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Justification of the discounting rate components for the implementation of socially oriented projects

■ **Abstract.** The purpose of the study was to provide a theoretical and methodological justification of the key elements that form the discount rate for social projects. Particular attention was paid to the factors that affect its value, taking into account the unique features of social initiatives: a long payback period, low commercial profitability and high social impact. Approaches to determining the discount rate were summarised, focusing on methodologies for economic calculations of different types of projects. Classical models (capital asset valuation model) and alternative methods (comparative sales, related investments, internal rate of return, hybrid approaches) were considered, considering the specifics of industries. For example, in the IT sector, the risks of obsolescence are important, and for infrastructure projects, the long-term nature of investments and government regulation are important. The activities of rating

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agencies (S&P, Fitch, Moody's) that assess long-term investment risks were analysed, as well as regulations, in particular, the Order of the Cabinet of Ministers of Ukraine No. 312 "On Approval of the Procedure and Methodology for Assessing an Investment Project with Significant Investments". The authors substantiated the level of risks that should be considered when determining the discount rate: economic, political, market and social. For social projects, the risks may be of a different nature, as they often have lower profitability but a greater social impact. Approaches to determining the discount rate in developed countries (USA, Japan, Germany) were compared and the possibility of their adaptation to Ukraine was assessed. Methodological recommendations for determining the discount rate for social projects with a more balanced approach to risks, taking into account not only financial but also social, political and regulatory risks, were developed. The proposed recommendations will help investors to better assess the risks and benefits of socially oriented projects

■ **Keywords:** risk level; cost of capital; risk premium; financing; project benefit; investors

■ INTRODUCTION

Determining the discount rate is an important stage and a key component of modern investment valuation methods, including the calculation of the value of a company and certain elements of its assets, as well as the assessment of the feasibility of investment projects and other aspects. Due to the large number of methods for determining the discount rate, it is important to analyse and synthesise the factors that influence this rate, as well as assess its significance for the final results of the valuation. This will allow choosing the most appropriate method that best suits the current economic situation in Ukraine. The main challenge of the study is to select discount rates that adequately account for both economic and social benefits in long-term public benefit projects. Many social and environmental initiatives, such as renewable energy, healthcare, education, and infrastructure projects, require a special approach to assessing their effectiveness due to their long-term nature and significant social impact (Zuo *et al.*, 2024). The question is how to determine a discount rate that reflects not only the economic benefits but also the broader social and environmental impacts of such projects.

The study by P.W. Saługa *et al.* (2021) analysed the discount rate for onshore wind farms in Poland. The authors used the risk-adjusted discount rate to assess the risks of projects, comparing them to traditional thermal power plants. The study showed that risk-adjusted discount rate reflects the risks of projects but does not take into account the environmental benefits of the transition to renewable energy, which could improve the long-term attractiveness of such projects. F. Cherbonnier & C. Gollier (2023) investigated risk-adjusted discount rates for projects in low-income countries. They suggest that these countries should use lower rates due to the higher social benefits of such projects. Their study highlighted those economic costs may be lower in lower-income countries, but global economic factors such as fluctuations in traditional energy prices, changes in global capital markets, and a country's inflation rate were not considered in detail. United States Agency for International Development studied social discount rates for renewable energy projects in rural communities in the United States (The social impact..., 2024). They used the social discount rate to assess aspects such as job creation, energy savings, and environmental impact. The study indicated significant social benefits from these projects, but it covered only a few regions, which limits the broad applicability of the results. M.A. Rauf & B. Frayne (2023) studied

investments in affordable housing in urban areas of Canada, applying a social discount rate to estimate social and economic returns. Their analysis showed that such projects have long-term benefits, such as reduced homelessness and improved health. However, the study is limited to the Canadian context and does not take into account the conditions of other countries.

L. Zhou *et al.* (2022) investigated the cost-effectiveness of public health measures during the COVID-19 pandemic, including vaccination campaigns, using social discount rates. They noted long-term public health benefits and economic savings from preventing disease outbreaks. However, the study did not consider other economic factors, such as inflation, currency risks and exchange rate fluctuations, which could affect decision-making. W. Intaraburt *et al.* (2022) studied water reclamation projects in Thailand, using different discount rates (from 3% to 11%) to assess the financial viability of projects. The results showed that although the projects were not financially viable, the inclusion of environmental benefits made them profitable in many scenarios. However, the study did not consider possible changes in climate conditions. M. Haacker *et al.* (2020) analysed social discount rates in healthcare, pointing out that the standard 3% rate does not correspond to the rate of economic growth in low-income countries. The authors recommended using a higher rate of 5% for low-income countries, but the study did not pay enough attention to social factors that may affect the health of the population.

Thus, the discount rate plays a crucial role in assessing the economic viability of socially oriented projects. It allows taking into account not only financial aspects but also long-term social and economic benefits, which is important for the implementation of projects aimed at improving the quality of life and sustainable development of the community. A review of previous studies shows that the choice of discount rate depends on various factors, including risks, the economic situation in the country, and the specifics of the project. Thus, the assessment of the components of the discount rate for socially oriented projects is a key issue, as the correct determination of this rate will allow investors to accurately assess risks and make informed decisions on investments in such projects, which led to the need for the current study. The purpose of the study was to provide a theoretical and methodological substantiation of the components of the discount rate for socially oriented projects.

◼ THEORETICAL OVERVIEW

The concept of a discount rate (discount) is broadly defined as a coefficient used to calculate the present value of future cash flows. In the field of valuation, discounting reflects the rate of return on invested capital and profitability in the post-forecast period. According to this indicator, an investor can invest in the asset being valued at the valuation date to cover all investment risks. The discount rate includes a premium for the risk associated with investing in the business being valued: the greater the risk, the higher the discount rate. As M. Busu (2022) noted, the time value of money is a fundamental financial concept, and the discount rate plays a crucial role in investment decisions and financial planning. A clear explanation of the concept of the social discount rate is provided by J. Broughel (2020), who defined it as "the interest rate for consumption". He explained its importance as the rate at which a unit of current consumption is exchanged for a unit of future consumption. This interest rate reflects the time preferences of consumers and, under certain conditions, can represent the risk-free market interest rate. All other things being equal, this approach is quite effective for each individual country, for each individual investment project, regardless of its focus on solving any social problems, but with minor adjustments. Namely, the addition of the cumulative effect when justifying its level, according to H. Yin (2019), M. Korol (2020) and R. Barrell & D. Karim (2020). On the one hand, the established level of the risk-free interest rate in each country already takes into account the economic characteristics of its development, while on the other hand, if risk premiums are added to its size, this justifies the specifics of implementing socially important investment projects.

In support of this view, the scientific work of G.E. Kendall *et al.* (2019) and D.C. Hornero & S.M. Montalván (2021) explained the meaning of the concept of entrepreneurial social discount rate. The scope of its application is determined by projects implemented through state support for entrepreneurship development programmes. Then, a premium for the unsystematic risk of a new enterprise and consideration of the loss aversion factor are added to the social discount rate. A.O. Zolkover *et al.* (2020) considered the social discount rate as a weighted average cost of capital (WACC). This approach implies that the social discount rate should be calculated as a weighted average between the marginal social opportunity cost of capital, the social rate of time preference, and, in the case of open economies, the cost of borrowing on external financial markets. For the purposes of the current study, the discount rate is the interest rate used to bring future cash flows to their present value; in the scientific context, it is a key element in the analysis of the economic efficiency of investments, as it takes into account the impact of time on the value of money. The higher the discount rate, the lower the value of future cash flows, as they are depreciated by inflation, risks, and opportunity costs (Danchuk *et al.*, 2021). In economic models, the discount rate determines how profitable long-term projects are and is used to calculate indicators such as net present value and internal rate of return (Shahini *et al.*, 2023).

In general, the discount rate, as noted by J. Bosshardt & E.M. Cerutti (2020) and M.S. Gasparian *et al.* (2021), has 3 main purposes: reflecting the rate of return at which future cash flows are brought to present value at the measurement date; reflecting the degree of risk associated with an investment in the object being valued; and demonstrating the cost of capital that the company has raised. The discount rate is an indicator for other interest rates, setting a benchmark for the cost of borrowed and invested funds, and serves as a "price tag" for lending rates, and also notes that the discount rate is mainly used to calculate the present value of future cash flows (Burawat, 2019; Maystrenko, 2022). By discounting future income or flows to their present value, investors can determine the present value of an investment. This is particularly important in valuation practices, where experts determine the fair market value of assets that may not have a competitive market.

Central banks use the key policy rate as a monetary policy tool to influence economic activity (Spytska, 2023). In general, the impact of the key policy rate varies across countries and economic environments. For example, in some African countries, changes in the discount rate have shown that interest rates have incomplete transmission to lending rates (Musimbi *et al.*, 2023). Moreover, central bank communications have become an influential tool for directing market interest rates and shaping inflation expectations, which in turn affect the key policy rate (Kuncoro, 2020). As emphasised by O. Maistrenko (2023), changes in the key policy rate affect the cost of borrowing for banks, which in turn affects interest rates in the economy. For example, as noted by O. Kuzmak & Y. Bondar (2024) and M.F. Ullah *et al.* (2024), a cut in the key policy rate can stimulate borrowing and spending, while an increase in the key policy rate can help control inflation and slow down economic overheating. Recent studies have highlighted the importance of the discount rate in managing monetary policy, especially in response to economic crises or uncertainties. The discount rate is an important monetary policy tool that affects fluctuations in interbank interest rates and the bank deposit market.

◼ MATERIALS AND METHODS

The study began with a review of existing scientific approaches to determining the discount rate for different types of investment projects. A special emphasis was placed on social projects, where economic indicators are often not decisive, and the main goal is to achieve public benefit. The inclusion criteria covered studies that examined methods for estimating the discount rate for various types of investment projects, including social projects, with a focus on such aspects as long payback, low commercial profitability, and high social impact. Articles were also selected that included a comparative analysis of traditional economic approaches, such as the capital asset pricing model (CAPM) and the WACC, with their adaptation to social projects. The exclusion criteria included the elimination of sources that did not take into account the specifics of social projects or that dealt exclusively with commercial initiatives without social aspects. Studies that did not contain detailed descriptions of methodologies or provide practical recommendations for determining discount rates for long-term social projects were also excluded. The search terms included combinations of terms such as "discount rate", "social projects", "CAPM", "WACC", "investment risks", "social effect", "long-term payback", "economic efficiency". The most relevant literature on the issue of determining the discount

rate was selected, highlighting the functions performed by this rate and what can be influenced by the discount rate. Attention was focused on the study and comparison of various methods of determining the discount rate. Traditional methods, such as CAPM, WACC, internal rate of return, cumulative build-up method, linked investment method, dividend discount model, subjective valuation method, hybrid approaches method, and comparable sales method, which are the most commonly used for estimating the cost of capital in investment projects, were considered. At the same time, alternative approaches that incorporate social aspects, such as the social discount rate, which allows for the consideration of social risks and benefits that go beyond commercial indicators, were explored.

The legal framework of Ukraine, in particular paragraphs 22-27 of the Order of the Cabinet of Ministers of Ukraine No. 312 (2024), was examined. The requirements for using the 5% rate for projects with public funding and a social component were studied. Separately, the recommendations of international rating agencies (S&P, Fitch, Moody's) on how to take risks into account when calculating the discount rate, as well as their impact on the long-term viability of social projects, were studied (Baron *et al.*, 2020; Franchuk *et al.*, 2020; Abdullayeva & Ataeva, 2022). Particular attention was paid to their approach to assessing long-term risks in unstable economic environments such as Ukraine. Approaches to determining the discount rate in different countries were compared, namely the United States, Japan, and Germany, and the possibility of adapting such models for Ukraine, given the country's economic conditions, was considered.

■ RESULTS AND DISCUSSION
Methods of determining the discount rate and their application

The discount rate is a key measure of risk and expected return on investment that reflects the change in the value of a business over time. It determines the present value of future cash flows given the level of risk associated with a particular asset or company. For example, a small regional bank that lacks diversification and operates in a limited market is exposed to higher risk than a large systemic bank that is highly diversified and operates in international markets. In this case, the discount rate for the smaller bank will be higher, as investors expect greater compensation for the risk of non-return on their investments.

Discounting involves the conversion of future cash flows into their present value, which allows for the comparison of different investment options, taking into account market risks and available alternatives. On the asset side, the discount rate is used to estimate the value of future cash flows and determine their present value (Farag *et al.*, 2022). For liabilities, it reflects a company's economic cost of raising capital, including interest rates on debt or the cost of raising equity. For investors, the discount rate is an indicator of the expected return they seek from investing in a company's shares or debt (Dyduch *et al.*, 2024). The higher the risk associated with a company or asset, the higher the expected return, and thus the higher the discount rate. The discount rate plays an important role in evaluating investment decisions and risks associated with future cash flows, and helps investors make more informed decisions about the value of assets (Shuplat *et al.*, 2022).

Choosing an appropriate discount rate that takes into account the specifics of an investment or project is extremely important, as an incorrect rate can lead to inaccurate valuations and poor investment decisions. In addition, the discount rate may need to be adjusted over time to reflect changes in the risk of the investment or market conditions. In summary, there are many methods that can be used to help determine the discount rate, each with its own advantages and disadvantages. Some methods of determining the discount rate and their characteristics are shown in Table 1.

Table 1. Description of discount rate calculation methods

Method name	General characteristic
The method of cumulative construction	Includes the addition of a risk-free rate, considering all possible compensation for the existing risks associated with the subject being evaluated
The method of comparative sales	This method consists in comparing the appraised object with other similar objects that have recently been sold. Regarding discounting, cash flows from real estate and its market value are taken into account
The method of related investments	It can be used in two ways: for equity and debt financing and by individual component parts in the structure of the object. Assumes that the discount rate is calculated according to generally accepted technology
WACC	The method is based on the proportions of each type of capital in the overall financing structure and considers the cost of debt after taking into account tax benefits. The WACC discount rate reflects the average cost of financing the company from various sources
Method of internal rate of return	This approach is implemented in two versions: basic and modified. It involves fixing the discount rate in accordance with the internal rate of return on the investor's equity
LIBOR rate method	In this case, the discount rate is determined based on the value of the currency on the London foreign exchange market, while it is especially important to take into account the risk factors of a particular country
CAPM	The discount rate is defined as the expected return on a share or investment, considering the risk
The method of hybrid approaches	Sometimes a combination of several methods is used to determine the discount rate, especially when the project involves attracting several sources of capital or has a different degree of risk over time
The method of subjective assessment	In some situations, especially for early-stage projects or unique investments, the discount rate may be determined by management subjectively, based on its own judgment and experience
Dividend discount model	For stock valuation purposes, dividend discount model calculates a discount rate based on expected dividend payouts and the current stock price

Source: created by the authors based on A. Mints *et al.* (2019), V. Bilozubenko *et al.* (2020), and N. Hurzhyi *et al.* (2022)

Taking into account the shortcomings of some methods of calculating the discount rate, the cumulative method of construction does not take into account the beta coefficient, but uses the equity risk premium and the company-specific risk premium. This approach circumvents the problem of lack of data on beta, especially when stock market data is not available. In this case, the appraiser should pay special attention to the expert opinion of various factors when determining additional risk premiums, and collect sufficient data to adjust the calculations. This method is commonly used to determine the discount rate when valuing small businesses and small closed companies. At the same time, the basic part of the discount rate for a closed company can be calculated using the CAPM model. However, a number of premiums for specific risks should be added to the value obtained: a risk premium for the small size of the company (if relevant); a premium for unfavourable capital structure (if identified by the appraiser); and a premium for the company's "closeness", i.e., the absence of its public status. Thus, the discount rate is a combined one, since it combines the results obtained using two methods – CAPM and the cumulative method of constructing the discount rate. An alternative approach to determining the discount rate involves analysing the options for financing infrastructure and road construction projects by raising capital from various sources. In this context, the WACC model provides a methodological basis for calculating the discount rate. It reflects the average cost of financing from all sources available to the company, taking into account the share of each source in the overall capital structure. The economic significance of the WACC is that it is a key factor in the decision-making process.

Risk assessment and determination of the risk premium for investing

The aspect that investors should not neglect when financing is risk. This element of the model, the average market rate of return, is an important component because it is used to compare the performance of investments, industries, and/or companies and is analysed in the context of risk, as sectors with higher risk levels usually have higher rates of return to compensate. As a direct calculation of the average return on all publicly traded equities is quite time-consuming, in practice the equity risk premium is usually determined using historical data. This premium reflects the additional return that an investor receives as compensation for assuming the systematic risk associated with investing in equities. The risks of investing in the shares of a particular company may include a country risk premium if the merger is with a non-resident company. The market premium is determined by comparing the return on securities on the market with risk-free investments over a long look-back period (Laeven & Valencia, 2020; Nguyen & Dang, 2023).

For unlisted banks, the risk premium is determined based on industry averages. In doing so, analysts use the returns of an index comprising at least 50 stocks from many sectors of the economy. The more stocks are included in an index, the more comprehensive information it provides about trends in the securities market. The use of this method is most justified in cases where there is reliable data on similar publicly traded companies. As a rule, these are companies whose shares are more or less actively traded on the stock market and there is access to information on the prices of actual transactions. Valuation of closed Ukrainian companies and unlisted joint stock companies is also possible using the CAPM model. To accurately apply this method, it is necessary to determine the beta coefficient by analysing data on similar public companies and make adjustments to take into account the individual risks of a particular company. In addition, the beta coefficient is a fairly universal tool for measuring the risks of not only individual public companies. Using the method of modifying partial indicators to determine the beta coefficient provides a basis for assessing the systemic risk of a country; economic sectors; bank; company operations; equity or debt capital risk of a company (Pronoza *et al.*, 2023).

It is clear that company-specific risks should also be taken into account, such as the risk of company closure. Investing in a closed joint-stock company is riskier due to the lower transparency compared to open companies whose shares are listed on an organised market (open companies are required by law to provide information about their activities to the public) (Kubiczek & Tuszkiewicz, 2022). In addition, there are risks associated with investing in small companies. There are two possible solutions to adjust the CAPM for low liquidity: taking into account the risks of purchasing low-liquid shares by adding an appropriate risk premium to the discount rate obtained by the CAPM and adjusting the result of the assessment of the profitability of shares (without considering low liquidity) by applying a discount for the lack of liquidity.

In turn, when calculating the discount rate using the cumulative discount method, the discount rate starts with the risk-free rate of return, to which is then added the return that compensates for the risk of financing a particular company. Thus, the discount rate under the cumulative method includes a risk-free rate of return and a rate of return that compensates for unsystematic risks specific to the company being valued. The following risk factors are generally presented and taken into account in the valuation theory of other countries, as set out in Table 2.

Table 2. List of key risk factors of other countries

Risk factor	Additional reward for risk, %
The main person in the management, management efficiency	0-5
The scale of the company	0-5
Sponsorship structure	0-5
Industrial and spatial diversity	0-5
Diversity of client base	0-5
Income: profitability and predictability	0-5
Other specific risks	0-5

Source: created by the authors

In Ukraine, several factors have been identified that contribute to unsystematic risk. These include the presence of a key person in the organisation, the size of the organisation, debt (the ratio of equity to debt), insufficient product diversification, insufficient diversification of production within the company, limited company history, peculiarities in business development (by industry and type of activity), and equipment obsolescence (especially relevant for Ukrainian enterprises). Comparing this data with the data in Table 2, it is worth concluding that the non-systematic risk factors are largely consistent with each other, except for the item "Other specific risks", which is related to the specifics of Ukrainian companies. This assessment model has two main limitations. Although the list of risk factors in Table 2 does not formally limit the scope of the analysis, it directs the appraiser's attention to these factors rather than those hidden under the "other" heading. The lack of clear methodologies for analysing the most important risk factors leads to the fact that the appraiser is forced to determine the level of risk under analysis based on assumptions.

These model limitations can be addressed with varying degrees of effectiveness. Under the cumulative model, the valuer should conduct a thorough analysis of the types of risks specific to the company and gradually increase the discount rate as they are identified. Thus, by understanding the key risk factors inherent in any company and the marginal premium that can be allocated to a particular risk, the valuer must determine the extent to which each risk factor affects the company's condition. Difficulties arise due to the need for a specialist to use methods that minimise subjectivity in risk assessment. To reduce subjectivity in risk assessment, sensitivity analysis is an effective tool that allows modelling different scenarios for key risk indicators and assessing their impact on the result. This helps the appraiser to more accurately determine which risks have the greatest impact and adjust the discount rate accordingly. Another method is to use comparative analysis based on historical data or market analogues to justify the level of risk, while reducing the impact of subjective factors.

The cumulative construction method does not include a beta indicator, while it takes into account the equity risk premium and the firm-specific risk premium. This method addresses the lack of beta data when information from stock markets is limited. The appraiser should rely on expert judgement of various factors in setting the additional consideration and collect a significant amount of information to make adjustments. The cumulative method is commonly used to calculate the discount rate when valuing small businesses and private companies. In addition, the basic part of the discount rate for a closed company can be calculated using the CAPM, but at least 3 additional risk premiums should be added to the value obtained: related to the small size of the company being valued; associated with a capital structure that is unfavourable for the company (if noticed by the appraiser); and related to the company's "closeness". In this scenario, the discount rate is set by combining the results obtained using 2 methods – CAPM and cumulative method to establish the above rate.

One component of the discount rate is the risk-free rate of return. An asset is considered risk-free when an investor, having invested funds at the beginning of a certain period, can accurately predict its value at the end of that period (Burban, 2023). Thus, a risk-free asset must provide a constant (stable) income and have a zero probability of default or non-fulfilment of obligations. Only a security issued by the government can be considered such an asset. Such income is expected to be approximately equal to the yield on long-term government treasury bonds. The only type of government securities that meets the requirements of a risk-free asset is a liability with maturity that coincides with the maximum period when it is possible to invest available funds (Kubiczek, 2020). At the expiry of the maturity of government securities and the time period for disposing of surplus funds, the investor can confidently state that he knows what the return on the funds used by him will be at the time of the initial investment.

As for other terms, the most commonly used are the risk-free interest rates on bank deposits or the coupon rate on Eurobonds issued by issuers, including government agencies. The risk-free rate of return reflects the income without risk, and in developed countries, such as the United States, Japan, and Germany, it is calculated based on government bond yields (Tynaliev *et al.*, 2024). For example, the risk-free rate of return in the US is usually based on the yield on 10-year treasury bonds, as they are considered the safest investment due to government backing and low default risk. This is often used for calculations such as WACC or discounted cash flow, as noted by Z. He & A. Krishnamurthy (2020). However, this approach is not appropriate for Ukraine, as investors do not consider investments in Ukrainian government securities to be risk-free, as noted in the works by I. Yagli & B. Deviren (2023), after the outbreak of Russia's war against Ukraine in 2022, investors became more cautious about investing in Ukrainian bonds due to growing political risks and economic instability. Research have shown that the events of the war have led to sharp fluctuations in bond markets, which has led to increased volatility in the yields of these assets. Investors tend to avoid such high-risk markets, which reduces demand for Ukrainian government securities. Comparing risk-free rates in Ukraine and other countries in the same currency makes it possible to assess the level of country risk.

According to the Order of the Cabinet of Ministers of Ukraine No. 312 (2024), paragraphs 22-27 recommend using a social discount rate of 5% for the hryvnia. However, the rate is subject to annual recalculation by the Ministry of Economy of Ukraine. This recalculation is based on the social opportunity cost method, which takes into account the cost of acquiring capital by the public sector and the inflation rate (Gutsalenko *et al.*, 2018). The results of the recalculation must be published on the official website of the Ministry of Economy no later than 1 June. If a new "social discount rate" is not provided for, the previously established rate will be applied. The 12% rate is applied to projects in regions with a developed market and an active business environment, according to R.S. Kvasnytska *et al.* (2019). Such regions may include large cities and industrial centres in developed or emerging economies with high levels of investment, entrepreneurial activity and corporate presence. These may include cities in North America, Western Europe or fast-growing urban centres in Asia and Latin America. An adjustment to the cumulative discount rate may be justified by adding a risk premium. Figure 1 shows the classification and gradation of potential project risk levels.
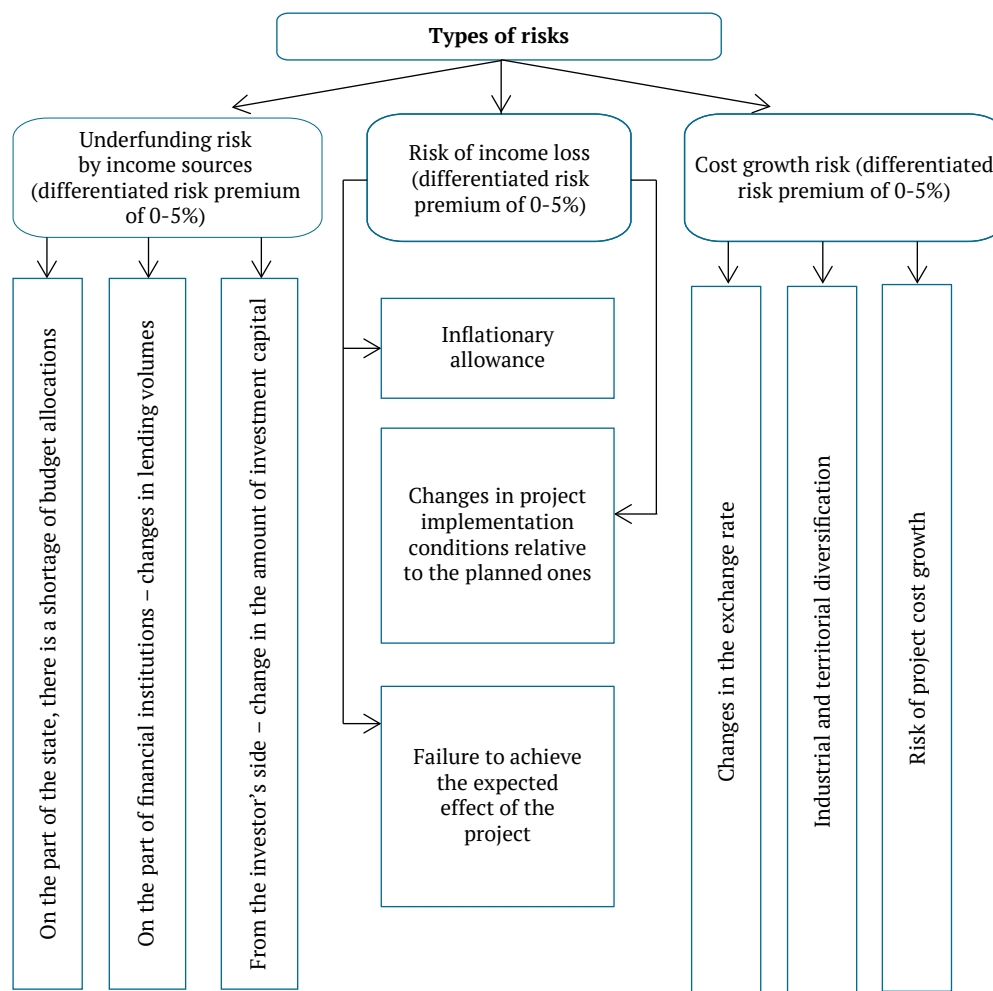
Figure 1. Categories of risks determining the impact on the level of the discount rate

Source: created by authors

Thus, as shown in Figure 1, the overall risk premium can be defined as a weighted average of the premiums for individual types of risks. The gradation of the underfunding risk premium depending on the source of revenue will be in the range of 0-5%. The amount of the risk premium that takes into account the shortfall in budget revenues is proposed to be estimated using the issuer default rating. The data presented in Table 3 shows how leading rating agencies such as S&P, Fitch, and Moody's assess long-term investment risks.

Table 3. Assessment of leading rating agencies regarding the risks of long-term investments

Risk rating conditions	S&P	Fitch	Moody's	Additional risk premium, %
The state has extremely powerful resources for making interest payments on loans and returning the principal amount of the debt	AAA	AAA	Ahh	0
The state demonstrates an extremely high ability to make interest payments on its debt obligations and settle its own debt, which corresponds to long-term ratings	AA+ AA AA-	AA+ AA AA-	Aa1 Aa2 Aa3	1
The state of the economy greatly affects and makes the country dependent on it, which affects the ability of the state to pay interest and debt, despite the fact that this ability is highly valued	A+ AND AND-	A+ AND AND-	A1 A2 A3	2
Solvency of the country is considered satisfactory	BBB+ BBB BBB-	BBB+ BBB BBB-	Wow1 Wow2 Wow3	3
Although the country remains solvent, potentially challenging economic conditions could impair its ability to meet payment obligations	BB+ VV BB-	BB+ VV BB-	Ba1 Ba2 Ba3	4

Risk rating conditions	S&P	Fitch	Moody's	Additional risk premium, %
The country's solvency level is quite low	B+ IN IN-	B+ IN IN-	B1 B2 B3	5

Source: created by the authors based on M. Baron *et al.* (2020), V. Franchuk *et al.* (2020), and M. Abdullayeva & N. Ataeva (2022)

As noted by K. Bannikova (2022), Ukraine's credit rating is currently set at C (negative), which is due to Russian aggression and military operations in the country, the size of the premium for the risk of budget revenue shortfall should be set at the maximum level of 5%. According to the study, the amount of additional remuneration for the risk of a probable shortfall in the receipt of funds from financial institutions can be set according to the gradation shown in Table 4.

Table 4. The ranking system of the financial organisation according to the rating and the corresponding compensation for the risk (according to the rating of the National Bank of Ukraine and/or the Ministry of Finance, rating agencies)

Risk rating conditions	Risk premium, %
The bank or institution is located in the first 10 points according to the rating assessment at the time when the project is launched	0
The bank or institution is located at points 11 to 20 according to the rating assessment at the time when the project is launched	1
The bank or institution is located at points 21 to 30 according to the rating assessment at the time when the project is launched	2
The bank or institution is located at points 31 to 40 according to the rating assessment at the time when the project is launched	3
The bank or institution is located at points 41 to 50 according to the rating assessment at the time when the project is launched	4
The bank or institution is located below 50 points according to the rating assessment at the time when the project is launched	5

Source: created by the authors

If the source of project financing is the capital of investors (legal entities), the amount of compensation for the risk of incomplete or untimely receipt of funds may be set according to the ranking system set out in Table 5. The assessment of the investor's financial condition, level of solvency and probability of default may be determined in accordance with the "Procedure for assessing the financial condition of a potential beneficiary of an investment project", the "Regulation on determining the amount of credit risk for active banking operations by banks of Ukraine" or other methods of similar purpose, as added by K. Bannikova (2022).

Table 5. Gradation of the risk premium depending on the solvency of investors

Risk rating conditions	Risk premium, %
Investors demonstrate exceptional ability to meet their obligations with minimal risk of default	0
Investors demonstrate adequate ability to fulfil their obligations with minimal risk of default	1
The average level of the ability of investors to implement own obligations	2
The investor's ability to fulfil obligations is estimated to be below average	3
The investor's financial condition is unstable and has signs of insolvency	4
The investor has a high level of probability of default	5

Source: created by the authors

In the current environment, it is also worth analysing the size of the risk premium, which takes into account the potential loss of income. When setting interest rates in an unstable economy, inflation risk plays a key role and can be divided into expected and unexpected components (interest rate risk), as shown in Table 6, along with the risk premium.

Table 6. Gradation of the risk premium according to the state of the economy

Risk rating conditions	Risk premium, %
The state of the economy is absolutely stable (the minimum social accounting rate takes into account the insignificant level of inflation)	0
Normal stable economy	1
Correspondence of actual inflation forecast	2

Table 6. Continued

Risk rating conditions	Risk premium, %
Manifestation of insignificant volatility of actual and forecast inflation indicators	3
Instability of economic processes at the macro level (significant discrepancies between the projected and actual level of inflation)	4
Manifestation of crisis phenomena in the country's economy (the projected level of inflation is difficult to determine)	5

Source: created by the authors

Also, the risk of not receiving an effect from the project and the risk of changing its conditions can be diversified in the following directions, indicated in Table 7. Another source of risk that should be analysed is increased costs. One of the risk factors of cost growth is the instability of the national currency, while the implementation of investment projects in the field of road construction is closely related to the cost of construction materials, which also largely reacts to fluctuations in exchange rates. The analysis of such risks is shown in Table 8.

Table 7. Gradation of the risk premium according to the degree of risk manifestation

Risk rating conditions	Risk premium, %
The risk management system is implemented according to the plan	0
risk response system is quite effective, but minor changes are needed	1
The degree of manifestation of risks has changed compared to the previous period	2
Risks will be revealed and will have an impact on changing the effect of project implementation at the level of failure to achieve the expected result	3
The impact of risks is underestimated, as a result – the presence of capital gains (preserving the value of invested capital)	4
The catastrophic nature of the manifestation of risks, as a consequence – unprofitability of the entity	5

Source: created by the authors

Table 8. Dependence of the value of the risk premium on the stability of the exchange rate

Risk rating conditions	Risk premium, %
The exchange rate has been stable for a long time and does not affect the cost of construction works and the cost of materials	0
Exchange rate fluctuations are possible only within the framework of forecasted seasonal changes, but they do not affect the cost of construction works and the cost of materials	1
The exchange rate can fluctuate within the limits predicted by the National Bank without significant deviations	2
The presence of minor deviations of the national currency exchange rate from the forecast, which affects the cost of construction works and materials	3
Fluctuations in the exchange rate of the national currency go beyond the forecast indicators and significantly affect the cost of construction works and materials	4
The exchange rate of the national currency is difficult to predict, significant fluctuations reflect crisis phenomena in the economy	5

Source: created by the authors

The risk of production and territorial diversification has the potential to significantly affect the cost of the project, the impact of which can be distributed according to the following scheme indicated in Table 9.

Table 9. Gradation of the risk premium depending on production and territorial diversification

Risk rating conditions	Risk premium, %
A simple project without territorial and industry diversification	0
Project implementation involves minimal production or territorial diversification	1
The implementation of the project involves production or territorial diversification, which may affect the conditions for receiving cash flows from the project	2
The project is geographically diversified, but does not involve significant industry diversification, as a result of which cash flow is generated mainly for one type of product	3
The project is sectorally diversified, but does not involve significant territorial diversification, as a result of which cash flows are formed for different types of production	4
The project envisages significant territorial and industry diversification	5

Source: created by the authors

As already emphasised, the economy of Ukraine is rather unstable, so the possibility of an increase in the cost of project implementation should also be taken into account, the impact of which can be distributed according to Table 10.

Table 10. Gradation of risk premium depending on economic fluctuations

Risk rating conditions	Risk premium, %
It is stable, there are no prerequisites for an increase in the cost of resources and related needs	0
There are changes in the economy, but they are at an insignificant level	1
Characteristically moderate and cyclical increase in prices for materials and related needs	2
It is characterised by a stable and moderate increase in prices for materials and related needs	3
Within inflationary phases, it is marked by changes in prices for materials and related needs	4
Shows significant fluctuations in the cost of materials and related needs that exceed the rate of inflation	5

Source: created by the authors

The discount rate is the main mechanism for analysing risks and potential return on investment. It reflects the present value of future cash flows and takes into account all the risks associated with a particular asset or business. The choice of an appropriate discount rate is crucial for making informed investment decisions, as an incorrectly chosen rate can lead to distorted valuations (Krylovskyi, 2024). There are many approaches to determining the discount rate, each with its own advantages and disadvantages. For example, methods such as the cumulative or CAPM approach allow for flexible changes in the rate depending on the specifics of a particular project or company. Factors such as capital structure, business size, transparency, and risks associated with sectoral or regional diversification all affect risk premiums (Buzhymska *et al.*, 2024). In Ukraine, particular attention should be paid to specific risks, such as economic instability, inflation, currency fluctuations and political uncertainty, which increase risk premiums and, consequently, the level of the discount rate (Zakharchuk *et al.*, 2022). Therefore, the minimum acceptable rate for assessing the value of equity capital of state-owned enterprises can be chosen at the level of the social rate with a yield of up to 5%.

V. Kazlauskienė (2015) and V. Lipkan *et al.* (2018), based on the global and European practice of determining the appropriate discount rate for socially important projects managed by the government, advocated the use of a social discount rate. This rate is usually derived from a comprehensive statistical analysis of the country's macroeconomic indicators. However, the authors themselves point out that this approach may not be sufficiently effective for developing countries, especially those with a relatively short history of economic development. Examples of such countries include Ukraine, Georgia, Kazakhstan, Moldova, and Angola. These countries face economic challenges, including instability and a short history of market reforms, which limits the ability to make accurate forecasts based on macroeconomic data (Ismayil-Zada, 2023).

The method also does not take into account the cumulative impact of current trends in economic progress or the specific conditions associated with different stages of a country's life cycle. For developing countries, other scholars suggest using a gamma-estimation model. According to D. Zhangallimbay & J.G. Castillo (2021), the main advantages of this model are that it allows for a social discount rate below 12%, provides high cost-effectiveness by integrating a wide range of expert opinions, and flexibility in adjusting the rate depending on the project time horizon (Kulanov *et al.*, 2020; De Goede, 2021). Despite its strengths, the gamma model is based on the principle of hyperbolic discounting, which tends to favour short-term benefits over long-term ones. This inherent bias is a limitation for its use in long-term social investment projects, where long-term returns are more typical but may be ignored in favour of immediate gains. Therefore, the model may not always be suitable for projects that require a long-term perspective.

As for other studies that also focused on the analysis of risks affecting the discount rate, O. Oliinyk *et al.* (2020) emphasised the importance of the discount rate when considering long-term receivables, proposing an algorithm that takes into account traditional factors such as inflation and individual company risks. In turn, L. He (2020) contributed to the discussion by highlighting the possibility of opportunistic actions when choosing discount rates for fair value measurement, which may cast doubt on the reliability of financial statements.

The study by L. Luo *et al.* (2020) highlighted that risk reflects fluctuations in economic factors such as GDP growth, inflation, and interest rates. Persistent shocks, such as economic recessions, can lead to increased long-term uncertainty, affecting discount rates and making it more difficult to predict future earnings. Research highlighted the need for models that account for sustained economic crises that affect both consumption growth and project productivity. S. Foudi (2024) noted that the rapid development of technology, especially in the areas of artificial intelligence, robotics, and renewable energy, has created both opportunities and risks. Technological obsolescence can make investments obsolete faster than expected, leading to higher discount rates that take into account the short life of certain technology projects.

Methodological recommendations for setting the discount rate for socially oriented projects

In general, these guidelines are based on the integration of both economic and social factors that influence the overall assessment of projects. A key element is the proper consideration of risks, as social projects often have a lower level of risk compared to commercial projects, but are more difficult to predict due to their non-profit nature and dependence on social change. In this context, it is important that the discount rate takes into account both the risks associated with the average market rate of return and specific social risks.

The determination of the discount rate should begin with the calculation of the risk-free rate, which reflects the return on assets that do not have a risk of default. In an environment of economic instability typical of transition

economies such as Ukraine, the risk-free rate can be roughly estimated based on long-term government bond yields, but with a risk premium for political and economic uncertainty. An important element is to consider the risk premium associated with the specific features of the project. For social projects, the risk is often lower due to government or international support, but this does not exclude the possibility of risks associated with insufficient funding, policy changes, or unfavourable social conditions. To adjust the discount rate, additional risk premiums should be considered, depending on factors such as project size, innovation, asset liquidity and organisational efficiency.

The cumulative method should be used to calculate the discount rate. This method involves adding additional premiums to the base risk-free rate for each identified risk. The appraiser should conduct a thorough analysis of the project and gradually increase the discount rate in accordance with the identified risks. For example, risks associated with inflation, political instability, financial unpredictability and changes in the regulatory environment can add between 1% and 5% to the overall discount rate (Oleksy-Gebczyk, 2024). In addition, it is important to consider the liquidity of the project. Projects with low liquidity should have a higher discount rate, as investors need to be rewarded for taking on this risk.

Liquidity can be considered by applying a risk premium or by introducing a discount on expected cash flows. The final aspect to consider when determining the discount rate for social projects is the impact of social factors. Projects that have significant social value and are supported by government programmes or international donors may have a lower discount rate due to lower risk. However, it is necessary to ensure that the social risk premium is not underestimated to avoid underestimating the project and its potential negative impacts. Thus, the discount rate for social projects should be determined taking into account the risk-free rate, as well as additional premiums for project risks, including liquidity, economic and political stability and project scale. It is important to monitor conditions on an ongoing basis and adjust the rate as necessary.

CONCLUSIONS
The study provided a theoretical and practical justification for the methodology for determining the discount rate for socially oriented projects. The main result was the development of an adapted approach to taking into account the risks specific to such projects, which have less commercial benefit but provide a significant social impact. In particular, the optimal method for calculating the discount rate was determined, combining classical and alternative approaches, including CAPM and the comparative sales method. The study found that traditional financial methods do not fully reflect social risks, so additional coefficients for socially oriented projects were proposed. It was found that approaches based on international practices need to be adapted to Ukraine's economic situation, in particular, taking into account political and economic risks. The findings show that a more balanced approach to risk management contributes to the long-term sustainability of projects and their social benefits.

The study found that social projects need to take into account specific risks, such as economic instability, the political situation, and changes in the regulatory framework. Qualitative indicators indicate the need for a balanced approach to risk calculation, which reduces the risk premium and increases the investment attractiveness of social projects. Quantitative indicators indicate the long-term viability of projects, provided that the discount rate is applied correctly. Recommendations are made for the implementation of an adapted methodology for evaluating socially oriented projects in conditions of economic instability, which can improve the investment climate and ensure the sustainable development of such initiatives.

From a quantitative perspective, this study has outlined several risk premiums, providing a clear framework for assessing risks in different economic environments. The recommendations arising from this work highlighted the need to continually reassess discount rates as economic conditions change to ensure the accuracy of financial projections. However, the study faced limitations such as the difficulty of modelling risks in a highly volatile environment, which can affect the accuracy of discount rate calculations. Future research should focus on improving risk assessment models, especially in an unstable economy.

■ REFERENCES
[1] Abdullayeva, M., & Ataeva, N. (2022). Mortgage lending with the participation of the construction financing fund of the bank of the future: A literature review. *Futurity Economics & Law*, 2(1), 50-65. doi: 10.57125/FEL.2022.03.25.05.

[2] Bannikova, K. (2022). Ukrainian refugees and the European labor market: Socio-cultural markers of interaction. *Amazonia Investiga Journal*, 11(56), 9-17. doi: 10.34069/ai/2022.56.08.1.

[3] Baron, M., Verner, E., & Xiong, W. (2020). Banking crises without panics. *Quarterly Journal of Economics*, 136(1), 51-113. doi: 10.1093/qje/qjaa034.

[4] Barrell, R., & Karim, D. (2020). Banking concentration and financial crises. *National Institute Economic Review*, 254, 28-40. doi: 10.1017/nie.2020.39.

[5] Bilozubenko, V., Yatchuk, O., Wolanin, E., Serediuk, T., & Korneyev, M. (2020). Comparison of the digital economy development parameters in the EU countries in the context of bridging the digital divide. *Problems and Perspectives in Management*, 18(2), 206-218. doi: 10.21511/ppm.18(2).2020.18.

[6] Bosshardt, J., & Cerutti, E.M. (2020). *Why did public banks lend more during the global financial crisis?* Washington: International Monetary Fund.

[7] Broughel, J. (2020). *The social discount rate: A primer for policymakers*. Retrieved from https://www.mercatus.org/research/policy-briefs/social-discount-rate-primer-policymakers.

[8] Burawat, P. (2019). The relationships among transformational leadership, sustainable leadership, lean manufacturing and sustainability performance in Thai SMEs manufacturing industry. *International Journal of Quality & Reliability Management*, 36(6), 1014-1036. doi: 10.1108/IJQRM-09-2017-0178.

[9] Burban, O. (2023). Analysis of the influence of value-forming components on machine-building enterprises market capitalization dynamics. *Economic Forum*, 13(3), 87-96. doi: 10.36910/6775-2308-8559-2023-3-12.

[10] Busu, M. (2022). Time value of money. In M. Busu (Ed.), *Essentials of investment and risk analysis* (pp. 11-28). Cham: Springer. doi: 10.1007/978-3-031-15056-2_2.

[11] Buzhymska, K., Tsaruk, I., Biriuchenko, S., Pashchenko, O., & Svitlyshyn, I. (2024). Impact of diversification on strategic business management. *Scientific Bulletin of Mukachevo State University. Series "Economics"*, 11(3), 34-46. doi: 10.52566/msu-econ3.2024.34.

[12] Cherbonnier, F., & Gollier, C. (2023). Fixing our public discounting systems. *Annual Review of Financial Economics*, 15(1), 147-164. doi: 10.1146/annurev-financial-102921-111749.

[13] Danchuk, V., Shlikhta, H., Usova, I., Batyrbekova, M., & Kuatbayeva, G. (2021). Integrated project management systems as a tool for implementing company strategies. *Periodicals of Engineering and Natural Sciences*, 9(4), 259-276. doi: 10.21533/pen.v9i4.2308.

[14] De Goede, M. (2021). Finance/security infrastructures. *Review of International Political Economy*, 28(2), 351-368. doi: 10.1080/09692290.2020.1830832.

[15] Dyduch, W., Dominiczewska, M., & Kubiczek, J. (2024). Value creation and value capture revisited: Resource, entrepreneurial and relational perspectives. *Forum Scientiae Oeconomia*, 11(4), 63-81. doi: 10.23762/FSO_VOL11_NO4_3.

[16] Farag, H.F.I., González-Serrano, L., & Talón-Ballestero, P. (2022). Analysing the impact of dynamic open pricing on hotel revenue management. *Journal of Tourism Analysis*, 29(2), 80-117. doi: 10.53596/jta.v29i2.422.

[17] Foudi, S. (2024). Are risk attitude, impatience, and impulsivity related to the individual discount rate? Evidence from energy-efficient durable goods. *Theory and Decision*, 96(4), 627-661. doi: 10.1007/s11238-023-09961-9.

[18] Franchuk, V., Omelchuk, O., Melnyk, S., Kelman, M., & Mykytyuk, O. (2020). Identification the ways of counteraction of the threats to the financial security of high-tech enterprises. *Business: Theory and Practice*, 21(1), 1-9. doi: 10.3846/btp.2020.11215.

[19] Gasparian, M.S., Kiseleva, I.A., Titov, V.A., & Olenev, L.A. (2021). Simulation and risk management of financial activities in the digital economy era. *Nexo Scientific Journal*, 34(4), 1388-1395. doi: 10.5377/nexo.v34i04.12684.

[20] Gutsalenko, L., Wasilewski, M., Mulyk, T., Marchuk, U., & Mulyk, Ya. (2018). Accounting control of capital investment management: Realities of Ukraine and Poland. *Economic Annals-XXI*, 170(3-4), 79-84. doi: 10.21003/ea.V170-14.

[21] Haacker, M., Hallett, T.B., & Atun, R. (2020). On discount rates for economic evaluations in global health. *Health Policy and Planning*, 35(1), 107-114. doi: 10.1093/heapol/czz127.

[22] He, L. (2020). Discount rate behaviour in fair value reporting. *Journal of Behavioral and Experimental Finance*, 28, article number 100386. doi: 10.1016/j.jbef.2020.100386.

[23] He, Z., & Krishnamurthy, A. (2020). *Are US treasury bonds still a safe haven?* Retrieved from https://www.nber.org/reporter/2020number3/are-us-treasury-bonds-still-safe-haven.

[24] Hornero, D.C., & Montalván, S.M. (2021). The entrepreneurial social discount rate: Risk premium and loss aversion in new ventures. *Mexican Journal of Economics and Finance*, 16(4), article number e-610. doi: 10.21919/remef.v16i4.610.

[25] Hurzhyi, N., Kravchenko, A., Kulinich, T., Saienko, V., Chopko, N., & Skomorovskyi, A. (2022). Enterprise development strategies in a post-industrial society. *Postmodern Openings*, 13(1), 173-183. doi: 10.18662/po/13.1sup1/420.

[26] Intaraburt, W., Sangsanont, J., Limpiyakorn, T., Ruangrassamee, P., Suttinon, P., & Suwannasilp, B.B. (2022). Feasibility study of water reclamation projects in industrial parks incorporating environmental benefits: A case study in Chonburi, Thailand. *Water*, 14(7), article number 1172. doi: 10.3390/w14071172.

[27] Ismayil-Zada, M. (2023). Analysis of physical economic theory implementation efficiency in the economic activity of Azerbaijan. *Scientific Horizons*, 26(2), 112-123. doi: 10.48077/scihor.26(2).2023.112-123.

[28] Kazlauskienė, V. (2015). Application of social discount rate for assessment of public investment projects. *Procedia – Social and Behavioral Sciences*, 213, 461-467. doi: 10.1016/j.sbspro.2015.11.434.

[29] Kendall, G.E., Nguyen, H., & Ong, R. (2019). The association between income, wealth, economic security perception, and health: A longitudinal Australian study. *Health Sociology Review*, 28(1), 20-38. doi: 10.1080/14461242.2018.1530574.

[30] Korol, M. (2020). Dynamics of main indicators of the Canadian banking system. *Baltic Journal of Economic Studies*, 6(3), 136-142. doi: 10.30525/2256-0742/2020-6-3-136-142.

[31] Krylovskyi, V. (2024). Increasing the financial potential of investment activity of business entities. *Economics, Entrepreneurship, Management*, 11(2), 65-76. doi: 10.56318/eem2024.02.065.

[32] Kubiczek, J. (2020). Corporate bond market in Poland – prospects for development. *Journal of Risk and Financial Management*, 13(12), article number 306. doi: 10.3390/jrfm13120306.

[33] Kubiczek, J., & Tuszkiewicz, M. (2022). Intraday patterns of liquidity on the Warsaw stock exchange before and after the outbreak of the COVID-19 Pandemic. *International Journal of Financial Studies*, 10(1), article number 13. doi: 10.3390/ijfs10010013.

[34] Kulanov, A., Issakhova, A., Koshkina, O., Issakhova, P., & Karshalova, A. (2020). Venture financing and the fuel and energy complex: Investing in alternative energy. *International Journal of Energy Economics and Policy*, 10(5), 531-538. doi: 10.32479/ijeep.9963.

[35] Kuncoro, H. (2020). Central bank communication and policy interest rate. *International Journal of Financial Research*, 12(1), article number 76. doi: 10.5430/ijfr.v12n1p76.

[36] Kuzmak, O., & Bondar, Y. (2024). Influence of monetary policy on development of the banking system of Ukraine. *Economy and Society*, 61. doi: 10.32782/2524-0072/2024-61-14.

[37] Kvasnytska, R.S., Dotsenko, I.O., & Matviychuk, L.O. (2019). Assessing the financial security of an enterprise in the system of ensuring the implementation of its financial strategy. *Financial and Credit Activity Problems of Theory and Practice*, 3(30), 95-102. doi: 10.18371/fcaptp.v3i30.179691.

[38] Laeven, L., & Valencia, F. (2020). Systemic banking crises database II. *IMF Economic Review*, 68(2), 307-361. doi: 10.1057/s41308-020-00107-3.

[39] Lipkan, V., Vasiutynska, L., & Diorditsa, I. (2018). Social discount rate: Assessment methodology. *Baltic Journal of Economic Studies*, 4(2), 114-118. doi: 10.30525/2256-0742/2018-4-2-114-118.

[40] Luo, L., Chen, S., & Zou, Z. (2020). Determining the generalized discount rate for risky projects. *Environmental & Resource Economics*, 77(1), 143-158. doi: 10.1007/s10640-020-00458-5.

[41] Maistrenko, O.S. (2023). The role of a discount rate in a transmission mechanism and its influence on the deposits market. *Bulletin of V.N. Karazin Kharkiv National University. Economic Series*, 104, 21-30. doi: 10.26565/2311-2379-2023-104-03.

[42] Maystrenko, O.S. (2022). Principles and formation features of the Central Bank's interest rate. *Socio-Economic Problems of the Modern Period of Ukraine*, 153(1), 54-59. doi: 10.36818/2071-4653-2022-1-8.

[43] Mints, A., Marhasova, V., Hlukha, H., Kurok, R., & Kolodizieva, T. (2019). Analysis of the stability factors of Ukrainian banks during the 2014-2017 systemic crisis using the Kohonen self-organizing neural networks. *Banks and Bank Systems*, 14(3), 86-98. doi: 10.21511/bbs.14(3).2019.08.

[44] Musimbi, D., Njaramba, J., & Maingi, J. (2023). Central bank rate pass-through effects on Kenya's lending rate. *Research Journal of Business and Finance*, 2(2), 34-43. doi: 10.58721/rjbf.v2i2.341.

[45] Nguyen, Q.K., & Dang, V.C. (2023). Does the country's institutional quality enhance the role of risk governance in preventing bank risk? *Applied Economics Letters*, 30(6), 850-853. doi: 10.1080/13504851.2022.2026868.

[46] Oleksy-Gebczyk, A. (2024). Inflation in Poland: Macroeconomic analysis. *Academy Review*, 2, 242-255. doi: 10.32342/2074-5354-2024-2-61-17.

[47] Oliinyk, O., Ksendzuk, V., & Tralo, I. (2020). Formation of debt discount rate: Accounting aspect. *European Cooperation*, 2(46), 7-17. doi: 10.32070/ec.v2i46.82.

[48] Order of the Cabinet of Ministers of Ukraine No. 312 "On Approval of the Procedure and Methodology for Assessing an Investment Project with Significant Investments". (2024, March). Retrieve from https://zakon.rada.gov.ua/laws/show/312-2024-%D0%BF#Text.

[49] Pronoza, P., Chernyshov, V., Malyshko, Y., & Aleksieienko, I. (2023). Optimization of business processes in investment using automation technology, financial calculations, and risk assessment methods. *Eastern-European Journal of Enterprise Technologies*, 2(122), 102-113. doi: 10.15587/1729-4061.2023.276098.

[50] Rauf, M.A., & Frayne, B. (2023). Affordable housing – challenges and constraints for local governance in Canada. *Journal of Sustainable Development*, 17(1), 103-118. doi: 10.5539/jsd.v17n1p103.

[51] Saługa, P.W., Zamasz, K., Dacko-Pikiewicz, Z., Szczepańska-Woszczyna, K., & Malec, M. (2021). Risk-adjusted discount rate and its components for onshore wind farms at the feasibility stage. *Energies*, 14(20), article number 6840. doi: 10.3390/en14206840.

[52] Shahini, E., Korzhenivska, N., Haibura, Y., Niskhodovska, O., & Balla, I. (2023). Ukrainian agricultural production profitability issues. *Scientific Horizons*, 26(5), 123-136. doi: 10.48077/scihor5.2023.123.

[53] Shuplat, O., Shevchenko, V., Lutsiv, N., Nekrasov, S., & Hovda, H. (2022). Financing the fixed assets reproduction of woodworking enterprises: Innovation and investment aspect. *Financial and Credit Activity Problems of Theory and Practice*, 4(45), 48-57. doi: 10.55643/fcaptp.4.45.2022.3801.

[54] Spytska, L. (2023). Prospects for the legalization of cryptocurrency in Ukraine, based on the experience of other countries. *Social and Legal Studios*, 6(4), 226-232. doi: 10.32518/sals4.2023.226.

[55] The social impact of renewable energy projects in rural areas. (2024). Retrieved from https://www.usaid.gov/energy/auctions/social-impacts.

[56] Tynaliev, K., Dzhumabekov, N., Adamkulova, C., Esenalieva, B., & Makeeva, S. (2024). Modern vectors of development of the country's tax system: International experience. *Scientific Bulletin of Mukachevo State University. Series Economics*, 11(2), 90-101. doi: 10.52566/msu-econ2.2024.90.

[57] Ullah, M.F., Latif, S., Syed, A.A., & Hassan, S.A. (2024). Role of monetary policy in asset price inflation: A comparative study of developed and developing economies. *Journal of Asian Development Studies*, 13(2), 850-858. doi: 10.62345/jads.2024.13.2.67.

[58] Yagli, I., & Deviren, B. (2023). Impact of Russia-Ukraine war on the hierarchical structure of government bond markets. *European Physical Journal Plus*, 138(3), article number 291. doi: 10.1140/epjp/s13360-023-03901-w.

[59] Yin, H. (2019). Bank globalization and financial stability: International evidence. *Research in International Business and Finance*, 49, 207-224. doi: 10.1016/j.ribaf.2019.03.009.

[60] Zakharchuk, O., Kisil, M., & Nechytailo, V. (2022). The state and prospects of investing in the development of agriculture in conditions of instability. *Ekonomika APK*, 29(6), 41-56. doi: 10.32317/2221-1055.202206041.

[61] Zhangallimbay, D., & Castillo, J.G. (2021). The social discount rate in the evaluation of investment projects: An application for Ecuador. *CEPAL Review*, 134, 75-95.

[62] Zhou, L., Yan, W., Li, S., Yang, H., Zhang, X., Lu, W., Liu, J., & Wang, Y. (2022). Cost-effectiveness of interventions for the prevention and control of COVID-19: Systematic review of 85 modelling studies. *Journal of Global Health*, 12, article number 05022. doi: 10.7189/jogh.12.05022.

[63] Zolkover, A.O., Rusina, Y.O., Bielialov, T.E., & Neseniuk, E.S. (2020). The influence of innovative potential on gross production and economic security: Regional analysis. *International Journal of Management*, 11(4), 439-452.

[64] Zuo, Z., Cao, R., & Teymurova, V. (2024). Unlocking natural resource potential: A balanced strategies for a fair and sustainable economic recovery. *Resources Policy*, 89, article number 104518. doi: 10.1016/j.resourpol.2023.104518.

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Обґрунтування складових ставки дисконтування для реалізації соціально орієнтованих проектів

■ **Анотація**. Метою дослідження було теоретико-методологічне обґрунтування ключових елементів, що формують ставку дисконтування для соціальних проектів. Особливу увагу приділено факторам, що впливають на її величину, враховуючи унікальні особливості соціальних ініціатив: тривалий термін окупності, низьку комерційну рентабельність та високий соціальний вплив. Узагальнено підходи до визначення ставки дисконтування, акцентовано увагу на методиках економічних розрахунків різних типів проектів. Розглянуто класичні моделі (модель оцінки капітальних активів) та альтернативні методи (порівняльних продажів, пов'язаних інвестицій, внутрішньої норми прибутковості, гібридні підходи) з урахуванням специфіки галузей. Наприклад, в IT-секторі важливими є ризики морального старіння, а для інфраструктурних проектів – довгостроковий характер інвестицій та державне регулювання. Проаналізовано діяльність рейтингових агентств (S&P, Fitch, Moody's), які оцінюють довгострокові інвестиційні ризики, а також нормативно-правові акти, зокрема, Постанову Кабінету Міністрів України № 312 «Про затвердження порядку та методики оцінки інвестиційного проекту зі значними інвестиціями». Автори обґрунтували рівень ризиків, які слід враховувати при визначенні ставки дисконтування: економічні, політичні, ринкові та соціальні. Для соціальних проектів ризики можуть мати інший характер, оскільки вони часто мають меншу прибутковість, але більший соціальний ефект. Проведено порівняння підходів

до визначення ставки дисконтування в розвинених країнах (США, Японія, Німеччина) та оцінено можливість їх адаптації до умов України. Розроблено методичні рекомендації щодо визначення ставки дисконтування для соціальних проектів із більш збалансованим підходом до ризиків, що враховує не тільки фінансові, але й соціальні, політичні та регуляторні ризики. Запропоновані рекомендації допоможуть інвесторам краще оцінити ризики та вигоди соціально орієнтованих проектів