation;
- mechanism of transformation of savings into investments;
- basic conditions for the establishment and operation of financial institutions;
- general terms and conditions and content of a financial service agreement.

Practical tasks.

Using professional terminology, explain the meaning and reveal the essence of the following terms: financial services market, financial services, financial transactions, financial assets, financial service providers, financial

services consumers, financial services market functions, financial services market features, financial services market principles, problems of the financial services market, role and functions of the state as a participant in the financial services market, investment capital: characteristics and sources, mechanism of formation and placement of savings in the market economy.

Test tasks:

1. What does not belong to the concept of "financial assets":

a) accounts receivable not held for resale.

b) financial investments held to maturity.

c) cash and cash equivalents.

d) there is no correct answer.

2. Find the incorrect statement. According to the segment structure, the financial services market is divided into:

a) financial services in the stock market.

b) financial services in the labor market.

c) financial services in the foreign exchange market.

d) financial services for risk hedging.

3.Financial institutions are prohibited from:

a) disseminate advertising in any form.

b) cooperation with analytical agencies that cooperate with their competitors.

c) cooperation with any unofficial disseminators of information on the state of the financial services market.

d) disseminating in any form of advertising and other information containing false information about their activities in the field of financial services.

4. The financial services market is:

a) the sphere of activity of financial services market participants for the purpose of providing and consuming certain financial services.

b) a place where a seller and a buyer of a respective product meet.

c) a place where different types of financial services are exchanged.

d) a place where information on supply and demand for a particular type of financial services is disseminated.

5.What are the main groups of financial intermediaries?

a) savings institutions, depository institutions, innovative institutions.

b) investment intermediaries, contractual savings institutions, depository institutions.

c) contractual savings institutions, depository institutions, and banking institutions.

d) savings institutions, innovative investment institutions, depository institutions.

6.Which of the statements is unnecessary. According to the requirements of the Law of Ukraine "On Financial Services and State Regulation of Financial Services Markets", the following services are considered financial:

a) accumulative pension services.

b) trust management of financial assets.

c) justification of net profit distribution.

d) provision of surety and guarantees.

7.Name the factors that determine the purpose of formation and functioning of the financial services market:

a) accumulation and placement of existing savings in the economy.

b) achievement of significant investment indicators of the trade balance.

c) accumulation and administration of the state budget.

d) all answers are correct.

8.By function, the subjects of the financial services market are divided into:

a) financial intermediaries, issuers, institutional investors, and savers.

b) issuers, savers, financial intermediaries, borrowers.

c) financial intermediaries, issuers, borrowers.

d) Savers, issuers, government organizations and institutions, and borrowers.

9. Individuals and legal entities that have temporarily free financial resources and intend to invest them in financial assets in order to receive income in the form of dividends, interest or increase in the market value of such financial assets are:

a) savers.

b) investors.

c) intermediaries.

d) issuers.

10.Institutions that, in the course of their activities, carry out long-term accumulation of clients' capital in order to make targeted payments in favor of such clients:

a) leasing companies.

b) collective investment institutions.

c) factoring companies.

d) contractual savings institutions.

Self-work. Essay topics:

1. Current trends in the development of the global financial services market.
2. Functioning of the financial services market in Ukraine and processes that affect its efficiency.
3. Stages of formation and development of the financial services market in Ukraine.
4. Problems of the Ukrainian financial services market integration into the European and world markets.
5. Research of the financial services market and development of new instruments.
6. Comparative characteristics of financial services markets in Europe.
7. Problems of making financial investments in Ukraine.
8. The activities of financial intermediaries to attract household savings to investment processes.
9. Licensing requirements for financial institutions in the system of regulation and supervision.

Key terms and concepts: financial services market, financial services, financial transactions, financial assets, financial services providers, financial services consumers, financial services market functions, financial services market features, financial services market principles, financial services market problems, financial services market participants, households, issuers, investors, institutional investors, market infrastructure institutions, financial institutions, state registration, licensing, savings, current savings, savings for the purchase of durable goods, savings for emergencies and retirement, investment savings, market interest rate, direct income of a financial service provider, indirect income of a financial service provider, financial service agreement, interaction of financial service market participants.

Topic 2. Financial services in the equity capital market

2.1. General characteristics of services in the equity capital market
2.2. The formation features of the equity capital market
2.3. Indicators characterizing the quality of shares
2.4. The value formation of shares in the stock market

Questions for control:

- Features, types, functions of securities.
- The role and functions of the equity capital market in the financial services market.
- Tools for investing capital in securities.
- The statistical indicators system of stock valuation.
- Shares valuation and calculation of their profitability.
- Stock price indicators, their rating.
- Classification of shares.

Practical tasks:

Task 1: A dividend of UAH 150 was paid per share. The dividend growth rate is 5%. The return that corresponds to the risk of investing in this stock is 35%. Find the value of the share.

Task 2. An investor purchased a share with a par value of 150 UAH and a dividend rate of 20% per annum. In 3 years he plans to sell the share at a price of 250 UAH. Determine the market value of the share if the required rate of return is 15%.

Task 3. Determine the value of a share and its quotation ratio if the dividend yield of PJSC "Alfa" is 51%. According to the current year's figures, the stock with a par value of UAH 108 has an exchange rate of UAH 104.3, and the amount of dividend per share for the previous year is UAH 15.

Task 4. Shares of PJSC "Niva" with a par value of UAH 120 were sold at the beginning of the year at the exchange rate of UAH 140. The dividend for the year was declared at 11% per annum. Determine the real yield on the dividend level of the shares purchased at the beginning of the year.

Task 5. The annual report of PJSC "Joint Stock Commercial Bank "Capital" for the current year contains the following data per share (in UAH): book price - 27.67; market price range during the year - 33.275 - 38.125; earnings per share - 1.56. Determine the range of changes during the year in the value of the share and the quotation ratio.

Task 6. The share purchased by the investor is promising and will be used for a long time. For the first five years, the investor has made a forecast of dividends, according to which the amount of dividends in the first year will be 100 UAH, and in subsequent years will increase annually by 20 UAH. the rate of current return on this type of stock is 15% per year. Determine the current market value of the stock.

Guidelines for completing the task:

Nominal (issue) value of shares - set by the issuer at the time of issue:

$$\mathbf{P_н = ЗК / N_a}$$

where ЗК - the amount of registered capital;

N_a - number of issued shares;

Market exchange value - the value at which a share is purchased.

$$\mathbf{P_{рин} = (P_н \times К^а)/100,}$$

where $P_{рин}$ - the market value of the share;

$P_н$ - nominal value of the share;

$К^а$ - share price, %;

$$\mathbf{К^а = (D_t /r) \times 100}$$

where D_t - the dividend, %;

r - bank loan interest, %.

If dividends grow every year, the market price of a share is determined by the formula:

$$Ррин = \sum_{t-1}^{n} \frac{Dt}{(1+r)^t}$$

where Ррин - the current market value of the share;

Dt - dividend to be paid in period t;

r - the minimum rate of return acceptable to the investor (discount rate);

n - the number of years the investor has held the share.

The book value of a share is determined by the formula

$$\mathbf{P_б = ЧА/ N}$$

ЧА - the value of the company's net assets, i.e. all assets minus debts (accounts payable, borrowed funds, deferred income);

N - number of paid-in shares.

Estimated exchange rate value of shares

$$\mathbf{P_{ркв} = (P/(N \times r)) \times 100,}$$

where $P_{ркв}$ - the estimated exchange rate value of a share;

P - net profit for the year;

N - number of paid-in shares;

r - the average NBU rate on centralized loans.

The Gordon model is used to calculate the current value of shares with constant dividend growth:

$$Pa = \frac{\text{Do} * (1 + \text{g})}{\text{r} - \text{g}}$$

g - the annual growth rate of dividends,

g = const;

Do - the amount of the last paid dividends.

If an investor plans to sell a share in the future, its market price is determined by the formula:

$$\text{Ррин} = \sum_{t-1}^{n} \frac{\text{Dt}}{(1+r)^t} + \frac{\text{Pn}}{(1+r)^n}$$

where Ррин - the current market value of the share;

Dt - dividend to be paid in period t;

r - the minimum rate of return acceptable to the investor (discount rate);

Pn - the price at which the investor plans to sell the share;

n - the number of years the investor has held the share.

The amount of the annual dividend can be determined by the formula:

$$\mathbf{D_t = N * d_c},$$

dc - annual dividend rate;

N - the nominal price of a share.

The amount of the paid dividend is characterized by the dividend yield, which is calculated using the formula:

$$\mathbf{D_{вих} = D_a / d_a}$$

where D_a - dividend per share,

d_a - earnings per share.

The value of shares, taking into account their demand in the market, is characterized by the P/E ratio (Price to Earning ratio):

$$\mathbf{P/E = P_{рин} / d_{a\,t}}$$

where $P_{рин}$ - the market price of a share

da t - earnings per share for t year.

The quotation ratio is also used to assess the quality of shares in the market:

$$\mathbf{К_К = P_{рин} / P_{К(О)}}$$

where $P_{рин}$ - the market price of the share

Book (accounting) price of a share.

The book price characterizes the share of a joint-stock company's equity capital per share and consists of the nominal value, the share of share premium (the accumulated difference between the market price of the shares sold and their nominal value) and the share of accumulated profits invested in the development of the joint-stock company.

Self-work. Essay topics:

1. Current trends in the application of dividend policy.
2. The concept of market value of shares by M. Miller-F. Modigliani.
3. The concept of "A bird in the hand" by M. Gordon, E. Brigham, J. Lintner.
4. The concept of integrated policy by J. Walter.
5. Comparative characteristics of dividend payment methods.
6. Common and distinctive features between common and preferred shares.
7. Preferred shares and their regulatory regulation.

Key terms and concepts: share issue, share statistics, share quality, share liquidity, market capitalization, market capacity, share index, nominal, book, market value of shares, dividends, ordinary and preferred shares, concept of market value of shares, dividend policy of a joint-stock company, methods of dividend payment.

Topic 3. Financial services in the debt capital market

3.1. General characteristics of services in the debt capital market
3.2. Bank lending
3.3 Factoring and forfaiting services
3.4. Leasing services

Questions for control:

- Principles, concepts, classification of bank loans.
- Methods of calculating interest on loans.
- Methods of lending to bank customers.
- Forms of loan account.
- Loans related to bill circulation.
- Loans secured by securities.
- The concept of a mortgage loan.
- Types of non-standard loans.
- The concept of consumer credit.
- The concept of a consortium loan.
- Assessment of the borrower's creditworthiness.
- Content and sequence of factoring operations.
- Calculation of factoring payments.
- Content and sequence of forfaiting operations
- Calculation of forfaiting payments.
- The essence and types of leasing.
- Procedure for executing a financial leasing agreement.
- Provision of financial leasing services.
- Calculation of lease payments.

Practical tasks:

Task 1. Based on the data given, determine the fee for factoring services: - a commercial bank has purchased invoices from an enterprise in the amount of UAH 150 thousand; the loan fee is set at 30% per annum; - the average turnover period in settlements with customers is 20 days; - the commission fee for factoring services is 5%.

Task 2. The amount of the factoring transaction is USD 400 thousand. The advance payment is 80%, the factor's commission is 3%. The payment for paperwork amounted to USD 315. Interest on the balance was accrued at the annual interest rate of 15% per annum. The debtor repaid the balance

within 120 days from the date of the transaction. The credit risk premium is 2%. What amount will the firm that sold the accounts to the factor receive?

Task 3. An enterprise supplies goods in the amount of UAH 16,000,000, the turnover of this receivable is 20 times a year. To accelerate the repayment of this debt, it was transferred to the factoring department of the bank on the following terms:

- provisioning rate - 15%.
- bank's commission fee - 0.5%.
- interest rate for a factoring loan - 25%. Determine the amount of money the company will receive from this transaction and the amount of the bank's income.

Task 4. Forfaiter has purchased a batch of 4 promissory notes from a customer with a term of 2 years, each with a face value of $17,500. Payments on these bills are made 2 times a year, i.e. every 180 days. In this case, the forfaiter provides the client with 3 grace days for settlement. The interest rate on the bills is 10% per annum. Calculate the amount of discount and the amount of payments of the forfeiter to the client for the bills purchased from him, taking into account the average term of forfeiture.

Task 5. A bill of exchange for 5 years for goods worth £994.0 thousand and a total nominal value of £1550.0 thousand, which pays 16.5% annually, is used in forfaiting calculations. You need to calculate the nominal value of the promissory notes for forfeiture if:

1) the sale price is divided into equal parts and a percentage of the amount of the outstanding debt is added to each part;

2) the sale price is divided into equal parts and the interest is accrued for each part for the entire term of the debt obligation and is collected annually;

3) the bill of exchange is used with an equal face value calculated according to the formula of approximate amounts of annual payments.

Task 6. On 01.12.202x, the bank entered into a financial leasing agreement with an enterprise, according to which a car worth UAH 134,000 was purchased. The costs associated with the execution of the financial leasing agreement amounted to UAH 3700 and are paid by the lessee. The lease term is 2.5 years. The interest rate on the lease is 18% per annum and is paid at the end of each month. The agreement provides for the transfer of the car to the ownership of the lessee upon expiration of the lease term. The present value of an ordinary annuity of 1 monetary unit (for a period of n = 30, i = 1.5 %) is 24.01584.

Calculate the regular lease payments using the methods you know. Which of these methods is the most attractive for the lessor and the lessee? Justify your conclusions.

Task 7. Carry out a comparative analysis of the feasibility of purchasing equipment by an enterprise on the basis of a bank loan and a financial leasing agreement. Justify your conclusions.

The company plans to purchase additional equipment worth 312 thousand UAH. The service life of the equipment is six years. To solve this problem, you can use a bank loan in the amount of 312 thousand UAH at 20% with annual repayment of the principal amount of debt for two years. You can also conclude a financial leasing agreement for a period of four years with annual lease payments. Full reimbursement of the property value is made in equal installments. Lease payments are accrued at a rate of 15% of the residual value of the leased asset.

Task 8. A firm has entered into an agreement with a bank to provide a loan of UAH 200 thousand for a period of 2 years under the following conditions: for the first year the loan fee is 20% per annum at a simple rate, and in each subsequent half-year the loan interest increases by 1%. Calculate the accrued amount of debt at the end of the 2nd year.

Task 9. The loan agreement provides for a loan in the amount of UAH 150 thousand for a period of 3 years under the following conditions: for the first year the loan fee is 18% per annum, and in each subsequent quarter the loan interest increases by 1.5%. Calculate the accumulated amount of debt at the end of the 3rd period.

Guidelines for completing the tasks:

Bank lending

Stages of bank lending:

Stage I - consideration of the client's application for a loan.

Stage II - determination of the class (for individuals - up to the 5th class, for legal entities - up to the 9th class) of the probability of client default.

The third stage is loan structuring. At this stage, the type, term of use, collateral, disbursement and repayment procedure, and the cost of the loan transaction are determined.

The net loan amount is calculated using the following formula:

$$Рч = \sum_{t}^{n} \frac{Pt}{(1+i)^t}$$

where i - the real interest rate;

Рч - net loan amount, i.e. the amount of funds disbursed to the consumer or transferred to the recipient's account at the time of loan disbursement,

t - the serial number of the loan agreement period (month or day);

n - the total remaining number of periods of the loan agreement (months or days) as of the date of calculation;

Pt - the amount of funds that the consumer pays to the bank and/or other t persons under the loan. The flow includes payments to repay the principal debt on the loan, interest on the loan, commission in favor of the bank, payments in favor of third parties that are paid in accordance with the loan received and are related to the servicing and repayment of the loan.

The principal amount of the loan, determined in accordance with the terms of the agreement (P), is calculated as follows:

$$\mathbf{P = P_ч + К_{кб} + П_в}$$

$P_ч$ - the net loan amount,

$К_{кб}$ - the amount of funds withheld by the bank at the time of disbursement,

Payments made by the consumer at the expense of his/her own funds to fulfill the loan conditions.

The calculation of the amount of interest for the use of credit funds by the client is determined using the following formula:

$$\mathbf{I} = \frac{\mathbf{P*i*n}}{\mathbf{B*100}}$$

where I - the amount of accrued interest,

P - principal amount of the loan (loan body),

i - interest rate,

n - the term of the agreement,

B - base period (actual number of days in a year – 365 or 366).

Formula for calculating simple interest:

$$\mathbf{I} = P * \frac{\mathbf{i*n}}{\mathbf{100}}$$

The amount S to be refunded (loan + interest) is calculated using the formula:

$$\mathbf{S} = P * (\mathbf{1} + \frac{\mathbf{i*n}}{\mathbf{100}})$$

Calculation using the compound interest formula:

$$\mathbf{I} = P * ((\mathbf{1} + \frac{\mathbf{i}}{\mathbf{100}})^{\mathbf{n}} - \mathbf{1})$$

$$\mathbf{S} = P * (\mathbf{1} + \frac{\mathbf{i}}{\mathbf{100}})^{\mathbf{n}}$$

Stage IV – conclusion of a loan agreement.

Leasing services

Figure 1 - Scheme of leasing operations

Periodic lease payments are divided into the following types according to the methods of their calculation:

- regular payments, i.e. payments made at regular intervals, including:
- constant payments (annuity);
- payments with variable reimbursement of the leased asset value;
- payments with reimbursement of the leased asset in equal installments;
- irregular payments - lease payments are agreed by the parties in accordance with a schedule that specifies certain payment terms and amounts.

Regular payments provide for the payment of the same amount of lease payment at regular intervals. This mechanism of money inflow (outflow) is called an annuity.

The main requirement is equality of the total present value of the payments and the value of the property offered for leasing. If the contract provides for an advance payment, the value is taken into account minus the amount of the advance payment. Thus:

$$P - S\frac{1}{(1+i)^n} = L\frac{1-(1+i)^n}{i}$$

where P - the initial cost of the leased asset;

n - number of periods;

i - interest rate for the specified period;

S - residual (redemption) value of the leased asset;

L - lease payment.

The amount of the lease payment is calculated by the formula

$$\mathbf{L} = \left(P - \mathbf{S}\frac{\mathbf{1}}{(\mathbf{1}+\mathbf{i})^{\mathbf{n}}}\right) * \left(\frac{\mathbf{i}}{(\mathbf{1}-(\mathbf{i}+\mathbf{1})^{\mathbf{n}}}\right)$$

The total amount of lease payments is calculated as the product of the lease payment received and the number of lease payments.

The distribution of the lease payment for debt amortization (reimbursement of the leased asset) and interest is made sequentially. The amount allocated to reimburse the cost of the leased asset is determined as the difference between the lease payment and interest accrued on the outstanding balance:

$$d_t = L\text{-}D_{t-1}*i$$

where d_t - the amount to be reimbursed for the value of the property in period t = 1, ... , n;

D_{t-1} - the balance of debt for the leased asset at the end of period t-1.

This method of calculating lease payments (annuity) is mostly used when leasing general-purpose fixed assets and equipment, the return on which is practically independent of the term of use and related physical depreciation.

Lease payments with variable reimbursement of the leased asset.

The terms of reimbursement of the leased asset provide for the possibility of changing (increasing or decreasing) lease payments with a constant growth rate (decrease) in each period. Thus, the scheme of accelerated (reduced) reimbursement of the leased asset value is being implemented. Lease payments are calculated as follows:

$$L_t = L_1 * (1+k)^{t-1}$$

where L_t - the lease payment in period t;

L_1 - the amount of the first lease payment;

t - leasing period = 1, ... , n

k - the growth rate.

If k > 0, there is an accelerated amortization of debt, if k < 0, on the contrary, the rate of recovery of the leased asset slows down.

The amount of the first lease payment is determined by the following formula:

$$L = \left(P - S\frac{1}{(1+i)^n}\right) * \left(\frac{i-k}{\left(1-(\frac{1+k}{1+i})^n\right.}\right)$$

The distribution of the lease payment for debt amortization (reimbursement of the leased asset) and interest is made in the same way: the amount to be used to repay the value of the property is calculated as the difference between the lease payment and the interest accrued on the outstanding balance.

Lease payments with reimbursement of the leased asset in equal installments.

When applying this method, the leased asset is reimbursed in equal installments. The amount of periodic compensation for the leased asset is determined based on the value to be repaid and the number of periods:

$$\mathbf{d = \frac{P-S}{n} = const}$$

where d - the amount of periodic reimbursement of the leased asset.

The amount of the lease payment is calculated as the sum of the lease object reimbursement and interest, and the interest is calculated based on the amount of debt for the lease object at the beginning of the period.

The lease payment is calculated using the following formula:

$$\mathbf{L_t = D_{t-1} * i + d}$$

The balance due for the leased item (D_t.) at the beginning of each subsequent period is determined as the difference between the balance due at the beginning of the previous period (D_{t-1}) and the amount of periodic reimbursement of the leased item (d).

Irregular lease payments.

In some cases, clients try to pay off the leased asset faster and thereby reduce the amount of interest paid to the leasing company. He offers a scheme of lease payments, according to which their amount in the first periods is quite significant, and after a while it decreases sharply. In this case, the amount of interest received by the lessor will be less than under the regular payment scheme. The leasing company may also increase the lease interest by a compromise amount. Sequence of calculation of irregular lease payments:

1. A schedule of lease payments is agreed upon.

2. The payments are divided into reimbursement of the leased asset and interest.

3. The flow of lease payments is discounted, except for the last payment, as its amount needs to be clarified. The calculation of the amount of discounted lease payments is based on the formula:

$$L = \sum_{t=1}^{n-1} Lt \frac{1}{(1+i)^t}$$

4. The present value of the last lease payment is calculated as the difference between the value of the property and the discounted amount of lease payments:

$$\mathbf{Ln} = \left(\mathrm{P} - \mathbf{S}\frac{\mathbf{1}}{(\mathbf{1}+\mathbf{i})^{\mathbf{n}}} - \sum_{\mathbf{t=1}} \mathrm{Lt}\ \frac{1}{(1+\mathrm{i})^{\mathrm{t}}} \right)$$

5. The amount of the last lease payment ensures equality of the amounts of payments and debts for the leased asset.

The future value of the last lease payment is calculated. The amount of the last lease payment is determined by the formula:

$$\mathbf{Ln} = \left(\mathrm{P} - \mathbf{S}\frac{\mathbf{1}}{(\mathbf{1}+\mathbf{i})^{\mathbf{n}}} - \sum_{\mathbf{t=1}} \mathrm{Lt}\ \frac{1}{(1+\mathrm{i})^{\mathrm{t}}} \right)$$

Factoring and forfaiting services:

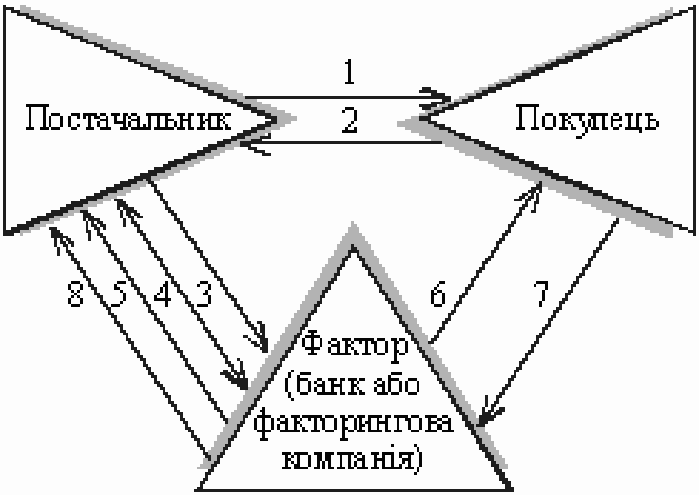

Figure 2 - Scheme of factoring operations

The procedure for factoring operations:

1. Shipment of goods (works, services) to the buyer by the supplier.
2. Acceptance by the buyer of debt claims for goods (works, services).
3. Presentation of debt claims by the supplier to the factor for the purpose of their assignment.
4. The factor determines the supplier's creditworthiness and, if the result is positive, enters into a factoring agreement with the supplier.
5. Transfer of funds to the supplier in the amount of 70-90% of the amount of debt claims purchased by the factor.

6. Issuance of debt claims by the factor for payment by the buyer.

7. Payment by the buyer of the debt claims issued by the factor.

8. Upon receipt of payment from the buyer, the factor transfers the remaining balance (30 - 10%) to the supplier minus the factoring service fee.

Algorithm for solving the problem:

1. Determination of the average receivables size of the enterprise

2. Determination of the amount of reserve deductions

3. Determination of the amount of accrued commissions for the collection of accounts.

4. Determination of the amount of accrued interest on a factoring loan, taking into account the turnover of receivables is for the year and the term of the factoring loan.

5. Determination of the amount to be transferred to the borrower's account, taking into account that the amount of the reserve will be returned to the company after repayment of the debt to debtors.

6. Calculation of total income and profitability of the transaction for the financial institution for the factoring service provided.

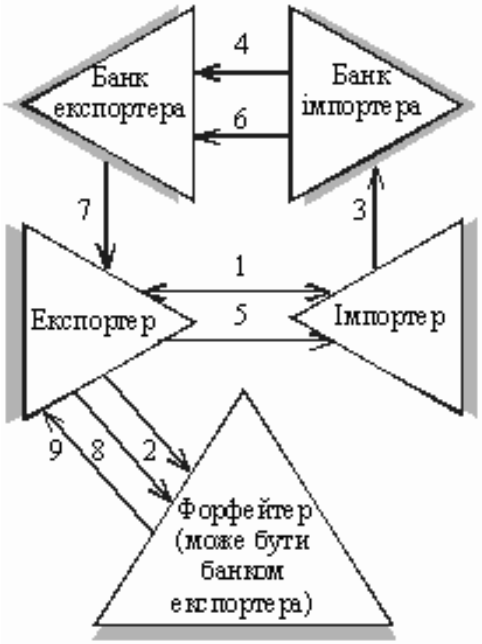

Figure 3 - Scheme of forfaiting operations

Conducting forfeiting operations:

1. The exporter and the importer agree on the delivery of goods and the procedure for their payment.
2. The exporter looks for a forwarder.
3. The importer draws up a series of bills of exchange and finds a bank that guarantees or avalizes the bills.
4. Sending guaranteed or avalized bills to the exporter's bank.
5. Delivery of the goods.
6. Authorization to transfer the bills to the exporter.
7. Provision of bills of exchange to the exporter.
8. Sale of bills of exchange by the exporter to the forfeiter.
9. Receipt of funds from the sold bills.

The calculation of the nominal value of bills of exchange to be forfeited is based on an agreement between the importer and the exporter that payment for goods or services will be made by issuing medium-term debt obligations. The exporter sets the nominal value of these bills using the following formula:

$$\mathbf{P = P_v – (P_v * Y/100)}$$

P - the sale price;

P_v - the price of the bill;

Y - the direct discount rate.

Two schemes are used to calculate the value of the paddles:

Table 1 – Calculation of forfaiting payments

Factoring service	**Forfaiting service**
The principal is repaid in equal installments, and interest is accrued on the outstanding balance	The principal is repaid in equal installments, and interest is accrued on the portion of the debt covered by the forfeiture bill
Interest payment in the period t	
$I_t = P * i * (1 - \frac{t-1}{n})$	$I_t = \frac{P}{n} * t * i$
Total amount of accrued interest	
$\sum_{t=1}^{n} It = P * i * \frac{n+1}{2}$	$\sum_{t=1}^{n} It = P * i * \frac{n+1}{2}$

Continuation of table 1

The nominal value of the bill to be redeemed in period t	
$V_t = \frac{P}{n}[1+(n-t+1)i]$	$V_t = \frac{P}{n}(1+ it)$
Total value of bills of exchange	
$\sum_{t=1}^{n} Vt = P * (1 + \frac{n+1}{2} * i)$	$\sum_{t=1}^{n} Vt = P * (1 + \frac{n+1}{2} * i)$
Correction factor	
$Z_1 = 1 + \frac{n+1}{2}(i - d\text{-}di\frac{n+2}{3})$	$Z_2 = 1 + \frac{n+1}{2}(i - d\text{-}di\frac{2n+1}{3})$
Present value of bills of exchange	
$A = P * Z_1$	$A = P * Z_2$
Adjustment interest rate	
$i = \frac{d}{1 + \frac{(n+2)\,i}{3}}$	$i = \frac{d}{1 - d\frac{(2n+1)}{3}}$
Adjustment discount rate	
$d = \frac{i}{1 - \frac{(n+2)\,i}{3}}$	$d = \frac{i}{1 + i\frac{(2n+1)}{3}}$
Present total costs of the importer	
$A1 = \frac{P}{n * Z1}\sum_{t=1}^{n}\frac{1+(n-t+1)i}{(1+j)^t}$	$A2 = \frac{P}{n * Z1}\sum_{t=1}^{n}\frac{1+it}{(1+j)^t}$
Net present value of the forfaiting project	
$NPV = P\,(1 - \frac{1}{n\,(1-d\frac{(n+1)}{2})} * \frac{(1+j)^n-1}{j(1+j)^n}$	

where P - the initial amount (price of the goods),

r - simple annual interest rate,

m - number of conversion periods per year,

t - the duration of the financial transaction, years,

i - interest rate for the conversion period, in general: i = r / m,

d - the compound interest rate for the conversion period,

n - the total number of conversion periods, which is determined by the formula:

n = m * t.

Self-work. Essay topics:

1. Factoring and forfaiting as the newest tools for financing the activities of enterprises
2. Problems of non-performing loans in the total volume of bank loans issued
3. Formation of a reserve to cover possible losses on loans from commercial banks
4. Use of the provision for possible losses on commercial bank loans
5. Bank lending in Ukraine and its modeling by methods of system dynamics
6. The main differences between financial and operational leasing
7. Types of forfaiting and the process of concluding a forfaiting agreement
8. Common and distinctive features between forfaiting and factoring

Key terms and concepts: credit, borrowed capital, simple interest, compound interest, commercial credit, consumer credit, credit card, factoring, forfaiting, leasing, acceptance, aval, fixed and floating interest rate, credit line, counterparty credit (overdraft), on-call credit, credit in national currency; loans in foreign currency; loans in several currencies; working capital loan; investment loan; securities loan; seasonal loan; import loan; export loan; mortgage loan; borrower's creditworthiness assessment; credit risk; fine, penalty, forfeit, credit limit, promissory note.

Topic 4. The market of banking services

4.1 Services of commercial banks and their types
4.2. Settlement and cash services for clients of commercial banks
4.3. Intermediary and guarantee services of commercial banks
4.4. Consulting services, trust (fiduciary) services
4.5. Financial engineering

Questions for control:

- Features of banking services and banking products and their main types.
- Classification of banking services.
- Procedure for settlements by payment order, payment request, payment request-order
- The procedure for settlements by checks.
- Settlements using letters of credit.
- Settlements when offsetting mutual debts.
- Interbank settlements.
- Settlements using payment cards.
- Remote banking services.
- Organization of cash payments
- Organization of the bank's cash desk
- Cash transactions through ATMs.
- Settlement operations of banks with bills of exchange
- Guarantee operations of banks with bills of exchange: bill avalization
- Commission operations of banks with bills: collection and domiciliation of bills
- Trust operations of banks with bills of exchange: storage of clients' bills of exchange
- Guarantee operations of banks
- Trust services of banks
- Other non-traditional banking operations.
- Banking services in financial engineering.

Practical tasks:

Task 1. The trust department of Bank Alfa has entered into an agreement with Beta JSC on mediation in the placement of the company's shares and payment of dividends on them. The bank undertook to place 17 thousand shares, including 4.3 thousand preferred shares. The fixed dividend

rate on the preference shares is 11%. All shares have the same par value of UAH 1000. The terms of the agreement stipulate that if the bank fails to place any part of the shares, it is obliged to buy them from JSC Beta at par value.

The bank placed the shares as follows: 4 thousand ordinary shares were transferred to the state, and the remaining ordinary shares - 9 thousand - were purchased by individuals; 4 thousand preferred shares remained unplaced.

Some time later, Beta JSC repurchased 800 ordinary shares from its shareholders. After the end of the reporting year, the general meeting of Beta JSC approved the amount of profit received for the reporting period - UAH 9 million, of which UAH 4.2 million is to be allocated for dividend payments.

What should the bank do with the unplaced preferred shares of Beta JSC? Determine the amount of dividends per 1 share. Where should the funds belonging to the shareholders as dividends be transferred to, and from what source should the bank pay the dividends?

Task 2. In order to attract funds from individuals, Gamma Bank offers them to manage these funds. To do this, the bank will compare the income received by the principal with the income in foreign or national currency at the currency equivalent.

The terms of management stipulate that the bank accepts funds in hryvnia at the rate of 50% per annum with repayment in 18 months in the national currency at the currency equivalent or in the currency. The dollar exchange rate at the beginning of the term of the trust deposit was UAH 31.8 per dollar. At the end of the term, the exchange rate was UAH 36.8 per dollar. The commission fee for cash management is equal to 4.5% of the principal's income. The funds provided to the bank for management are 10 thousand dollars.

Explain the expediency, from the point of view of the principal, of concluding an agreement with the bank for cash management on the terms of payment of income in foreign currency and in national currency at the currency equivalent.

Task 3. A Ukrainian factory makes payments to a plant in Krakow (Poland) using a letter of credit. The contract between them provides for the use of an irrevocable letter of credit in the amount of UAH 176 thousand. On April 10, the factory asked Kredit Bank to open an uncovered letter of credit. The correspondent agreement between the issuing bank and the executing bank stipulates that the bank will pay a commission of 0.1% for advising and other operations with the letter of credit. After checking all the neces-

sary documents of the factory, the commercial bank opened an uncovered letter of credit for the factory to make payments to the Polish plant. On April 18, the issuing bank received from the executing bank a register of documents for UAH 176 thousand and other documents required by the letter of credit. The confectionery factory's current account balance as of April 18 was UAH 30 thousand.

Determine: 1) the essence of the bank's guarantee when opening uncovered guaranteed letters of credit;

2) what documents regulate the relations between the parties involved in settlements by guaranteed letters of credit;

3) what account entries should be made by the bank when opening a letter of credit and receiving documents from the executing bank on payment of funds.

Task 4. Conduct a credit scoring of yourself in terms of determining your ability to obtain and repay a consumer loan in the amount of UAH 100 thousand. What class of borrower do you belong to in terms of debt service reliability?

Task 5. A bank has credited a bill of exchange in the amount of UAH 3560 80 days before the due date. The simple discount rate is 12 %. The number of days in a year is 360. Determine the discount and the value of the bill of exchange, taking into account the monthly inflation rate of 7 %.

Guidelines for completing the tasks:

Bills of exchange submitted for accounting must have at least two signatures: the drawer and the first drawee. The amount to be deducted in favor of the bank consists of the interest rate (discount), and for nonresident bills - also porto (postage) and damno (commission for collection of nonresident bills). The discount amount (D) is calculated using the following formula:

$$\mathbf{C = (К \times Т \times В) / (100\ \% \times 360)}$$

where K - the nominal amount of the bill;

T - the period from the date of recognition to the date of payment under the bill, days;

B - interest rate for bills of exchange.

The discount rate applied by the bank when accounting for bills of exchange is closely related to the interest rate on ordinary lending transactions and can be calculated using the following formula:

$$\mathbf{D} = \frac{\mathbf{R}\frac{\mathbf{n}}{\mathbf{360}}}{\mathbf{1} + \mathbf{R}\frac{\mathbf{n}}{\mathbf{360}}} \mathbf{x} \frac{\mathbf{n}}{\mathbf{360}}$$

where D - the annual discount rate, %,

R - the annual interest rate, %,

n - the number of days until the bill matures.

The amount to be paid to the bearer of a bill of exchange at the time of its acceptance by the bank is calculated using the following formula:

$$\mathbf{AP = NV\ (1 - D\frac{n}{360})}$$

AP - the amount paid to the bearer of the accounted bill,

NV - the nominal value of the bill.

The coefficient characterizing the current solvency of an individual borrower ($К_{ПП}$) is determined by the following formula:

$$\mathbf{К_{ПП} = СЧД\ /\ ВДЗ_{кр}}$$

СЧД - the borrower's total net income for the month;

$ВДЗ_{кр}$ - monthly loan repayment and interest payment obligations of the borrower.

In this case, the borrower's total net income is defined as the difference between the borrower's monthly expected total income and total expenses and liabilities:

$$\mathbf{СЧД = СД - СВ}$$

where СД - the borrower's total income, as evidenced by relevant documents. The total income of the guarantor, confirmed by the relevant documents (in case of concluding a guarantee agreement), is also taken into account;

СВ - total expenses of the borrower. The monthly minimum level of the borrower's total expenses may not be less than the amount determined by the bank for a particular loan product.

The loan collateralization level (ЗК) is defined as the ratio of the collateral value of the proposed collateral to the loan amount and interest thereon:

$$\mathbf{З_К = В_З\ /\ С_{кр} + В_{кр}}$$

where $В_З$ - collateral value determined by the relevant structural unit based on the opinion of an independent expert;

$С_{кр}$ - loan amount;

$В_{кр}$ - accrued interest for one month of using the loan. The bank assigns a score to each of the calculated values of the indicators (Table 2).

Table 1 - Quantitative indicators for assessing the financial condition of an individual borrower

Indicator	The value of the indicator	Point
Total net income of the borrower	СЧД ≥ 50% ВДЗкр	5
	СЧД ≥ 25% ВДЗкр	3
	СЧД less 25% ≥ ВДЗкр	1
	СЧД ≤ВДЗкр	0
Funds on bank accounts	The amount of funds exceeds the loan amount	4
	The amount of funds is less than the loan amount	2
	No funds on the accounts	0
Loan collateral	Collateral amount ≥ 50% of the loan amount	5
	Collateral amount ≥ 25% of the loan amount	3
	Collateral amount less than 25% ≥ loan amount	1
	The collateral amount is less than the loan amount	0

Table 2 - Indicators for analyzing the creditworthiness of a legal entity borrower

Indicator	Calculation algorithm	Normative value
Liquidity indicators		
Instant liquidity ratio (IL1)	**КЛ$_1$ =Ав / Зп** , where **Ав** - highly liquid assets = Cash and cash equivalents + Current financial investments; **Зп** - Current (short-term) liabilities = Short-term loans + Settlements with creditors	≥0,2
Current liquidity ratio (CL2)	**КЛ$_2$ =Ал / Зп ,** where **Ал** - liquid assets = Highly liquid assets + Accounts receivable + Promissory notes received	≥0,5
Total liquidity ratio (TL3)	**КЛ = Ао / Зп ,** where Ao - current assets	≥2,0

Continuation of table 2

Debt indicators		
Fixed asset coverage ratio	Fixed assets / Equity	0,75...1
Short-term debt ratio	Short-term liabilities / Equity	>0,5
Total debt coverage ratio	Total liabilities / Equity	≤2
Debt repayment indicators		
Cash flow ratio	Profit - Taxes + Depreciation - Dividends/short-term borrowings	= 1
Interest expense ratio	Profit before tax + Interest payments / Interest payments	≥1
Financial stability indicators		
Equity maneuverability ratio	КМ = (Вк – Ан) / Вк , where Вк is the company's equity capital; Ан - non-current assets	≥0,5
Independence ratio	КН = Зк / Вк , where Зк - borrowed funds (long-term + current liabilities)	≤1
Business activity indicators (turnover)		
Receivables turnover ratio	Average amount of accounts receivable * 365 / Amount of sales on credit	
Inventory turnover ratio	Inventories * 365 / Cost of goods sold	
Accounts payable turnover ratio	Invoices payable * 365 / Amount of purchases	
Profitability indicators		
Return on assets	ROA = net income / total assets * 100%	
Return on sales	Рп = net profit / Ор * 100%, where Ор is the volume of product sales (excluding VAT)	
Return on shareholders' equity	Net income / Shareholders' equity*100%	

Continuation of table 2

Indicators of the borrower's funds assessment		
Equity coverage ratio	Sources of equity / Balance sheet currency	≥0,5
Ratio of equity and debt	Equity - (Property, plant and equipment + Other non-current assets) / Loans + settlements with creditors of all types	≥0,5

Self-work. Essay topics:

1. Problems of trust services in Ukrainian banks.
2. Use of bank guarantees by banks of Ukraine.
3. Operations with precious metals in Ukrainian banks: state and prospects.
4. The use of bank payment cards in modern settlements.
5. Problems of protecting the interests of bank depositors.
6. Modern practice and features of the provision of settlement services by banking institutions.
7. Practice and problems of development of new settlement services in Ukraine
8. Common and distinctive features of the concepts of "banking metals" and "precious metals".
9. Problems and features of investing in precious metals.
10. Modern practice and problems of providing trading services in the market of precious metals in Ukraine.
11. Features of precious metals trading on world markets.
12. Legislative regulation of the precious metals market in Ukraine.
13. The practice of forming the gold and foreign exchange reserve of Ukraine.
14. Prospects for the development of Internet banking.

Key terms and concepts: cash payments, non-cash payments, customer accounts, payment order, payment request, payment request-order, check, letter of credit, interbank settlements, payment cards, ATMs, bill of exchange, collection, domiciliation, avalization, storage of bills of exchange, commission operations of banks, trust operations of banks, guarantee operations of banks, trust services of banks, non-traditional banking operations, financial engineering, precious metals market, precious metals, bullion, world gold markets, free markets for precious metals, controlled markets, principles of functioning of the precious metals market, operations with precious metals.

Topic 5. Financial services of non-bank financial institutions

5.1. Economic essence and functions of non-bank financial institutions
5.2. Services of financial companies
5.3. Activities of credit unions in the financial services market
5.4. Services of pawnshops
5.5. Activities of funded pension institutions
5.6. Activities of collective investment institutions
5.7. Financial services in the insurance market

Questions for control:

- Non-bank financial services market participants, their types and functions.
- Conditions for the establishment and operation of non-bank financial institutions.
- Classification of non-bank financial institutions.
- The system of interaction between financial services market participants in the processes of capital accumulation and movement.
- Financial companies as non-bank institutions of the credit system.
- Credit unions (cooperatives, partnerships).
- Financial services of pawnshops.
- Financial services for risk transfer by insurance companies.
- Financial services of non-state pension funds.
- Services of collective investment institutions.
- Market of auxiliary and related services in the field of financial activities.

Practical tasks.

Task 1. A loan in a Credit Union is issued for six months at a simple discount rate of 15%. Calculate the amount that the borrower will receive and the amount of the discount if you need to return 25,000 UAH.

Task 2. A deposit is made to a credit union in the amount of UAH 625,000 for 8 months at a simple interest rate of 25% per annum. Determine the real income of the depositor if the expected monthly inflation rate is 1.5%.

Task 3. On January 1, 2022, a client deposited UAH 2000 in a CS account at 6 percent per annum and under the condition that no interest is charged on the interest. What amount will be on this account on January 1, 2024, if the CS compounds interest annually?

Task 4. Alpha LLC insured its property worth UAH 153500 for the amount of UAH 85000. As a result of an accident, a crash accident occurred. The emergency commissioner recognized the accident as insured and estimated the losses in the amount of UAH 22300. Calculate the amount of insurance indemnity, provided that the property was insured under:

1) proportional liability;
2) insurance system at the actual value of the property;
3) first risk system.

Determine the amount of insurance indemnity if:

- conditional deductible was 10% of the sum insured;
- the unconditional deductible is 15% of the sum insured.

Task 5. A citizen has entered into a voluntary accident insurance contract with an insurance company for a period of 1 year for the amount of UAH 60 thousand. A month after the contract came into force, the citizen suffered an injury that caused disability for 120 days, after which he received a group II disability. Determine the amount of the total insurance payment for insured events, if the insurance company pays 0.15% of the sum insured for each day of temporary disability.

Task 6. 10 years before retirement, a citizen decided to make contributions to a private pension fund, which would provide an annual payment of 10 thousand UAH for ten years after retirement. What amount should be set aside annually on a deposit with capitalization of interest, if the annual interest rate is 11.3%?

Task 7. The amount of required investment in the project is 18000 UAH. Income is expected: in the first year - 1500 UAH; in the next 8 years - 3600 UAH annually. Determine the net present value of the project, the index of return, if the required annual interest rate is 11%, and evaluate the feasibility of the project.

Guidelines for completing the tasks:

To calculate the loan amount that the borrower will receive, use the formula:

$$P = S \times (1 - n \times i)$$

where P - the amount of the initial amount of money;

S - the accrued amount;

n - the length of the accrual period;

i - the discount rate.

To determine the amount of discount, use the following formula:

$$D = S - P$$

where D - the discount amount for the interest accrual period.

The actual amount of the owner's income from the deposit is estimated by adjusting the nominal amount of income by the inflation index for the period during which interest is accrued on the deposit:

$$\mathbf{S_р = S_н / I_{інф}}$$

where Sp is the real future value;

$S_н$ - nominal future value;

$I_{інф}$ - inflation index.

Calculation of the nominal future value of the deposit:

$$\mathbf{S_н = P \times (1+ i \times n)}$$

The following formula is used to calculate the inflation index for the period during which interest is accrued on the deposit:

$$\mathbf{I_{інф} = (1+ T_{інф}) t}$$

where $\mathbf{T_{інф}}$ - the inflation rate per month,

t - the length of the calculation period in months.

Compounding is the process of calculating compound interest, i.e., calculating interest on an amount that includes interest accrued from the previous period.

$$\mathbf{S=P*(1+i*n)}$$

If an object was insured at its actual value, the insurance indemnity is equal to the full amount of losses.

To calculate the insurance indemnity under the proportional liability system, the following formula is used:

$$\mathbf{Q = T \text{ x } S/W}$$

where T - the actual amount of losses;

S - sum insured under the agreement;

W - the value of the insured object.

Insurance indemnity under the first-risk system provides that all losses within the sum insured (first risk) are indemnified in full, and losses exceeding the sum insured (second risk) are not indemnified by the insurer at all.

The future value of the accumulated funds at the time of retirement is equal to the amount of payments for that period:

$$\mathbf{R ((1+i)^m-1) / i = W (1-(1+i)^{-n}) / i}$$

where R - the amount to be deposited,

m - number of years until retirement,

W - the amount to be received

n - the number of years during which the amount will be received.

Hence:

$$\mathbf{R = W\frac{1-(1+i)^{-n}}{(1+i)^m-1}}$$

Net present value (NPV) is the difference between the present value of income and the present value of invested funds, i.e:

$$\mathbf{NPV\ (r, n, A, R) = P\ (r, n, R) – E\ (r, n, A)}$$

where n - the duration of the investment project in time periods;

A_t - the amount of investment at time $0 \le t \le n$;

A = (A0, A1, ... An) is the investment vector;

Rt - project income at time t,

R = (R0, R1, ... Rn) is the vector of revenues;

r - the required rate of return on the project.

$$\mathbf{P\ (r, n, R)} = \sum_{t=0}^{n} \frac{R_t}{(1+r)^t}$$

$$\mathbf{E\ (r, n, A)} = \sum_{t=0}^{n} \frac{A_t}{(1+r)^t}$$

The net present value characterizes the possible increase (decrease) in the investor's capital as a result of the project implementation. If NPV (r,n) > 0, the investment project is profitable, otherwise it is unprofitable.

Net Future value (NFV) is the net value of project income at time t = n. It is calculated by increasing the sum of NPV at time t = n

$$\mathbf{FV\ (r, n, A, R) = NPV\ (r, n, A, R)\ (1+\ r)^{\ n}}$$

The NPV and IRR are absolute indicators, and along with them, such relative indicators as the yield index and the internal rate of return are widely used.

Profitability index (PI) is the ratio of the present value of income to the present value of investment.

$$\mathbf{PI\ (r, n, A, R)} = \frac{\mathbf{P\ (r,n,R)}}{\mathrm{E\ (r,n,A)}}$$

The internal rate of return (IRR) is the interest rate r at which the net present value of the project is zero, i.e.:

$$\mathbf{NPV\ (IRR, n, A, R) = 0}$$

Self-work. Essay topics:

1. The concept and types of pension payments under NPF. Terms and conditions of their implementation.
2. Management of financial resources of non-state pension funds.
3. Risks of NPF operation.
4. Methods of assessing the reliability of non-state pension funds.
5. Foreign experience of non-state pension provision and the possibility of its use in domestic practice.
6. Trust management of financial assets.
7. Collective investment services.
8. Intermediary operations in the insurance market.

9. Risk transfer by insurance companies.
10. Prospects for the development of financial companies and pawnshops.
11. Potential for further development of non-state pension funds in Ukraine.
12. Characteristics of the instrumental infrastructure of NPFs

Key terms and concepts: financial services market infrastructure, financial intermediaries, financial intermediation, types of financial services subject to mandatory licensing, direct financing, indirect financing, non-bank intermediation, market-oriented model of financial intermediation, mixed model of financial intermediation, depository institutions, contractual savings institutions, investment intermediaries, savings and loan associations, restrictions on the provision of financial services, financial companies, microcredit, pawnshop, credit union, assets of a collective investment institution, assets of a non-state pension fund, value of net assets of a collective investment institution, mutual investment fund, professional asset management activity, insurance company, insurance policy, insurance payment, insurance indemnity, insurance rate, insured amount.

Topic 6. Financial services in the securities market

6.1. General characteristics of financial services in the securities market
6.2. Services for servicing the issuance and trading of securities
6.3. Activities on the provision of services for the storage of securities, maintenance registers for registered securities holders and settlement and clearing services
6.4. Services for the organization of trade and management of securities
6.5. General characteristics of services in the markets of derivative financial instruments
6.6 Hedging services with futures and forward contracts

Questions for control:

- Organization of the exchange infrastructure.
- Participants in exchange trading and general characteristics of exchange intermediation entities.
- Intermediary services for investing in securities.
- Valuation of securities.
- Fundamental and technical analysis in the activities of exchange intermediaries.
- Settlement and clearing financial services.
- Types and types of exchange derivatives.
- Types of forward contracts.
- Definition of an option, types of options.
- Tools for technical analysis.
- Fundamentals of organization and functioning of the derivatives market.
- The concept of hedging, types and methods of hedging.
- Admission of securities to quotation on stock exchanges.
- Analysis of the main stock indices of Ukraine.
- Analysis of the activities of professional securities market participants.
- Characterization of the exchange segment of the securities market of Ukraine.

Practical tasks:

Task 1. The face value of a bond with 4 years to maturity is 800 UAH, the coupon is 17% and is paid once a year. Determine the market value of the bond so that it provides the buyer with a yield of 20% per annum.

Task 2. Bonds issued by PrJSC "Alpha" with a par value of 125 UAH are sold at a price of 128.53 UAH. Determine the rate of bonds. How will the price of the bond change if the bond rate decreases by 5%.

Task 3. The profit on the bonds of Beta LLC with a nominal value of 10,000 UAH is paid twice a year, based on 45% per annum. Determine the amount of profit at each payment. How will the profit change if payments are made four times a year at the rate of 50% per annum.

Task 4. Government short-term bonds with a face value of 1.2 thousand UAH and a maturity of 91 days are sold at the rate of 87.5. Determine the amount of profit from the purchase of 10 bonds and the profitability of the financial transaction for the estimated number of days in a year equal to 365.

Task 5. A bond is sold on the stock market for 120 UAH. It is issued for a period of 3 years, with 1 year left to maturity. Its face value at the time of issue was set at 110 UAH. Interest payments are made annually at a rate of 12% to the face value. Taking into account the risk of this type of bonds, the rate of its current yield is assumed to be 10% per year. Determine the current market value of the bond, its correspondence to the sale price and its value at the time of redemption by the issuer.

Task 6. Bonds with a face value of 1000 UAH with a maturity of three years and a coupon of 28 %, paid annually. The current market price of the bond is 950 UAH, the discount rate is 25%. Calculate the duration.

Task 7. A discount certificate of deposit with a face value of UAH 6500 was purchased 90 days before its maturity and sold 36 days later. The discount rates at the time of purchase and sale were 16% and 18% per annum, respectively. Determine the profitability of the transaction at the effective rate of simple interest.

Task 8. The premium of a call option on US dollars written for USD 1000 with a term of 30 days and strike price of UAH 5.40 per dollar is UAH 300, and the spot rate is UAH 5.50 per dollar. Determine the intrinsic and time value of the option.

Task 9. In April, July wheat futures contracts are quoted at 4900 USD per bushel. However, the trader, having analyzed the market conditions, expects a high harvest, i.e. a price decline, and decides to open a short position for 10 July contracts. In early July, prices for July futures fell to $4,500 per bushel. The trader closes the short position by buying back the contracts (liquidation) with a profit of 400 cents per bushel. Determine the result of the speculative operation

Task 10. In March, a refinery buys oil on the real market at $25 per barrel and sells a June contract at $25.5 per barrel. July delivery at this time is

quoted at $27.0 per barrel. Although the June contract has a premium over the full delivery price of $0.5 per barrel, the full price between the June and July contracts is also $0.5 per barrel. A hedge transaction should be executed to determine the results if in the future prices drop to $23/bbl for the June contract and $23.5/bbl for the July contract, respectively.

Guidelines for completing assignments:

Bonds

The bond rate is determined by the formula:

$K_o = P / N * 100\%$

where K_o is the bond rate;

P - market price of the bond;

N - the face value of the bond.

The price of a bond at a given exchange rate is equal to:

$P = K_o * N/100$

The current market value of coupon bonds, provided that periodic interest payments are made during the bond's life and the face value is paid at the end of the term, is calculated by the formula, if coupons are paid once a year, the bond price:

$$P = \frac{C}{1+r} + \frac{C}{(1+r)^2} + \cdots + \frac{C}{(1+r)^n} + + \frac{N}{(1+r)^n}$$

If coupon payments are made several times a year, the price of the bond is calculated using the following formula:

$$P = \frac{C/m}{(1+r/m)} + \frac{C/m}{(1+r/m)^2} + \cdots + \frac{C}{(1+r/m)^{n*m}} + + \frac{N}{(1+r)^n}$$

where C - annual coupon payments

N - the face value of the bond

r - discount rate

n - number of years to maturity of the bond

m - number of coupon payments during the year

The amount of the next coupon payment is determined as follows:

$$Cm = N\ \frac{r}{100} * \frac{t_m - t_{m-1}}{365} * \frac{R_m}{R_o}$$

where R_o - the average dollar exchange rate for 30 days preceding the issue date

R_m - the average dollar exchange rate for 30 days preceding the end date of the m-th coupon period

t_{m-1} - start date of the m-th coupon period

t_m - the end date of the m-th coupon period

The model for estimating the value of a bond with the payment of the entire amount of interest at maturity is as follows:

$$P = (N + Ck) / (1 + r)n$$

where P is the real value of the bond with the payment of the full amount of interest at maturity;

N - the nominal value of the bond to be redeemed at the end of its maturity;

Ck - the amount of interest on the bond payable at the end of its maturity;

r - the expected rate of gross investment return (yield) of the bond;

n - the number of periods remaining until the bond is redeemed (for which the rate of return is set).

The model for estimating the value of a bond sold at a discount is as follows:

$$P. = N / (1 + D)n$$

where D is the bond discount.

The amount of reinvested interest is calculated using the formula for the future value of the annuity, namely:

$$Cp = C/r ((1 + r)n - 1)$$

The yield to maturity of zero-coupon bonds is derived from the bond pricing formula and is determined by the following formula:

$$P = \frac{N}{(1 + r)^n}$$

Hence

$$r = (\sqrt[n]{\frac{N}{P}} - 1) * 100$$

Simplified calculation of the yield to maturity:

$$r = \frac{N - P}{P} * \frac{365}{t} * 100$$

The yield of a transaction (deal) on zero-coupon bonds is calculated using the following formula:

$$r = \frac{P_{пр} - P_{пок}}{P_{пок}} * \frac{365}{t`} * 100$$

where $P_{пок}$ is the purchase price of the bond

$P_{пр}$ is the bond's selling price

t` - number of days from the date of purchase to the date of sale

If interest is not paid on the bonds, the source of profit from their purchase will be the difference between the redemption price (face value) and

the purchase price. The difference between these prices is called a discount, and the bonds themselves are called discount bonds. Such bonds include government short-term obligations. The profit from buying such bonds will be equal:

$$W = N - P = N - Pk * N/100 = N (1 - Pk/100)$$

Duration is the weighted average term of the payment stream weighted by the discount amount. The duration of a payment stream depends on the current interest rate: the higher the interest rate, the lower the value of future long-term payments compared to short-term payments, and vice versa, the lower the interest rate, the longer the duration of the payment stream.

$$D = \frac{\sum_{i=1}^{N}(PV_i * t_i)}{P}$$

PV_i - the present value of future bond income,

t - the period of receipt of the i-th income,

P - the price of the bond

$$D = \frac{1}{P}\sum_{i=1}^{N}\frac{t * CF_t}{(1+r)^t}$$

Certificates of deposit

When making calculations, it should be taken into account that certificates of deposit are divided into two types according to the way their holders receive income: interest-bearing and discount certificates.

Interest-bearing certificates of deposit accrue interest based on the accrual principle of bank deposits. Discount certificates of deposit are sold at a price lower than the nominal value but are redeemed at the nominal value. The difference between these values determines the income from operations with them.

Certificates of deposit are traded in the market until their maturity and are freely tradable. The level of income from transactions with discount certificates of deposit depends on the level of market interest rates, and for interest-bearing certificates of deposit, in addition, on the level of interest rate at the time of their issue. Income from operations on purchase and sale of certificates of deposit is determined as the difference between the price of their sale (P2) and purchase (P1), calculated according to the following formulas:

for interest-bearing certificates of deposit - purchase price

$$P_1 = \frac{N\left(1 + \frac{t_0}{K} i_0\right)}{1 + \frac{t_1}{K} i_1}$$

sale price:

$$P_2 = \frac{N\left(1 + \frac{t_0}{K} i_0\right)}{1 + \frac{t_2}{K} i_2}$$

where N is the nominal value of the certificate of deposit;

t_0 - term in days from the date of issue to the date of maturity;

K - number of days in a year;

t_1 , t_2 - terms in days, respectively, from the moment of purchase and sale to the moment of maturity;

i_1, i_2 - simple interest rates in the money market at the time of purchase and sale;

i_0 - simple interest rate set at the time of issue of the certificate of deposit.

for discounted certificates of deposit-purchase price:

$$P_1 = N(1 - \frac{t_1}{K} i_1)$$

sale price:

$$P_2 = N(1 - \frac{t_2}{K} i_2)$$

income from the purchase and sale of a deposit certificate:

$$D = P_2 - P_1$$

The yield on a certificate of deposit purchase and sale transaction in the form of an effective interest rate per annum can be determined using the following formula:

$$i_{eф.} = \frac{W}{P * n} = \frac{дохід}{P_n * n}$$

Options

There is a three-month stock option. The strike price of the option is UAH 100 and the value of the option is UAH 5. The spot price of the stock is UAH 100. The investor buys the option. This means that he pays UAH 5 to the option seller and receives the right to buy the share in 3 months at the strike price, i.e., UAH 100 (X = 100). Let's say the option buyer is a speculator who is playing for a rise. He expects the share price to rise to UAH 120 at the expiration of the contract. Suppose he is right. Then in 3 months,

the speculator exercises the option, i.e. buys a share from the option seller for UAH 100 and immediately sells it on the spot market for UAH 120. He wins 20 UAH on the price difference. The speculator's total gain should be adjusted for the premium paid, so it is 120 - 100 - 5 = 15 UAH.

If the speculator made a mistake and the share price fell to 80 UAH in 3 months. Then he does not exercise the option, since it makes no sense to buy a share at 100 UAH under the option if it is now worth 80 UAH on the market. The result of the investor's transaction is the loss of the premium.

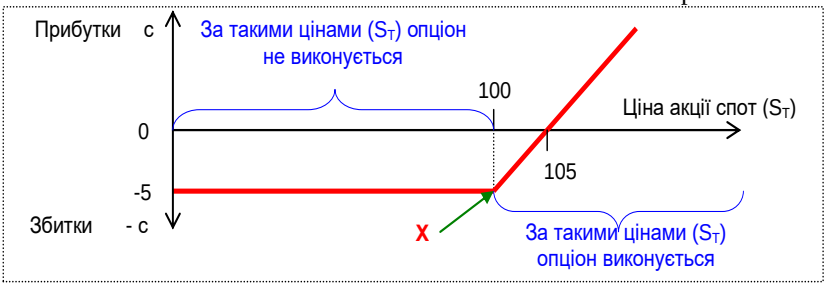

Figure 1 - Formation of financial results of the call option buyer

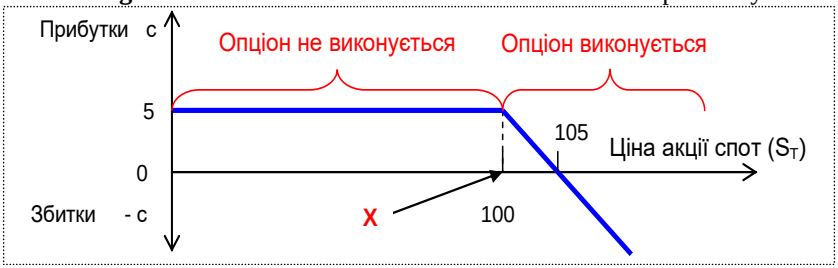

Figure 2 - Formation of financial results of the call option seller

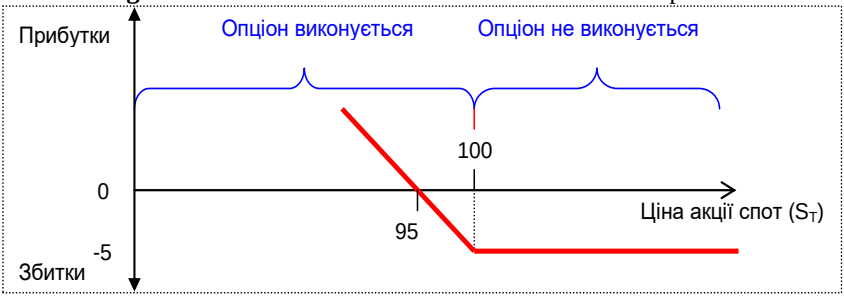

Figure 3 - Formation of financial results of the put option buyer

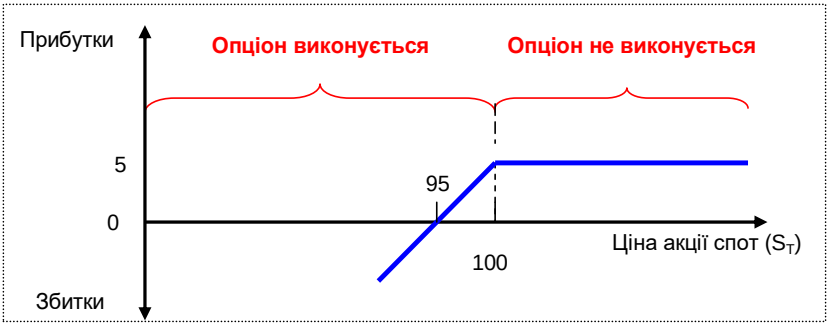

Figure 4 - Formation of financial results of the put option seller

Forward transactions

Forward price of a share that does not pay dividends

$$F = S\,(1 + r\frac{t}{T})$$

Forward currency price

$$F = S\,\frac{(1 + r\frac{t}{T})}{(1 + r_f\frac{t}{T})}$$

Forward contract price

$$F = \frac{K}{(1 + r\frac{t}{T})}$$

F - forward price;
S - spot price;
r - risk-free rate of the national currency;
r_f - risk-free rate of the quoted currency;
K - delivery price of the forward contract;
t - contract validity period;
T - the duration of the financial year.

Self-work. Essay topics:

1. Practice and problems of securities traders in Ukraine.
2. Modern practice and problems of providing financial services for the placement of securities.
3. Placement of securities on the stock exchange by Ukrainian enterprises.
4. Option agreements: types, terms of use, participants.

5. Futures contracts: types, mechanism of conclusion, trends in use.
6. Clearing settlements in the activities of commodity exchanges.
7. Banks and investment companies as participants in the stock market.
8. The use of derivatives on stock exchanges.
9. Quotations of securities on the stock exchange.
10. The essence and types of intermediary activities in the stock market.
11. Listing of securities on the stock exchange.
12. Stock market indices.

Key terms and concepts: professional activity in the stock market, securities trading activity, asset management activity, depositary activity, activity on organization of trading in the stock market, brokerage activity, dealer activity, underwriting, securities management activity, settlement and clearing activity, activity on maintenance of registers of registered securities, securities traders, brokerage office, brokerage commission, collective investment, corporate investment fund, unit investment fund, venture capital fund, derivative, option, futures contract, forward contract, derivative securities, hedging, speculation, certificates of deposit, quotations, stock index, types of forward contracts, definition of a futures contract, organization of trading in futures contracts, option, types of options, categories of options, option premium, peculiarities of fundamental analysis, tools for technical analysis.

Topic 7. Financial services in the foreign exchange market

7.1. Foreign exchange market and its participants
7.2. Opening and maintaining accounts in foreign currency
7.3. Services in the interbank foreign exchange market
7.4. Services in the foreign exchange market
7.5. Services of financial institutions in international settlements
7.7. Other services in the foreign exchange market

Questions for control:

- Organization of the monetary and foreign exchange market in Ukraine.
- Characterization of the professional participants composition in the foreign exchange market.
- General principles of currency transactions and financial and services accompanying their implementation.
- Operations with foreign exchange market instruments.
- Interrelation of monetary, currency and stock market sectors of the financial services market
- Organization of operations in the interbank foreign exchange market of Ukraine.
- Financial services of international financial organizations.
- Dealing services (FOREX operations) in the financial services market.
- Use of currency forwards.
- Cryptocurrencies.

Practical tasks:

Task 1. Determine the forward exchange rate of the dollar for a forward contract with a delivery date in 3 months, which is concluded by a German bank, if:

- Euros can be borrowed for 3 months at 3.26% per annum;
- US dollars can be placed on the German financial market for 3 months at 5.53%;
- US dollars can be placed on the euro market at 5.41% per annum;
- the spot rate of the US dollar to the euro on the day of the contract is 0.8709.

Task 2. An investor takes a downside position on January 10 on one March futures contract for Swiss francs (standard lot of 100,000 Swiss francs) at a price of USD 0.6405 per franc. The guarantee fee is USD 1800, and additional collateral is USD 1400. How much money will be left in the

investor's account on January 13 in the morning, if the last contract for Swiss francs was executed on January 10 at a price of $ 0.6410 per franc, on January 11 - $ 0.6380, and on January 12 - $ 0.6400.

Task 3. An investor takes a term position to play the upside on January 15 on one March Canadian dollar futures contract (standard lot of 100,000 Canadian dollars) at a price of $0.6048 per Canadian dollar. The guarantee fee is USD 1800, additional collateral is USD 1400. How much money will be left in the investor's account on January 18 in the morning, if the last contract for Canadian dollars was executed on January 15 at a price of 0.6100 dollars per Canadian dollar, on January 16 - 0.6090 dollars, and on January 17 - 0.6030 dollars.

Task 4. Calculate the exchange rate for a three-month forward contract if the following exchange rates are quoted on the market on May 1: GBP/USD 1.4745 and the following interest rates: GBP 3m - 6.5%; USD 3m - 5.8%.

Guidelines for completing assignments:

The forward price is the price of buying and selling a currency in some time, defined as the spot rate multiplied by the ratio of interest rates of the two currencies:

$$\mathbf{Kfwd} = \mathbf{Kspot} \times \left(\frac{\mathbf{1} + \%\,\mathbf{UAH}}{\mathbf{1} + \%\,\mathbf{USD}}\right)$$

A currency quote is a fixation of the exchange rate of a national currency against foreign currencies. A full quote involves setting the buyer's (bid) and seller's (offer) rates. Bid is the buy rate of the base currency (the sell rate of the quote currency) by the market maker.

Offer is the selling rate of the base currency (the buying rate of the quote currency) by the market maker. The difference between the buy and sell quotes is called spred (or margin):

Spred = Offer - Bid

The bank's currency position (VP) is an indicator that characterizes the bank's currency risk; the difference between the amount of assets and off-balance sheet claims in a particular foreign currency and the amount of balance sheet and off-balance sheet liabilities in the same currency:

VP = Av - Lv

where Av - the assets accounted for on a certain day in the balance sheet, i.e., available to the bank at that time, and the assets that the bank will receive in the future (purchase of a certain currency under forward, futures, options, and future currency receipts in the form of income).

Lv - the bank's liabilities to customers and counterparties on a certain day in the balance sheet and the bank's liabilities in the future (sale of a certain currency under forward, futures, options, future losses in a certain currency).

Open currency position means that the amount of assets and off-balance sheet claims in a particular foreign currency does not equal the amount of balance sheet and off-balance sheet liabilities in the same currency.

Open long currency position - the sum of assets and off-balance sheet claims exceeds the sum of on-balance sheet and off-balance sheet liabilities in each foreign currency:

$$\mathbf{Av > Lv}$$

The currency position is open short - the sum of assets and off-balance sheet liabilities exceeds the sum of on-balance sheet and off-balance sheet claims in each foreign currency:

$$\mathbf{Av < Lv}$$

The currency position is closed - the sum of assets and off-balance sheet claims in a particular foreign currency equals the sum of on-balance sheet and off-balance sheet liabilities in the same currency:

$$\mathbf{Av = Lv}$$

Self-work. Essay topics:

1. Conversion transactions between banks on spot terms.
2. Types of forward transactions in the foreign exchange market.
3. Forward outright rate.
4. Forward rate for broken dates.
5. Forward cross rates.
6. Swap quotes.
7. Organization of trading in currency option contracts and margin system.
8. Futures price and features of its formation for different types of currency contracts.
9. Market of current conversion operations.
10. Conclusion of conversion operations in the FOREX market.
11. Prospects for the functioning of cryptocurrencies in the world and their importance in the financial system.

Key terms and concepts: professional currency market participants, currency transactions, current trading transactions, current non-trading transactions, currency transactions related to capital movements, currency exchange transactions, spot currency transactions, forward currency transac-

tions, currency arbitrage, currency option, currency forward contract, currency futures contract, international settlements, currency rate, cross rate, FOREX market, currency dealing, cryptocurrency.

Topic 8: State regulation of the financial services market. Financial monitoring

8. 1. The state regulation essence and forms of the financial services market

8.2. Bodies that carry out state regulation of financial services markets

8.3. Powers of the National Bank of Ukraine in the financial services market

8.4. Powers of the National Securities and Stock Market Commission

8.5. Procedure for conducting financial monitoring

Questions for control:

- Peculiarities of historical development and main tasks of the financial services market state regulation in Ukraine.
- State regulation of the financial services market in Ukraine.
- The National Bank of Ukraine as a body of the financial services market state regulation.
- State regulation of investment processes in the economy.
- The National Securities and Stock Market Commission of Ukraine as a body of the financial services market state regulation.
- Regulation of certain types of financial institutions.
- Self-regulatory organizations of financial intermediaries: essence and functions.
- The procedure for financial monitoring.
- Primary and secondary financial monitoring.
- The role of financial monitoring in the risk management system of financial institutions.
- Risk-oriented approach of financial institutions to financial monitoring.

Practical tasks:

Task 1. Analyze the dynamics of indicators characterizing the capital adequacy of the bank, using the financial statements for the last three years, analyze and justify their compliance with the requirements of the NBU and the Basel III Directive.

Task 2. To analyze the dynamics of the bank's financial condition indicators, calculate the necessary ratios and assess the quality (risk, profitability and liquidity) of the bank's deposit portfolio for the last three years.

Task 3. Calculate the values of indicators H11 and H12, analyze their compliance with regulatory values, analyze the structure and dynamics of

the securities portfolio and the dynamics of the bank's securities performance indicators, analyze the risks of investing in the bank's securities for the last three years.

Task 4. Calculate the amount and analyze the regulatory capital and capital required to cover the bank's operational risk for the last three years.

Task 5. Analyze the existing system and structure of compliance control in the bank.

Task 6. Calculate the indicators for assessing the stress resistance of an insurance company, determine the generalized value, characterize the state of insurance company's protection against risks as of 01.01.20xx, and justify the conclusions.

Task 7. Analyze the internal financial monitoring system of the bank.

Guidelines for completing the task: Assessing the quality of the bank's deposit portfolio

The analysis of the deposit portfolio quality should be based on the analysis of its types and types. In this case, the type of deposit portfolio by type of attracted resources should first be analyzed for compliance with the selected deposit policy, and it should be determined whether the deposits included in the deposit portfolio comply with the selected type of deposit portfolio. If there is a discrepancy in the number of types of deposits, the reason should be identified and, depending on it, another type of portfolio should be selected. Next, you need to determine the nature and composition of the deposit portfolio. In the first case, it is determined whether the portfolio continues to be focused on profitability and reliability, and in the second case, whether it has a flexible or permanent structure.

Table 1 – Analysis of deposit risks dynamics.

Indicator	20xx	20xx	20xx	Deviation 20xx to, thousand UAH		Deviation 20xx to, %.	
				20xx	20xx	20xx	20xx
Equity capital							
Deposits, total							
Incl. deposits of individuals							
Legal entity deposits							
Loan portfo-lio							
Net income							
Return on equity							
Return on deposits							
Loans to deposits ratio							

Draw reasonable conclusions based on the indicators calculated in the table.

Table 2 – Dynamics of customer deposit liabilities

Indicator	20xx	20xx	20xx	Deviation 20xx to, thousand UAH		Deviation 20xx to, %.	
				20xx	20xx	20xx	20xx
Legal entities, total:							
Including current accounts							
Term funds							
Individuals, total:							
Including current accounts							
Term funds							
State and public organizations, total							
Including current accounts							
Term funds							
Deposits, total							

Draw reasonable conclusions based on the indicators calculated in the table.

Assessment of deposit portfolio quality

Since the criteria for evaluating a deposit portfolio are risk and profitability, let's consider a methodology for assessing portfolio quality based on risk and return ratios.

The risk ratio allows to quantify the quality of the deposit portfolio from the standpoint of deposit risk:

$$\mathbf{P= C- PV/ C,}$$

where P - risk ratio;

C - total amount of the bank's losses related to this portfolio as of the settlement date;

PV - projected losses, equal to the provision for possible losses associated with this portfolio as of the settlement date.

The higher the value of P and the closer it is to one, the better the quality of the deposit portfolio. When P = 1, there is no risk, and the expected losses are zero.

The return on deposits is the income earned per unit of invested funds placed in loans over a certain period. The yield is calculated using the following formula:

$$\mathbf{D= P/ C,}$$

where P - the amount of interest received on loans during the settlement period;

C - the average (for the calculation period) amount of the bank's losses related to this deposit.

The average value of assets is determined by the formula:

$$C = \frac{\sum A_i}{n}$$

where A_i - the value of assets placed on credit, measured at a certain interval;

n - the number of measurements in the calculation period.

After calculating the coefficients, a graph with the coordinates P, D is plotted.

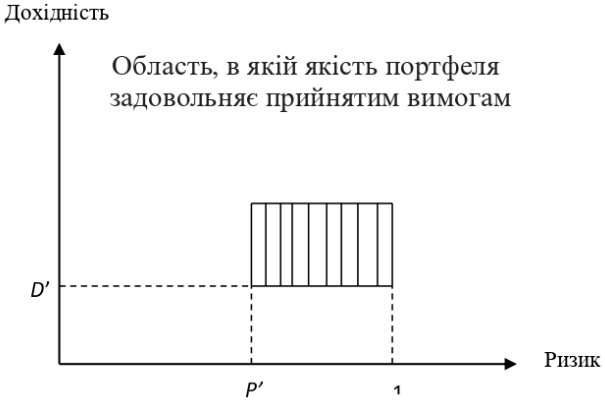

Figure 1 – Graph of the bank's deposit portfolio quality assessment

The graph highlights the area of required values of P', D' that meet the requirements for the bank's deposit portfolio. For each reporting date, the values of the P, D coefficients are calculated and plotted on the graph as points. Depending on which area the point falls in, a conclusion can be drawn about the quality of the deposit portfolio, in particular: whether the quality of the deposit portfolio meets the requirements for profitability and risk; and the dynamics of the deposit portfolio is assessed.

The following coefficient is used as a generalized coefficient of the deposit portfolio quality:

KP= RR / K

where RR - the estimated provision for deposits,

K - the amount of outstanding principal.

The analysis of financial ratios is used to analyze the deposit policy:

K1 = Deposits / Liabilities.

The ratio determines the aggressive or conservative policy of the bank.

K2 = Deposits / Equity.

The ratio determines the riskiness of the deposit policy applied by the bank.

The analysis also calculates indicators that help to track changes in the size of the portfolio and the compliance of actual data with the planned data:

Deposit risk protection ratio = Provisions / Deposits

This ratio, which takes into account deposit risk, is used to assess the effectiveness of a commercial bank's deposit policy and to estimate the minimum size of the bank's reserve fund.

Deposit growth rate = Amount of deposits for the previous period / Amount of deposits for the current period.

The growth of deposits indicates a decrease in deposit risk and helps to optimize the bank's reserve fund in the context of compensation for possible losses. Determination of this indicator, which characterizes the dynamics of the deposit portfolio, allows forecasting the total need for provisioning for bank losses and adjusting the deposit risk protection ratio.

The following indicators are evaluated to analyze the deposit portfolio:

K1 = Deposits at the end of the period / Deposits at the beginning of the period,

K2 = Non-earning deposits / Deposits at the beginning of the period,

K3 = Deposits withdrawn early / Deposits on deposit,

K4 = Deposits / Bank assets,

K5 = Large deposits / Deposits,

K6 = Extended deposits / Deposits.

The above indicators, considered in the dynamics, reflect changes in the bank's deposit portfolio and the amount of its risk. Based on this analysis of the deposit portfolio quality, certain trends in the level of deposit risk are identified.

Regulation of investment activities

In order to limit the impact of investment risk associated with investment activities of financial institutions and possible loss of investor's capital, the National Bank of Ukraine sets investment standards.

Investment caps are economic standards set by the NBU to ensure control over banks' investment activities, including direct investments. These standards include N11 and N12.

The normative for investing in securities separately for each institution (N11) is set to limit the risk associated with investing in shares, units, stakes, and investment certificates of a particular legal entity. The standard value of the H11 indicator should not exceed 15%.

$$H11 = \frac{\text{Investments in securities of a separate legal entity}}{\text{Regulatory capital}} \leq 15\%$$

The total investment amount ratio (N12) is set to limit the risk associated with the bank's investment activities. The standard value of the N12 indicator should not exceed 60%.

$$H12 = \frac{\Sigma \text{ investments in securities of a separate legal entity}}{\text{Regulatory capital}} \leq 60\%$$

Table 3 – Structure and dynamics of the bank's securities portfolio

Indicator	20xx	20xx	20xx	Deviation 20xx to, thousand UAH		Deviation 20xx to, %.	
				20xx	20xx	20xx	20xx
Financial investments, total							
Including trading securities							

Continuation of table 3

Securities for sale							
Securities to maturity							
Investments in associates and subsidiaries							
Assets							
Share of the securities portfolio in assets, %.							

Based on the indicators calculated in the table, draw reasonable conclusions.

Table 4 - Dynamics of the bank's performance indicators with securities

Indicator	20xx	20xx	20xx	Deviation 20xx to, thousand UAH		Deviation 20xx to, %.	
				20xx	20xx	20xx	20xx
Shareholders' equity							
Authorized capital							
Total assets							
Investments in securities							

Continuation of table 4

Ratio of securities to equity, %.							
Ratio of securities to authorized capital, %.							
Share of investments in securities in banks' assets, %.							

Based on the indicators calculated in the table, draw reasonable conclusions.

The NBU's diagnostic examination program is intended to identify problems of banks related to their investments in securities:

a) securities issued by central executive authorities, the National Bank of Ukraine, and the State Mortgage Institution (government securities);

b) listed securities, except for government securities (ЦПл);

c) unlisted securities, except for government securities (ЦПпл);

d) securities that are not traded on stock exchanges, in particular, bills of exchange (ЦПно);

e) securities of non-diversified investment funds (ЦПнф).

Given the high risks of investing in securities of types b)-d), the bank's regulatory capital (К1) should be adjusted (reduced) based on the carrying value of ЦПл, ЦПпл, ЦПно, ЦПнф in the bank's trading portfolio and carrying value of ЦПнф in the bank's portfolio for sale:

К1= 0,5*БВ(ЦПл) + БВ(ЦППпл) + БВ(ЦПно) + БВ(ЦПнф),

where БВ - the book value.

When evaluating securities in the available-for-sale portfolio, the value of the security's risk indicator shall be applied in the amount of:

0,5 — to ЦППл (50 % reservation);

1,0 — to ЦППпл, ЦППно (100 % reservation).

When assessing securities in the portfolio held to maturity (except for government securities) with a final maturity of less than two years in ac-

cordance with the terms of issue, the value of the security risk indicator should be applied in the amount of:

1,0 — (100 % reservation).

Table 5 – Risk analysis of the bank's investments in securities

Indicator		20xx	20xx	20xx	Deviation 20xx to, thousand UAH		Deviation 20xx to, %.	
					20xx	20xx	20xx	20xx
Securities in the bank's portfolio, UAH thousand								
including for sale, UAH thousand								
to maturity, UAH thousand								
Provision for impairment of securities available-for-sale	thousand UAH							
	%							
Allowance for impairment of securities held to maturity	thousand UAH							
	%							

Based on the results of the valuation of securities in the bank's portfolio available-for-sale and portfolio held-to-maturity, the forecast amount of the provision should be determined and compared with the actual amount formed.

Optimization of the securities portfolio is aimed at reducing its risk at a given level of profitability.

Portfolio optimization is based on risk assessment and appropriate diversification of portfolio instruments.

The standard deviation (σ) is the most common measure of investment risk. The calculation of this indicator allows you to take into account fluctu-

ations in expected returns from different investments. The numerical value of this fluctuation is calculated using the formula:

$$\boldsymbol{\sigma} = \sqrt{\sum_{\mathbf{t=1}}^{\mathbf{n}} \mathbf{pi} * (\mathbf{E} - \mathbf{E_r})^2}$$

where t - the number of periods;

n - number of observations;

E - the estimated return on a security at different market conditions;

E_r - the average expected return on a security;

pi - the value of the probability of income.

The coefficient of variation allows you to determine the level of risk if the average expected returns differ from each other. The coefficient of variation (CV) is calculated using the formula:

$$\mathbf{CV} = \frac{\boldsymbol{\sigma}}{\mathbf{E_r}}$$

When comparing the risk levels of individual securities, preference should be given to the one with the lowest coefficient of variation (which indicates the best risk/return ratio).

The beta coefficient (β-coefficient) is used mainly to analyze the riskiness of investments in individual securities in comparison with the systematic risk of the entire securities market. This indicator is calculated using the following formula:

$$\boldsymbol{\beta} = \frac{\mathbf{cor} * \boldsymbol{\sigma}_{\text{ц}}}{\boldsymbol{\sigma}_{\phi}}$$

where cor - the correlation between the yield on a particular type of security and the average yield on securities in general;

$\sigma_{ц}$ - the standard deviation of the yield on a particular type of security;

$\sigma_{ф}$ - standard deviation of the yield on the securities market as a whole.

The risk level of individual securities is determined based on the values of the β-coefficient shown in the table.

Table 6 – Determination of the risk level of individual securities

The value of the β-coefficient	Risk level of the security
β = 1	Medium
β < 1	Low
β > 1	High

Thus, as the value of the β-coefficient increases, the level of systematic investment risk also increases.

The total assessment of the designed portfolio by the ratio of return and risk.

The aggregate assessment of the designed portfolio in terms of the ratio of profitability and risk allows us to evaluate the effectiveness of all the work on its formation.

The level of portfolio profitability is calculated by the following formula:

$$R_{Дп} = \sum_{t=1}^{n} R_{Дi} * \gamma_i$$

where $R_{Дп}$ - the rate of return on the investment portfolio;

$R_{Дi}$ - yield on individual securities in the portfolio;

γ_i - the share of individual securities in the total value of the portfolio, units.

The portfolio risk level is calculated by the following formula:

$$R_{Рп} = \sum_{t=1}^{n} R_{СРi} * \gamma_i + R_{НРп}$$

where $R_{Рп}$ - the risk level of the investment portfolio;

$R_{СРi}$ - the level of systematic risk of individual securities measured by the beta coefficient;

γ_i - the share of individual securities in the total value of the investment portfolio, units;

$R_{НРп}$ - the level of unsystematic risk of the portfolio.

The result of the portfolio assessment is the determination of the extent to which it was possible to reduce the level of portfolio risk in relation to its average market level formed at a given level of investment portfolio profitability.

Calculation of the capital required to cover operational risk

The methodology used to calculate market risk is VAR (value-at-risk), which reflects the maximum level of expenses that a bank may incur in the event of an unfavorable situation in the financial market. The minimum amount of regulatory capital is determined by the following formula:

$$\frac{Рк}{Ар + Рр * \mathbf{12,5}} \geq \mathbf{8\%}$$

where Рк - regulatory capital;

Ар - risk-weighted assets;

Рр - market risk provisions.

The NBU measures and assesses banks' operational risk based on the concept of economic capital calculation using the following models: a model based on a basic indicator, a standardized approach, and advanced approaches.

The basic indicator approach provides for a minimum amount of capital equal to 15% of the average annual loan amount of gross income for the three preceding years:

$$К_{ОР} = \frac{\sum_{i=1}^{n} ВД}{n} * ά,$$

where $К_{ОР}$ - the amount of economic capital for operational risk;

ВД - gross income for 3 years;

n - 3 years;

ά - provisioning ratio (15%).

For many banks, the probable value of operational risk is difficult to access, so a study at the level of profitability of the core banking activity makes it possible to measure the potential operational risks for the bank. The proportion of capital for operational risks in the total amount of regulatory capital is determined, and therefore, it must be taken into account in the amount of required reserves. The level of capital for operational risks must meet the requirements of the Basel Committee's directive.

The advanced method is based on proprietary calculation methods and can be used by banks that meet a certain set of qualitative and quantitative standards set by the supervisor.

Table 7 – Calculation of the capital required to cover operational risk.

Indicator	20xx	20xx	20xx	Deviation 20xx to, thousand UAH		Deviation 20xx to, %	
				20xx	20xx	20xx	20xx
Net operating income							
Net average income							

Continuation of table 7

Projected amount of capital under operational risk							
Regulatory capital							
Share of capital to cover of operational risks in the structure of regulatory capital, %.							

Draw reasonable conclusions based on the indicators calculated in the table.

Table 8 – Normative value and formula for calculating the NBU's economic ratios

	Economic standard	Calculation formula	Normative value
Н1	Minimum amount of regulatory capital	РК(Н1) = ОК+ДК-В	UAH 200 mln.
Н2	Sufficiency (adequacy) of regulatory capital	$Н2 = \frac{РК}{Ар + СВП - НКР} * 100\%$	not less than 10%
Н3	Adequacy of fixed capital		not less than 7%
Н4	Immediate liquidity	$Н4 = \frac{Ккр + Ка + Дс}{Рп + Ск} * 100\%$	not less than 20%

Continuation of table 8

Н5	Current liquidity	$Н5 = \frac{А}{Зп} * 100\%$	not less than 40%
Н6	Short-term liquidity	$Н6 = \frac{Ал}{З1} * 100\%$	not less than 60%
Н7	Maximum credit risk exposure per counterparty	$Н7 = \frac{Зс}{РК} * 100\%$	no more than 25%
Н8	High credit risks	$Н8 = \frac{Зв}{РК} * 100\%$	not less than 8 times the amount of regulatory capital
Н9	Maximum credit risk exposure on transactions with related parties	$Н9 = \frac{Зін}{РК} * 100\%$	no more than 25%
Н11	Investment in securities separately for each institution	$Н11 = \frac{Кін}{СТ} * 100\%$	no more than 15%
Н12	Total investment amount	$Н12 = \frac{СКін}{СТ} * 100\%$	no more than 60%

where РК - the bank's regulatory capital;

ОК - core capital (Tier 1 capital);

ДК - additional capital (Tier 2 capital);

В - invested funds;

Ар - assets and certain off-balance sheet liabilities of the bank;

Свп - the aggregate amount of the bank's open currency position in all foreign currencies and precious metals;

НКР - uncovered credit risk;

Ккр - funds on correspondent account;

Ка - cash on hand;

Рп - current accounts for calculating the instant liquidity ratio;

Ск - term funds with final maturity;

А - assets of the bank with a final maturity of up to 31 days for calculating the current liquidity ratio;

Зп - bank's liabilities with a final maturity of up to 31 days for calculating the current liquidity ratio;

Ал - liquid assets with a final maturity of up to one year for calculating the short-term liquidity ratio;

З1 - liabilities of the bank with a final maturity of up to one year for calculating the short-term liquidity ratio;

Зс - gross debt on term and overdue deposits, loans, factoring, financial leasing, imputed bills, securities, overdue accrued income, other active banking operations, and financial liabilities of the bank to one counterparty (or group of related counterparties);

РК - regulatory capital of the bank;

Зв - gross debt on term and overdue deposits, loans, factoring, financial leasing, impaired bills, securities, receivables, overdue accrued income, other active banking operations and financial liabilities of the bank for all major credit risks granted by the bank to all counterparties (or a group of related counterparties);

Зін - aggregate debt on term and overdue deposits, loans, factoring, financial leasing, imputed bills, securities, overdue accrued income, other active banking operations and financial liabilities of the bank in respect of one insider (or a group of related insiders);

Кін - bank funds invested in the purchase of shares (stakes/units) separately for each institution;

СКін - funds of the bank invested for the purpose of purchasing shares (stakes/units) of any legal entities;

СТ - authorized capital of the bank.

Table 9 – Compliance of the bank's performance indicators with the NBU standards

№	Indicator	20xx	20xx	20xx	Deviation of 20xx to		
					normative	20xx	20xx
1	Н1						
2	Н2						
3	Н3						
4	Н4						

Continuation of table 9

5	H5						
6	H6						
7	H7						
8	H8						
9	H9						
10	H10						
11	H11						
12	H12						

Methodology for stress testing the capital adequacy of insurers

Stress testing is a risk management method used directly to measure the impact of random probable events (stresses) on the insurer's financial position and its operations in general. Stress testing can be used both to quantify risk and to control it. Ukrainian insurance companies must conduct regular stress testing and submit its results to the NBU along with their annual reports. In accordance with the Solvency II Directive, the solvency of insurance companies is assessed by calculating the Solvency Capital Requirement (SCR), which is defined as the amount of funds capable of covering the insurance company's losses in the event of the realization of all risks arising in the course of its activities. The required solvent capital must be calculated either according to a standard formula or using an internal model.

$$\mathbf{RK = RSM \geq SCR}$$

RK - capital adequacy ratio,

RSM - solvency margin,

SCR - required solvent capital.

$$\mathbf{RSM = ВК – НА}$$

ВК- shareholders' equity,

НА - intangible assets.

$$\mathbf{SCR = BSCR + SCR_{or} + TR_{adjusted}}$$

BSCR - basic required solvency capital,

SCRor - required solvent capital to cover operational risk,

TRadjusted - the result of adjusting the ability of technical provisions and deferred taxes to cover expenses.

$$BSCR = \sqrt{\sum_{ij} Corr_{ij} * SCR_i * SCR_j}$$

$$= \sqrt{\sum Corr} * SCR_l * SCR_{nl} * SCR_h * SCR_m * SCR_d$$

Corrij means the item specified in row "i" and column "j" of the correlation matrix,

SCRi - risk module i,

SCRj - risk module j,

i, j - possible risk combinations.

SCRl is the life insurance guarantee risk module,

SCRnl - module of guarantee risk not related to life insurance,

SCRh - module of guarantee risk of health insurance,

SCRm - market risk module,

SCRd - counterparty default risk module.

$$\mathbf{SCR_{or} = min\ (0{,}3\ BSCR;0{,}03\ P_{gross})}$$

Pgross - the volume of gross insurance premiums, UAH thousand.

SCRl = Vl*p(σ)

Vl - the amount of net life insurance premiums, UAH thousand,

p(σ) - a combined indicator of the standard deviation of risk by life insurance classes, p(σ) ≈ 3* σ,

SCRnl = Vnl*p(σ)

Vnl - the sum of net insurance premiums for types of insurance other than life and health insurance, UAH thousand

p(σ) - a combined indicator of the standard deviation of risk by classes of insurance other than life and health insurance, p(σ) ≈ 3* σ,

SCRh= Vh*p(σ)

Vh - the sum of net insurance premiums for health insurance, thousand UAH

p(σ) - a combined indicator of the standard deviation of risk by health insurance classes, p(σ) ≈ 3* σ,

$$SCR_m = K_\gamma * \sqrt{\sum A_j^2} * \sigma^2_{(m)j}$$

Kγ - the critical point of the Student's distribution at a given reliability γ and a one-sided critical limit (Appendix A),

Aj - the book value of the j-th asset, thousand UAH.

σ(m)j - the standard deviation for the j-th asset.

$$SCR_d = K_\gamma * P_{ri} \sqrt{1 - \omega}$$

Pri - the amount of premiums ceded to reinsurers, UAH thousand,

ω - coefficient corresponding to the reinsurer's rating.

Table 10 – Standard deviation of risk by class of insurance

j / i	Market	Default	Life	Health	Risk insurance
Market	1	0,25	0,25	0,25	0,25
Default	0,25	1	0,25	0,25	0,5
Life	0,25	0,25	1	0,25	0
Health	0,25	0,25	0,25	1	0
Risk insurance	0,25	0,5	0	0	1

The share of the regulatory solvency margin (Minimum Capital Requirement - MCR) in the Solvency Capital Requirement (SCR) should be at least 25% and not more than 45%.

$$0{,}25 * SCR \leq MCR \leq 0{,}45 * SCR$$

Table 11 – Indicators for assessing the stress resistance of an insurance company

Indicator	Formula
Reinsurance independence ratio (Risk retention)	$\frac{\text{Net insurance premiums}}{\text{Insurance premiums}}$
Ratio of profitability of insurance activities (Insurance limit)	$\frac{\text{Net income (loss)}}{\text{Insurance premiums}}$
Level of capital in total assets	$\frac{\text{Capital}}{\text{Assets}}$
Asset risk ratio	$\frac{Accounts\ receivable}{Insurance\ premiums\ +\ Reimbursements\ from}$
Insurance reserves adequacy ratio	$\frac{\text{Чисті страхові резерви}}{\text{Середній обсяг страхових премій за останні 3 р}}$
Insurance risk ratio	$\frac{Net\ insurance\ reserves}{Capital}$

Continuation of table 11

Independence ratio	$\frac{Borrowed\ capital}{Equity}$
Solvency margin ratio	$\frac{\text{Actual solvency margin}}{\text{Normative solvency margin}}$
Loss ratio of insurance operations	$\frac{Insurance\ indemnities}{Insurance\ premiums}$

The actual solvency margin is determined by the following formula:

$$\textbf{ФЗП} = \Sigma A - \Sigma НА - \Sigma З$$

ΣA - the total value of the insurance company's assets, UAH thousand,

ΣNA - the total value of intangible assets of the insurance company, UAH thousand,

ΣL - the total amount of liabilities of the insurance company, including insurance liabilities, UAH thousand.

The normative solvency margin should be equal to the greater of the values determined by the formulas:

$$\textbf{НЗП}_1 = (СП - СП_П) \times 0{,}5) \times 0{,}18$$

СП - amount of insurance premiums collected for the previous 12 calendar months, UAH thousand,

СПп - amount of insurance premiums transferred to reinsurers for the previous 12 calendar months, UAH thousand,

0.18 - reduction coefficient adopted based on the requirements of EU standards.

$$\textbf{НЗП}_2 = (СВ - СВ_П) \times 0{,}5) \times 0{,}26$$

СВ - amount of insurance claims for the previous 12 calendar months, UAH thousand,

СВп - amount of insurance claims paid by reinsurers for the previous 12 calendar months, UAH thousand,

0.26 - reduction coefficient adopted based on the requirements of EU standards.

$$\textbf{НЗП} = \textbf{НЗП}_1 > \textbf{НЗП}_2 \textbf{ або } \textbf{НЗП}_1 < \textbf{НЗП}_2$$

In order to ensure a sufficient level of solvency, according to the legal requirements, the actual solvency margin must exceed the regulatory solvency margin at any date, i.e., the condition must be met at all times:

$$\textbf{ФЗП} > \textbf{НЗП}.$$

Self-work. Essay topics:

1. The concept of the need, goals and forms of state regulation of the financial services market.
2. The main functions and powers of the National Bank of Ukraine to regulate the financial services market.
3. The activities characteristics of the State Commission on Securities and Stock Market to regulate the activities of financial services providers.
4. Characteristics of measures authorized state bodies influence for offenses in the financial services market.
5. General problems and directions for improving state regulation of the financial services market in Ukraine.
6. Features of credit unions regulation.
7. Specifics of state supervision and control over the activities of pawnshops.
8. Features of non-state pension funds state regulation.
9. State regulation of collective investment institutions.
10. State regulation of financial services market infrastructure institutions.

Key terms and concepts: state regulation of the financial services market, goals of state regulation of the financial services market, National Bank of Ukraine, State Securities and Stock Market Commission, State Financial Monitoring Service of Ukraine, state policy in the field of prevention and counteraction to legalization (laundering) of proceeds from crime, financing of terrorism and financing of proliferation of weapons of mass destruction, subjects of primary financial monitoring, subjects of state financial monitoring, national risk assessment in the field of prevention and counteraction to legalization (laundering) of proceeds from crime and terrorist financing, self-regulatory organizations of market participants, forms of the financial services market state regulation, licensing of financial services activities, measures of the authorized state body influence, primary and secondary financial monitoring, Basel III, Solvency II.

GUIDELINES FOR THE IMPLEMENTATION OF CONTROL WORK BY APPLICANTS FOR HIGHER EDUCATION OF EXTRAMURAL STUDY

General guidelines for completing, grading, and defending a test

The test is a written self-work. The purpose of the test in the discipline "Financial Services Market" is to expand and deepen students' knowledge of this discipline, develop skills of creative self-work, master the ability to argue their own point of view, make financial calculations, generalize, systematize and analyze financial and economic indicators, etc.

Choosing a test option. The test consists of theoretical and practical parts. In the theoretical part, you must give a detailed answer to two proposed theoretical questions. In the practical part, you are required to solve a case study or a situational task and draw conclusions about the results obtained. The number of the test variant corresponds to the serial number under which the applicant's name is reflected in the list of the academic group, in cases where the number of higher education applicants exceeds the number of options, the choice of the test variant is agreed with the lecture.

The test paper should contain the following basic structural elements, arranged in the following sequence:

- cover sheet;
- answers to theoretical questions;
- practical part;
- list of references.

The test consists of the following stages:

- familiarization with the topic of the theoretical part of the test,
- selection and analysis of scientific sources of information on the proposed topic, drawing up a preliminary plan for answering theoretical questions;
- consultations with the lecture, approval of the final plan for answering theoretical questions;
- writing the text of the theoretical part of the work in accordance with the requirements for its design;
- solving the problem of the practical part of the work, formulating conclusions about the results obtained;
- submitting the work for review to the lecture,
- familiarization with the lecture's comments, correction of errors (if if available), and resubmission of the test.

The title page is the first page of the test paper and contains basic information about the paper and its author.

The theoretical part of the test paper must contain a literature review on the proposed issue. In the literature review, the student should outline the main stages of the development of scientific thought on the issue, systematize information sources, critically evaluate them, separate the most significant provisions, and determine the main thing in the current state of the problem. The materials of the theoretical part should be systematized in a certain logical sequence.

The total amount of the theoretical part of the paper should be at least 7-8 A4 pages.

Since the test paper is devoted to a relatively narrow topic, the review of the works of predecessors should be conducted on the issues of the chosen topic, and not on the entire problem as a whole. By briefly and critically reviewing the work of predecessors, the author should identify those issues that remain unresolved. It is advisable to conclude this section with a brief summary of the need for research in this area and offer your vision of solving the existing problems.

The list of references is one of the essential parts of the test paper and reflects the student's creative self-work. It is recommended to place the sources used in the order in which they are mentioned in the text, either by through numbering or by alphabetical order of authors' names or titles of works. The number of sources used indicates the breadth of coverage of the problem and the effectiveness of the work on it. The number of sources is not limited and depends on the topic of the test.

If the author refers to any borrowed facts or quotes the works of other authors, he or she must provide references to the sources from which the materials are taken.

The practical part of the test is performed according to the following algorithm:

- write down the condition of the problem with the input numerical data according to the chosen option;
- sequentially write down or display the formulas (in general form using symbols) that should be used in solving this problem with the necessary explanations and comments;
- based on the input data, the necessary calculations are made and the answer is formed;
- substantiate the conclusions about the results obtained.

When completing the practical part, it is advisable to use the knowledge gained in lectures and practical classes, as well as methodological recommendations.

The test paper is submitted to the department for review and then handed over to the lecture in due time and posted in the Moodle system for review no later than two weeks before the start of the examination session.

In accordance with the curriculum and the Temporary Regulations on the organization of the educational process using distance learning technologies at the Petro Mohyla Black See National University of 20.08.2020, a procedure has been developed that regulates the training of higher education students majoring in 072 "Finance, Banking, Insurance and Stock Market", including the use of information and telecommunication technologies and technical means of video communication. The use of information and telecommunication technologies and technical means of video communication to organize the procedure for remote defence of control works is carried out for the period of announcement of national or local restrictive measures in Ukraine.

Assessment criteria for the test.

Assessment criteria for answers to theoretical questions:

4 points - the higher education student is fluent in the material, the answer is structured, concise, presented in a logical sequence, the text is accompanied by visualization in the form of graphs, tables, diagrams, figures, etc. During the defense of the test, the higher education student demonstrates fluency in theoretical material, provides reasonable answers to the questions posed.

2-3 points - the higher education applicant has a general knowledge of the educational material, uses a sufficient number of scientific sources, answers questions during the defense, but without sufficient justification and argumentation.

1 point - the student does not have full knowledge of the educational material, without argumentation and justification, superficially presents it to answer questions, there is no visualization, there are minor errors and inaccuracies, during the defense he/she does not sufficiently reveal the content of the proposed questions.

0 points – the student does not know the educational material, it is not sufficiently worked out, there is no structure, logical sequence of presentation of materials, references, during the defense, does not understand the content of the questions and is unable to give a clear answer to them.

Assessment criteria for practical and situational tasks:

6 points - the answer is correct, contains the necessary elements of financial analysis, is systematized, formulas are used correctly and consciously, and contains a comprehensive justification.

5 points - the results obtained are generally correct, but there are minor inaccuracies in the presentation of the material that do not affect the final result.

4 points - the answer is partially correct, there are errors and inaccuracies, and the answer is not sufficiently substantiated.

3 points - the problem is solved correctly, but there are some inaccuracies, no references are given, and the answers to all the questions posed in the problem are not given.

2 points - the problem is partially solved correctly, has the correct course of solution, but arithmetic errors are made that led to an incorrect final result.

1 point - the answer contains a significant number of errors, does not contain relevant conclusions and elements of analysis.

0 points - the problem is solved incorrectly or not at all.

The maximum number of points for the test is 20 points.

Table 1 – Number of points for the tasks

№	Type of the task	Amount	Points	Maximum number of points
1	Theoretical question	2	4	8
2	Practical or situational task	2	6	12
Total				20

A positively assessed test is a mandatory type of academic work, based on the results of which a higher education student is admitted to the final semester control, the results of the test are taken into account in the final assessment. If a higher education student fails the exam, the results of the positively assessed control work remain with him/her to participate in the retake. A higher education student is not allowed to take the final examination if he or she has no positive test results.

Variants of topics for the theoretical part of the paper

1. Prerequisites for the emergence of the financial services market.
2. The role and functions of the financial services market.
3. Classification of financial services market participants.

4. The concept of financial intermediation.
5. Functions of financial intermediaries.
6. Segmental structure of the financial services market.
7. Institutional structure of the financial services market.
8. The importance of financial services in the stock market.
9. The place and role of the risk management services market in the process of movement of financial assets.
10. Placement of capital in banking institutions.
11. Operations with money market instruments.
12. State financial institutions in the money market.
13. Financial services of non-state pension funds.
14. Life insurance services as a form of savings.
15. Financial services as a component of the collection form of payment.
16. Financial services as a component of the letter of credit form of payment.
17. Financial services as an integral element of settlements through blocked accounts.
18. Financial services as a component of currency clearing settlements.
19. The market of SPOT operations.
20. Operations in the forward foreign exchange market.
21. SWAT operations.
22. Bank credit (abstracts on certain types of bank credit).
23. Types of servicing of emission operations in the stock market.
24. Issuance activities of the state in the stock market.
25. Intermediary services in investing capital in securities.
26. Exchange operations with securities.
27. Issuance of government bonds and budgetary policy of the state.
28. Securities portfolio management.
29. Trust management of financial assets.
30. Collective investment services.
31. Intermediary operations in the insurance market.
32. Risk transfer by insurance companies.
33. Hedging risks with the help of financial intermediaries.
34. Transfer of currency risk by financial intermediaries.
35. Avalanche and acceptance credit as a risk management tool.
36. Forfaiting as a risk management tool.
37. Assumption of investment risk by financial intermediaries.
38. The system of financial services market infrastructure.
39. Organizationally formalized markets.
40. National depository system.

41. Information and analytical systems.
42. Functions and interconnection of individual elements of financial market infrastructure.
43. The impact of registration activities on the financial services market.
44. The impact of depository activities on the financial services market.
45. The impact of information and analytical systems on the financial services market.
46. Bodies of state regulation of the financial services market in Ukraine.
47. Protection of the consumers rights financial services.
48. Interaction of state regulatory authorities of the financial services market in Ukraine.
49. Regulation of financial intermediaries (abstracts on certain types of financial intermediaries).
50. State regulation of trade organizers in the financial market.

Table 2 – Matrix of distribution of options and questions between higher education students

Variant	**Question**	**Variant**	**Question**	**Variant**	**Question**	**Variant**	**Question**	**Variant**	**Question**
1	*1, 26*	***6***	*6, 31*	***11***	*11, 36*	***16***	*16, 41*	***21***	*21, 46*
2	*2, 27*	***7***	*7, 32*	***12***	*12, 37*	***17***	*17, 42*	***22***	*22, 47*
3	*3, 28*	***8***	*8, 33*	***13***	*13, 38*	***18***	*18, 43*	***23***	*23, 48*
4	*4,29*	***9***	*9, 34*	***14***	*14, 39*	***19***	*19, 44*	***24***	*24, 49*
5	*5,30*	***10***	*10, 35*	***15***	*15, 40*	***20***	*20, 45*	***25***	*25, 50*

Conditions of practical tasks and recommendations for their solution

Practical task 1

1. A promissory note in the amount of UAH 32000 was issued for 230 days with interest at the rate of 25% and the estimated number of days in a year is 365. The bank recognized the bill 54 days before the due date at the discount rate of 10% per annum and the number of days per year is 360. Determine the amount received by the bearer and the amount of income of the bank.

Solution

1) Find the accrued amount that the bearer will receive at the end of the bill's maturity, after accruing interest:

$$S = P(1 + i * n) = P(1 + i * \frac{\partial}{k})$$

$$S = 32000(1 + 0.25 * 230/365) = 37041.10 грн.$$

2) find the amount for which the bank will buy the bill from the bearer (the amount of the bill's accounting):

$$P_0 = S(1 - d * n) = S(1 - \partial / k * d)$$

$$P_0 = 37041.10(1 - 0.1 * 54/360) = 36485.48 грн.$$

3) calculate the amount of the bank's income as the difference between the amount accrued and the amount paid to the bank's bearer:

$$I = S - P_0$$

$$I = 37041.10 - 36485.48 = 555.62 грн.$$

Answer: the bank's income will amount to UAH 555.62; the amount received by the bearer is UAH 36485.48.

2. When paying a bill of exchange in the amount of UAH 12 thousand, which has 32 days to maturity, the bank's income amounted to UAH 2125. Determine the interest rate and the discount rate used by the bank if the number of days in a year is 360.

Solution

1) Find the discount rate using the formula:

$$d = \frac{S - P}{S * \partial / k} = \frac{I}{S * \partial / k} -$$

$$d = \frac{2125}{12000 * 32/360} = \frac{2125}{1066.67} = 1.99 \cdot або \cdot 199\%$$

2) find the interest rate using the formula:

$$i = \frac{S - P}{p * n} = \frac{S - P}{p * \partial / k} = \frac{I}{p * \partial / k}$$

$$i = \frac{2125}{(12000 - 2125) * 32/360} = \frac{2125}{877.78} = 2.42 \cdot або \cdot 242\%$$

Or by applying the equivalence formula:

$$i = \frac{d}{1 - n * d};$$

$$i = \frac{1{,}99}{1 - 1{,}99 * 32/360} = \frac{1.99}{0.823} = 2.42$$

Answer: the discount rate is 242%: the interest rate is 199%.

2. A discount-type deposit certificate with a nominal value of UAH 15,000, whose price is determined using the discount rate, is purchased six months before maturity and sold 3 months later. The market interest rates at the time of purchase and sale are 40% and 35%, respectively. Determine the income and profitability of the transaction.

Solution

1) Find the purchase price of the certificate of deposit by performing an accounting transaction:

$$P_K = S(1 - n_K * d_K)$$

$$P_K = 15000*(1 - 0.5*0.4) = 12000 грн.$$

2) find the selling price of the deposit certificate by applying the accounting formula:

$$P_n = S(1 - n_n * d_n)$$

$$P_n = 15000(1 - 3/12*0.35) = 13687.5 грн.$$

3) calculate the income from the sale and purchase of a certificate of deposit as the difference between the sale price and the purchase price of the certificate:

$$Дохід = P_n - P_k$$

$$Дохід = 13687{,}5 - 12000 = 1687{,}5 грн.$$

3) calculate the profitability of the purchase and sale transaction in the form of an effective interest rate per annum using the formula:

$$i_{еф.} = \frac{W}{P*n} = \frac{дохід}{P_n*n}$$

$$i_{еф.} = \frac{1687{,}5}{12000*3/12} = \frac{1687{,}5}{3000} = 0{,}5625 \cdot або \cdot 56{,}25\%$$

Answer: the income from the sale and purchase of a certificate of deposit is UAH 1687.5; the yield on this transaction is 56.25% per annum.

4. A bill of exchange is recorded in a bank six months before its maturity. The monthly inflation rate is 2 %. Determine the discount rate that ensures the real return on accounting and corresponds to the real return on lending operations of 6 % per annum.

Solution

1) find the inflation rate for the period of the financial transaction using the formula:

$$I\alpha = (1+\alpha)^n$$

$$I\alpha = (1+0{,}02)^6 = 1{,}126162$$

2) using the Fisher formula, we find the interest rate that would ensure the required level of real profitability of lending operations:

$$i\alpha = \frac{(1+n*i)*I\alpha - 1}{n}$$

$$i\alpha = \frac{(1+0{,}5*0{,}06)*1{,}126162-1}{0{,}5} = 0{,}3199 \cdot або \cdot 31{,}99\%$$

4) find the discount rate that would ensure the required real return on lending operations in an inflationary environment using the interest rate equivalence formula:

$$d\alpha = \frac{i\alpha}{1+n*i\alpha}$$

$$d\alpha = \frac{0{,}3199}{1+0{,}5*0{,}3199} = 0{,}2758 \cdot або \cdot 27{,}58\%$$

Answer: The discount rate of 27.58% should be used.

Matrix of initial data for task 1 by variants

Type of tasks №1

Variant	***Indicator***		
	P	***i***	***d***
1	30000	20	10
5	35000	25	12
9	40000	23	11
13	42000	27	14
17	45000	24	15
21	47000	22	13
25	50000	26	12

Type of tasks №2

Variant	***Indicator***		
	I	***δ***	***k***
2	2100	30	360
6	2000	32	365
10	2150	33	360
14	2200	35	365
18	2175	37	360
22	2300	34	365

Type of tasks №3

Variant	***Indicator***		
	S	d_k	d_n
3	15500	45	40
7	16000	43	38
11	17000	42	35
15	16500	44	39
19	17500	46	37
23	18000	43	40

Type of tasks №4

Variant	***Indicator***		
	α	***i***	***n***
4	3	5	6/12
8	2,5	7	7/12
12	3,5	5,5	9/12
16	2	6	5/12
20	4	5	8/12
24	3	6,5	10/12

Practical task 2

To complete the task, use the methodology recommended in Topic 8. State regulation of the financial services market. Financial monitoring

Task 1. Analyze the dynamics of indicators characterizing the bank's capital adequacy, using the financial statements for the last three years, analyze and justify their compliance with the requirements of the NBU and the Basel III Directive.

Task 2. To analyze the dynamics of the bank's financial condition indicators, calculate the necessary ratios and assess the quality (risk, profitability and liquidity) of the bank's deposit portfolio for the last three years.

Task 3. Calculate the values of indicators H11 and H12, analyze their compliance with regulatory values, analyze the structure and dynamics of the securities portfolio and the dynamics of the bank's securities performance indicators, analyze the risks of investing in the bank's securities for the last three years.

Task 4. Calculate the amount and analyze the regulatory capital and capital required to cover the bank's operational risk for the last three years.

Task 5. Calculate the indicators for assessing the stress resistance of an insurance company, determine the generalized value, characterize the state of insurance company's protection against risks as of 01.01.20xx, and justify the conclusions.

The financial statements required to complete the tasks are selected by higher education students on the official websites of financial institutions from the proposed list.

№ п/п	Banking institutions	Non-banking institutions
1	JSC "PrivatBank"	IC "ARX"
2	JSC "Oschadbank"	IC "Unica"
3	JSC "Raiffeisen Bank"	IC SG "TAS"
4	JSC "Sense Bank"	IC "Arsenal Insurance"
5	JSC "Ukreximbank"	IC "USG"
6	JSC "OTP Bank"	IC "INGO"
7	JSC UkrSibbank	IC "VUSO"

Continuation of table

8	JSC "Citibank"	IC "Alfa Insurance"
9	JSC "PUMB"	IC "PZU Ukraine"
10	JSC "Universal Bank"	IC "Universalna"
11	JSB "Ukrgasbank"	IC "Oranta"
12	JSC JSCB "Lviv"	IC "Providna"
13	JSC "Kredobank"	IC "Knyazha VIG"
14	JSB "Pivdenny"	IC "Guardian"
15	JSC "ING Bank Ukraine"	IC "Allianz Ukraine"
16	JSC "Piraeus Bank ICB"	IC "UPSK"
17	JSC "Procredit Bank"	IC "Express Insurance"
18	JSC "Bank Credit Dnipro"	IC "Kraina"
19	JSC "Credit Agricole Bank"	IC "Euroins Ukraine"
20	JSC "Credit Europe Bank"	IC "Prosto-strakhovanie"
21	JSC "Accordbank"	IC ""Unika - zhyttia""
22	JSC "Tascombank"	IC "INGO - zhyttia "
23	JSC "Idea Bank"	IC "Met Life"
24	JSC "Bank for Investments and ings"	IC "Knyazha VIG - zhyttia "
25	JSC "Globus Bank"	IC "PZU Ukraine Life Insurance"

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Antimonopoly Committee of Ukraine - http://www.amc.gov.ua

Database of Ukrainian legislation on the Internet - www.lawukraine.com

State Financial Monitoring Service of Ukraine - www.sdfm.gov.ua

State Agency for Investment and National Projects of Ukraine - www.ukrproject.gov.ua

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Cabinet of Ministers of Ukraine - http:// www.kmu.gov.ua

Ministry of Finance of Ukraine - http://www.minfin.gov.ua

National Securities and Stock Market Commission of Ukraine - www.nssmc.gov.ua

National Bank of Ukraine - http://www.nbu.gov.ua

Pension Fund of Ukraine - http://www.pfu.gov.ua/

National Security and Defense Council of Ukraine - http:// www.rainbow.gov.ua/

Accounting Chamber of Ukraine - http://www.ac-rada.gov.ua/

Ukrainian Stock Exchange PFTS. - www.pfts.com

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Official websites of international financial organizations:

Bank for International Settlements - http://www.bis.org/

World Trade Organization (WTO) - http://www.wto.org/

United Nations Department of Statistics - http://unstats.un.org/

European Bank for Reconstruction and Development - http://www.ebrd.com/

European Investment Bank - http://www.eib.org/

European Central Bank - http://www.ecb.int/

International Finance Corporation - http://www.ifc.org/

International Monetary Fund - http://www.imf.org/

Organization for Economic Cooperation and Development (OESD) - http://www.oecd.org/

World Bank - http://www.worldbank.org/

Central European Bank - http://www.ecb.int/

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Валентин Вікторович
ДРАНУС
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ЧЕРНЮК

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«Ринок фінансових послуг» (англійською мовою)
для студентів спеціальності 072 «Фінанси, банківська справа, страхування та фондовий ринок»

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