

## **MODERN APPROACHES AND SYSTEM OF INDICATORS FOR INVESTMENT EVALUATION**

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**Abstract:** The article analyzes modern methodological approaches to the evaluation of investments in the context of a market economy. It emphasizes the importance of assessing investment projects based on risk, profitability, time value, and liquidity indicators. The paper presents three main conceptual approaches: the discounting approach, the relative performance indicators approach, and the risk-based approach. The key evaluation criteria, such as NPV, IRR, ROI, and Payback Period, are explained with their application in agribusiness. The authors highlight the significance of digital analytical tools (STATA, SPSS, Excel) in the modern investment assessment process.

**Keywords:** Investment, NPV, IRR, ROI, Discounting, Risk analysis, Agribusiness, Profitability, Fiscal evaluation.

Investment serves as the cornerstone of economic growth, influencing productivity, employment, and technological advancement. In the 21st century, global competition, digital transformation, and fiscal volatility require a more scientific and integrated approach to assessing investment performance. Traditional financial measures alone no longer suffice; investment evaluation must incorporate social, environmental, and innovation-driven perspectives [1].

The effectiveness of investment evaluation systems directly determines the rational allocation of capital resources. In agribusiness — where production cycles are long and external risks are high — precision in investment assessment plays a critical role in ensuring profitability and sustainability. Therefore, developing nations like Uzbekistan must align their methodologies with international standards and modern digital technologies.

The conceptual framework of investment evaluation originates from classical economic thought. John Maynard Keynes (1936) introduced the concept of the marginal efficiency of capital, emphasizing that investment decisions depend on the expected yield relative to the interest rate [2]. Irving Fisher (1930) expanded this idea by formalizing the time value of money, arguing that future cash flows must be discounted to present value to reflect their true economic worth [3].

James Tobin's "q" theory (1969) proposed that firms invest when the market value of their assets exceeds replacement cost, thus linking investment behavior with stock market dynamics [4]. Later, Richard Musgrave (1959) extended the discussion to the public finance domain, emphasizing that both public and private investments should satisfy efficiency and equity criteria [5].

In contemporary practice, the OECD and World Bank frameworks view investment efficiency as a multidimensional concept, integrating financial, environmental, and social parameters. This

broader interpretation aligns with the Sustainable Development Goals (SDGs), recognizing that investment should not only yield profit but also promote inclusive and green growth [6].

Three main conceptual approaches are currently used in investment valuation:

1. Approach based on discount,
2. Relative-indicator approach,
3. Risk-based approach.

### 1. The Discounting Approach

In this approach, the effectiveness of investments is determined by bringing future cash flows to their present value. The most commonly used indicators are:

- **NPV - net present value:**

$$NPV = \sum_{t=1}^n \frac{CF_t}{(1+r)^t} - I_0$$

where:  $CF_t$  - cash flow in period  $t$ ,  $r$  - discount rate,  $I_0$  - initial investment.

If  $NPV > 0$ , the project is considered financially feasible.

- **IRR (Internal Rate of Return)** - the internal rate of return, which is the value of the discount rate and ensures the condition  $NPV = 0$ . The IRR represents the utility of the project as a percentage.

- **PI (Profitability Index)** - profitability index, i.e., the ratio of NPV to the amount of investment. If  $PI > 1$ , the project is accepted.

- **Payback Period (PP)** - the payback period of an investment.

These tools are essential for long-term capital projects and account for the time value of money, making them highly applicable in agrarian and industrial sectors [7].

### 2. The Relative-Indicator Approach

This approach is based on a system of financial ratios. For example:

- **ROI (Return on Investment)** - the level of return on investment,

$$ROI = \frac{\text{Net Profit}}{\text{Investment}} \times 100\%$$

- **ROE** - return on equity,

- **ROA (Return on Assets)** - the efficiency of asset utilization.

These indicators measure how efficiently capital resources are utilized. In the agribusiness context, ROI above 15% generally indicates strong efficiency and sustainable profitability [8].

### 3. The Risk-Based Approach

The outcome of investments is always associated with uncertainty and risk. Therefore, risk analysis is an integral part of the modern assessment system.

The main types of risks are:

- financial risk,
- market risk,
- political risk,
- agroclimatic risk,
- currency risk.

Investment outcomes are inherently uncertain, hence risk management is an integral part of modern evaluation systems. Key types of risks include financial, market, political, agro-climatic,

and currency risks. Advanced methods such as sensitivity analysis, Monte Carlo simulation, and scenario modeling are used to quantify uncertainty and guide decision-making [9].

Indicators for assessing the effectiveness of investments in the modern economy are expressed through the following integral indicators (Table 1).

**Table 1.**

**Main indicators for assessing the effectiveness of investments**

No	Indicator name	Formula / expression	Evaluation meaning
1	NPV (Net present value)	$NPV = \sum_{t=1}^n \frac{CF_t}{(1+r)^t} - I_0$	Project utility
2	IRR (Internal Rate of Return)	From the condition NPV = 0	Return on capital
3	PI (profitability index)	NPV / I <sub>0</sub>	Project acceptable if it's greater than 1
4	ROI (Investment Return)	$ROI = \frac{\text{Net Profit}}{\text{Investment}} \times 100\%$	Profitability level
5	Payback Period	$T \approx I_0 / CF$	Payback period
6	Risk index	$\sigma / \mu$	Risk-earnings ratio

This system of indicators allows agribusiness entities to assess the effectiveness of investments from various perspectives: financial, time-based, and risk-based.

In modern conditions, methods of analysis based on digital technologies are also widely developing. Regression, trend, and correlation analysis of investments is carried out using STATA, EViews, SPSS, and Excel programs.

In this case, along with the results of NPV-IRR-ROI, such indicators as agricultural profitability, capital turnover, and resource intensity of investments are comprehensively assessed.

Investment efficiency cannot be captured by a single indicator. Each metric reveals a different aspect of project performance. For instance, a project with high IRR usually has a positive NPV, but the strength of this relationship depends on capital cost and market conditions. ROI evaluates immediate profitability, while NPV and IRR assess long-term value creation.

The Payback Period focuses on liquidity but ignores risk and time value, which limits its usefulness for large-scale projects. Therefore, a comprehensive evaluation model integrating discounting, profitability, and risk parameters provides a more balanced and realistic picture of investment effectiveness.

Modern approaches to investment valuation require taking into account a combination of risk and profit separately for each project. Therefore, a comprehensive approach, i.e., systems combining the elements of discounting + risk + profitability, is considered the most optimal.

In the field of agribusiness, these methods should be used not only for financial analysis, but also for increasing production efficiency, introducing innovations, and creating digital management mechanisms.

Investment evaluation is not merely a financial procedure—it is a strategic instrument for achieving economic growth and sustainability. Integrating classical economic theories with digital tools and international best practices creates a robust framework for decision-making. For Uzbekistan, strengthening the link between fiscal policy, digital analytics, and investment management can significantly improve capital productivity, especially in agribusiness. The adoption of comprehensive evaluation methodologies and international cooperation in financial governance will ensure long-term fiscal stability, innovation, and inclusive economic development.

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