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METHODS FOR CALCULATING THE DISCOUNT RATE FOR THE EVALUATION OF THE COST OF OBJECTS MAKING INCOME ON THE EXAMPLE OF THE REPUBLIC OF UZBEKISTAN

Abstract: The discount rate is necessary to determine the current value of the income stream for making key decisions on the purchase / sale of a property, enterprise or when choosing a specific investment project. When calculating the value of real estate, enterprise and analyzing the effectiveness of investment projects, financial analysts and appraisers often face the problem of correctly determining the discount rate.

The correct calculation of these indicators allows you to more accurately take into account the conditions of the market environment in which the circulation of property and the implementation of investment projects are possible.

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Introduction

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Initially, for the sake of brevity, the concepts of investment projects, profitable real estate or an existing enterprise, for the sake of generality, will be called valuation objects, noting, if necessary, some differences in their valuation.

The discount rate necessary to establish the current value of the future income stream is the main economic standard used in assessing the effectiveness of an investment project or any other property of a production complex that can generate income from investments at a certain stage of their life cycle.

In the course of the analysis, the discount rate is understood as the rate of return on the capital invested in the valuation object required by the owner of the given object.

Main part

A low rate can overstate the value of future cash receipts or valuation subject and as a result, the owner can choose an ineffective investment project and incur losses or overstate the value of real estate / existing company.

Using a high rate can result in losses associated with a missed income opportunity. All this necessitates a careful justification of the discount rate [1].

The discount rate should take into account all the individual financial interests included in the capital structure, and the ultimate goal of the investor and property owners (investor) is to receive income from

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the use of the profitable object in excess of the originally invested amount for its creation / acquisition.

Based on this, the investor's total expected return consists of a full return on the originally invested amount and profit, i.e. return on invested capital.

The difference between the net income accumulated for the billing period and the net present value (discounted accumulated balance) for the same period is the discount. The discount rate is the cost of capital raised at which the owner of the capital agrees [2]:

1. Invest in a project in case of evaluating the effectiveness of an investment project. In this situation, the discount rate may be different for different calculation steps in cases of time-variable risks or time-variable structure of invested capital;

2. Purchase / sell a comparable property in case of valuation of profitable real estate or an existing enterprise. In this situation, the discount rate can be assumed constant over time and depend only on the structure of capital.

The profitability of deposits or other securities, inflation, rates of return on various types of loans and other indicators are additional data on the basis of which a decision is made on the acceptable return on invested own or mixed capital for the investor / buyer.

To separate the concepts of profitability from an investment project and from real estate or an enterprise, it is necessary to distinguish between the concepts of current profitability and final return [3].

When assessing the cost of an investment project, the requirements of a particular investor should be taken into account, which can be focused only on current returns during the period allocated to them within the project life cycle.

The requirements of another investor can be expanded to the final return of the project, when it is planned to sell the object at the end of the investment period. In the latter case, the discount rate should be determined by the norms of final return [4].

When assessing the profitability of real estate or an enterprise, it should be borne in mind that these objects already exist de facto, and additional investments (during reconstruction, re-profiling, maintenance), if any, are aimed only at creating additional value that provides the necessary market potential subsequent sale (reversion).

Two conclusions follow from the foregoing:

1) The size and structure of the discount rate in all the above situations will be different, both in size and in structure;

2) The choice of the method of calculating the discount rate depends on which investment cash flow project is used as the basis for the assessment.

This is the essence of all discussions about an acceptable and reasonable value of discount rates.

It is necessary to distinguish the following discount rates used in evaluating the effectiveness of an investment project [7]:

• commercial, in assessing the commercial effectiveness of the project and determined taking into account the alternative efficiency of capital use. Most often used in assessing the value of an object without the participation of budget funds;

• discount rate of the project participant, reflecting the effectiveness of individual industry enterprises and other participants, selected by project participants;

• social rate of discount, when assessing socio-economic projects with a minimum of requirements for their effectiveness. This norm is considered a national parameter and is set centrally by state bodies in conjunction with forecasts of the country's economic and social development

• the budget discount rate is the alternative cost of state budget funds and can be set by order at the republican or regional level.

The following methods are most often used for the analytical determination of the discount rate (assessment of the commercial effectiveness of an investment project, real estate and an existing enterprise):

− valuation of capital / long-term assets (CAPM);

− weighted average cost of capital (WACC);

− cumulative construction.

1. Capital Assets Pricing Model – CAPM

The model is based on the analysis of stock market information arrays on changes in the yield of freely traded shares. The rate of return on equity R_e (1) for any type of investment depends on the risks associated with these investments, and is determined by the expression:

$$R_e = R_f + \beta (R_m - R_f) + g1 + g2 + C \quad (1)$$

Where R_f is the return on risk-free assets. In the conditions of the local market, the Central Bank of the Republic of Uzbekistan [5] refinancing rate is used as R_f - 8.5% (currently); $(R_m - R_f)$ - market risk premium, the amount by which the average market rate of return on shares in the stock market exceeded the rate of return on risk-free securities.

It is based on statistical data on market premiums for a long period (in a number of recommendations this premium is taken equal to 5%); g1 - additional premium for small enterprises (low creditworthiness and financial instability). The value of this premium may be up to 75% of the nominal risk-free rate of loan interest; g2 - risk premium for a given object, accepted expertly; β - "beta" coefficient - the ratio of the volatility of the company's stock price to the volatility of a similar indicator for the market as a whole.

If β = 1, then fluctuations in stock prices of the enterprise coincide with fluctuations in the market as

a whole. If β = 1.2 - it is expected that the value of the shares of the enterprise will grow 20% faster than the market as a whole. And vice versa; C - country risk. According to the ratings of the countries of the world given in international publications and statistics (for example, the German firm BERI), this premium can be up to 250% of the discount rate calculated taking into account all other factors. In the absence of the necessary data, the prize is evaluated expertly. When the project is of national importance, the value of C can be taken at the level of 1%.

Many components of this methodology are evaluated subjectively enough, there is no linking of the risk premium to the specific risks of the subject of assessment and the account of its current functioning.

In countries with developed stock markets, data on ratios are published in print.

For example:

Re = Rf + β (Rm – Rf) + g1 + g2 + C = 8,5 + 0,172 (14 – 8,5) + 1,15 + 1 = 11,6%.

Thus, the discount rate of the valuation subject will be 11.6%.

2. Weighted Average Cost of Capital –WACC

This is the most objective method of determining the discount rate and is used in cases. when not only equity but also borrowed capital is attracted to finance the facility.

The profitability of such an object should compensate for both the risks associated with investing its own funds and the costs of attracting borrowed capital. The long-term portion of the debt is considered unchanged.

The discount rate is defined (2) as the weighted average cost of capital:

WACC = Ks Ws + Kd Wd (1 – T)   (2)

Where Ks is the cost of equity; Ws is the investment projective share of equity; Kd is the cost of borrowed capital; Wd is the share of borrowed capital; T - income tax rate.

In those cases when it is impossible to obtain the necessary data, then available information on the ratio of Ws and Wd of similar objects is used. At the same time, the value of Wd is adjusted taking into account the income tax rate, the meaning of which is that interest on debt servicing is attributed to the cost of production, thereby reducing the tax base for income tax [8].

For example:

The cost of equity is at 13.6% [6]. The share of equity is 75%. The annual interest rate on borrowed funds is 6.5%. The share of borrowed capital is equal to 25%. The income tax rate in accordance with the Tax Code of the Republic of Uzbekistan is 20%.

Substituting the given values in the formula (2), we obtain:

WACC = 13,6% x 0,75 + 6,5% x 0,75(1– 0,2) = 10,2 + 1,3 = 11,5%.

Thus, the discount rate will be at the level of 11.5%.

3. Cumulative discount rate building method

This method of constructing an income rate is most often used in countries with poorly developed stock markets and is used [8]:

1) mostly for enterprises:
− with limited retrospective data;
− with reduced profitability;
− with significant dependence on the supplier;
− with high fixed costs in comparison with variable costs.

2) then, when risks are caused, first of all, by unsystematic risks of the evaluated object.

The cumulative construction of the discount rate D is carried out by successively adding to the value of the risk-free income rate Rf (lower limit) additional premiums PRк (3) for various types of risk for investing in this object:

D = Rf + PRm+ PRs + PRu   (3)

1. PRm - the risk of investing in this object, which should be interpreted as country risk. The lower the risks of doing business in the country, the lower the required return;

2. PRs - risk to small enterprises. The smaller the object of assessment, the greater the risk of investing in it;

3. PRu - specific risks, such as [9]:

− the quality of the facility management (the presence of a qualified key figure, its integrity, predictability);

− the risk of a narrow set of sources of financing for the facility and its low financial stability;

− the risk of commodity and territorial diversification of the industry to which the subject of valuation belongs and is determined solely by the internal characteristics of each industry - the volatility of their cash flows. For example, the volatility of flows in wholesale trade and oil production will be completely different;

− clientele diversification. The higher the degree of diversification of the clientele and the longer the period of effective communication with them, the lower the risk of investment;

− the degree of certainty of the projected net profit or cash flow. The amount of risk depends on the ability to generate high profits over the past few years;

− other specific risks inherent in the subject of assessment.

The specific value of the premium for each type of risk (with the exception of country risk) is determined by experts on a likely interval from 0 to 5% and is completely based on subjective opinion, and therefore can cause serious objections [10].

The situation is aggravated by the fact that the profitability of investments in various facilities in the conditions of economic instability is not always adequate to the risks themselves.

Typically, the return on investment is higher than the bank rate i.e. the discount rate is always higher

than the bank interest rate. However, in a real situation, the involvement of individual objects may not ensure the profitability of the valuation object above the loan rate.

Under these conditions, the final return on initial investments in a profitable object and income from its functioning may not be higher than the rate on bank loans [11].

Consequently, the discount rate for some objects may be lower than the loan rate, which leads to the inability to attract borrowed funds. At low discount rates, the levels of capitalized income themselves should be low.

Chart 1. Advantages and disadvantages of various method

Method	Advantages	disadvantages
CAPM	Allows you to take into account the influence of external factors that are not dependent on the progress of the project, political risks, rates of return (without risk, industry and average market)	It is directly related only to companies that are joint stock companies and have stock market quotes. Companies that have sufficient statistics to calculate their β coefficient or are able to find a close partner company.
WACC	The cost of capital can be calculated quite accurately. Based on the cost of capital, it is possible to judge possible options for using resources, returning money to shareholders and creditors in proportion to their contributions to the company's capital.	The cost of equity (dividends by shareholders) does not correspond to the market level of profitability (there are no stock quotes on the open market). The cost of borrowed capital is often distorted due to the possibility of applying concessional lending schemes, the complexity of lending schemes.
Cumulative discount rate building method	Ease of use	It is highly subjective, since it is based on the use of expert assessments. It does not take into account the specific cost of capital when implementing the asset. This indicator has been replaced by inflation and the minimum yield on medium-term foreign currency deposits, which is not related to the profitability of the property being valued, as well as to the weighted average interest rate on loans and the structure of its own and borrowed capital.

When evaluating an investment project, it is advisable to analyze its sensitivity to various discount rates if the forecasting period is at least 3 to 5 years.

Sensitivity analysis will determine the stability limit of the investment project, the level of profitability acceptable to investors.

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