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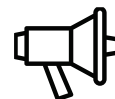


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ENHANCING THE MECHANISMS OF PROJECT-BASED FINANCING FOR INVESTMENT PROJECTS IN COMMERCIAL BANKING INSTITUTIONS

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Abstract: This article examines the theoretical, methodological, and practical aspects of improving project financing mechanisms for investment projects in commercial banks. The economic essence of project financing, its differences from traditional investment lending, and risk allocation mechanisms are analyzed based on scientific sources. Financial and non-financial risks inherent in investment projects are systematized. The study proposes the implementation of cash-flow-based lending, scenario analysis, financial covenants, and dynamic monitoring mechanisms. The research findings contribute to enhancing the stability of commercial banks' credit portfolios.

Key words: project financing, investment project, commercial bank, cash flow, risk management, DSCR, SPV, financial covenants.

INTRODUCTION

The modernization of the real sector of the economy and the implementation of infrastructure projects are increasing the demand for long-term financial resources. In this context, commercial banks act as the primary institutional entities responsible for financing investment projects. In international practice, the project finance mechanism is widely applied in the funding of large-scale investment projects [1].

Project financing links loan repayment not to the borrower's overall financial standing, but to the future cash flows generated by the project itself [2]. However, in national banking practice, investment loans are often issued based on a collateral-backed model, which leads to a high concentration of risks on banks' balance sheets [3].

Therefore, improving the mechanisms of project financing in commercial banks constitutes a pressing scientific and practical task.

LITERATURE REVIEW

The concept of project-based financing has been widely examined in both theoretical and applied financial literature. Scholars such as Finnerty (2013) and Yescombe (2013) emphasize that project financing is fundamentally based on the separation of project risks from the sponsor's balance sheet and on the use of project-generated cash flows as the primary source of debt repayment. Gatti (2018) further argues that this approach enhances financial discipline and transparency, especially in large-scale infrastructure and industrial projects.

Esty (2004) and Nevitt and Fabozzi (2000) highlight the advantages of project financing in terms of risk sharing among stakeholders and improved capital efficiency for banks. At the same time, Mishkin (2019) and Lavrushin (2016) stress the importance of effective risk management systems in banking activities, noting that insufficient monitoring and weak covenant structures increase credit risk exposure. International institutions such as the Basel Committee and the IMF also underline the need for stronger risk assessment frameworks and cash-flow-based lending models in order to ensure financial stability.

RESEARCH METHODOLOGY

This study employs a mixed-method research approach combining qualitative and quantitative analytical techniques. The theoretical framework is developed through a systematic review of scientific literature on project financing, bank risk management, and investment lending. Comparative analysis is used to identify the key differences between traditional collateral-based lending and project-based financing models.

Empirical analysis is based on statistical data from the Central Bank of the Republic of Uzbekistan and international financial institutions. The study applies financial ratio analysis, including the DSCR indicator, to assess the sustainability of project cash flows and debt servicing capacity. In addition, risk analysis methods, scenario-based forecasting, and structural analysis of bank loan portfolios are used to evaluate the effectiveness of project financing mechanisms. The results are generalized using logical analysis and synthesis to formulate practical recommendations for improving project financing practices in commercial banks.

ANALYSIS AND RESULTS

1. Theoretical Foundations of Project Financing

Project financing is a form of long-term lending based on the assessment of an investment project as an independent financial entity, in which loan repayment primarily relies on the cash flows generated by the project itself [4].

Within this model, a Special Purpose Vehicle (SPV) is established, and the project's assets and liabilities are recorded on its balance sheet [2]. This structure enables effective risk segregation and enhances the transparency of financial flows.

The key financial indicators used in project evaluation include:

- NPV (Net Present Value) – net present value;
- IRR (Internal Rate of Return) – internal rate of return;
- DSCR (Debt Service Coverage Ratio) – debt service coverage ratio;
- LLCR (Loan Life Coverage Ratio) – loan life coverage ratio [5].

The DSCR is calculated as follows:

$$\text{DSCR} = \text{CFADS} / \text{Debt Service}$$

In international practice, it is generally recommended that the DSCR should not be lower than 1.2–1.3 in order to ensure an adequate safety margin for lenders and to maintain the financial sustainability of the project [2].

2. Comparative Analysis of Traditional Lending and Project Financing

Traditional investment lending is primarily based on the borrower's overall financial condition and collateral, with loan repayment linked to general revenues, which results in a high concentration of risks on the bank's balance sheet. In contrast, project financing relies mainly on project-generated cash flows as the primary source of debt repayment and involves the establishment of a Special Purpose Vehicle (SPV) to separate project risks from the sponsor's balance sheet. This approach enables risk sharing among participants, enhances transparency, and strengthens monitoring through financial covenants and performance indicators such as DSCR. Consequently, project financing provides a more effective framework for funding large-scale investment projects and improving the sustainability of commercial banks' loan portfolios (Table 1).

Table 1. Comparative Characteristics of Traditional Investment Lending and Project Financing

No.	Criterion	Traditional Lending	Project Financing
1	Object of analysis	Borrowing enterprise	Independent project
2	Source of repayment	General revenues	Project cash flows
3	Risk allocation	Primarily borne by the bank	Distributed among participants
4	Collateral	Fixed (hard) collateral	Project assets and cash flows
5	Monitoring	At the loan approval stage	Continuous throughout the project life cycle

The results of the analysis indicate that project financing facilitates risk diversification and increases the efficiency of bank capital utilization [6].

3. Systematic Analysis of Project Financing Risks

Project financing is characterized by the following main types of risks: credit risk, currency risk, construction risk, operational risk, and market risk [7] (Table 2).

Table 2. Project Financing Risks and Their Management Instruments

No.	Risk type	Impact level	Mitigation instruments
1	Credit risk	High	DSCR monitoring, financial covenants
2	Currency risk	Medium	Hedging mechanisms
3	Construction risk	High	EPC contracts
4	Operational risk	Medium	Insurance
5	Market risk	Medium	Long-term contracts

4. Analysis of the Practice of Commercial Banks in Uzbekistan

Recent statistical indicators of Uzbekistan's banking system demonstrate significant growth in the credit portfolios of commercial banks and changes in their structural composition.

As of 1 January 2026, the total loan portfolio of commercial banks amounted to approximately 604,002 billion UZS, reflecting a 13% increase compared to the beginning of 2025. This growth indicates an expansion of banking activities and enhances the potential for channeling credit resources into investment-oriented sectors [16].

Furthermore, as of 1 June 2025, the total loan portfolio of commercial banks stood at 567,685 billion UZS, of which loans extended to legal entities accounted for a substantial share, amounting to 373,953 billion UZS [3]. This confirms that banking activities are largely concentrated on lending to legal entities, including enterprises and investment projects.

Recent statistical data also illustrate the sectoral structure of bank lending. As of 1 December 2025, total commercial bank loans reached 595,309 billion UZS, distributed across sectors such as industry, agriculture, and construction. Specifically, loans allocated to industry amounted to 143,511 billion UZS, to agriculture 61,628 billion UZS, and to construction 18,063 billion UZS [7]. These figures reflect both the investment potential and the sectoral composition of banks' credit portfolios.

The statistical bulletins of the Central Bank further confirm a positive trend in the growth of commercial banks' assets and loan portfolios. From the beginning of 2025 to the beginning of 2026, total assets and total loan portfolios increased substantially, indicating overall financial stability [16]. This expansion implies a strengthened resource base for financing investment projects.

The analytical findings suggest that:

- the total volume of commercial banks' loan portfolios is growing rapidly;
- loans extended to legal entities constitute a significant share;
- credit resources are actively directed toward key sectors of the economy;
- investment loans are predominantly allocated to large-scale enterprise projects.

However, despite these positive trends, the statistical structure of investment-oriented lending requires separate and detailed analysis, as aggregate credit portfolio statistics do not fully reflect the actual share and dynamics of investment loans. Therefore, further examination of the Central Bank's sector-specific investment lending statistics represents an important direction for future research within this study.

Based on the research findings, the following recommendations have been developed:

- introduction of a cash-flow-based lending model;
- mandatory implementation of scenario-based cash-flow analysis;
- broader application of financial covenants;
- establishment of dynamic risk-monitoring mechanisms;
- creation of specialized project finance units within commercial banks.

This approach contributes to strengthening the stability and sustainability of the loan portfolio [10].

Overall, the upward trend in the growth of commercial banks' credit portfolios indicates an increasing allocation of credit resources toward investment activities, which further reinforces the necessity of improving project financing mechanisms [12, 14].

CONCLUSIONS AND RECOMMENDATIONS

The research findings indicate that, in the practice of financing investment projects within commercial banks, the traditional collateral-based lending model continues to dominate. This approach primarily links loan repayment to the borrower's overall financial condition and does not sufficiently take into account the actual cash-flow potential of the project. As a result, credit risks become highly concentrated on the bank's balance sheet, and the long-term sustainability of investment projects is not fully ensured.

In contrast, the project financing mechanism is distinguished by its reliance on project-generated cash flows as the primary source of debt repayment. This approach allows for risk allocation among participants,

enhances financial transparency, and improves the quality of the loan portfolio. The study substantiates that the introduction of cash-flow analysis based on the DSCR indicator, scenario-based forecasting, and a structured system of financial covenants constitutes a critical condition for increasing the effectiveness of project financing.

Furthermore, the systematic analysis of risks inherent in investment projects—such as credit, currency, construction, and operational risks—demonstrates the necessity of a comprehensive risk management approach. It is insufficient to limit risk assessment to the initial evaluation stage; instead, a continuous monitoring mechanism throughout all phases of the project life cycle should be implemented. Such an approach would elevate the bank's risk management system to a qualitatively new level.

The recommendations developed in this study—namely, the broad implementation of a cash-flow-based lending model, the mandatory application of scenario analysis, the strengthening of financial covenant systems, and the establishment of specialized project finance units—contribute to enhancing the stability of commercial banks' loan portfolios. These measures not only reduce investment risks but also improve the efficiency of long-term financing of the real sector. Overall, improving the mechanisms of project financing in commercial banks represents a crucial factor in strengthening the financial stability of the banking system, stimulating investment processes, and increasing the competitiveness of the economy. In the future, the broader application of digital technologies, the use of artificial intelligence for risk assessment, and the deepening of the institutional foundations of project financing should be considered promising directions for further research.

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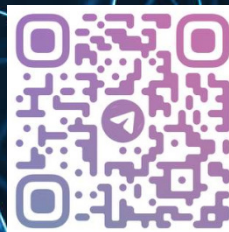
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