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EVALUATION OF INVESTMENT PROJECTS EFFECTIVENESS IN A BANK'S ACTIVITY

Abstract. *Introduction.* The basic task of the bank's investment project development is to prepare information that is necessary to grounded decision making about the investments practicability. Therefore, the problem of the methodological approaches adaptation for investment project efficiency evaluation and their practical implementation in bank's activity gains the particular actuality in today conditions of investment business.
Purpose. Grounding of correlation between methodological approaches for the investment project efficiency evaluation and their practical implementation in bank activity. Methods. Usage the system analysis and comparison analysis allows identifying the correlation between methodological approaches to investment project efficiency evaluation and their practical implementation in bank activity.
Results. Determination of the bank's investment effectiveness indicators helps to evaluate the considered investment project from the point of view of acceptability for the next analysis, to perform the comparison evaluation of the competitive investment projects package and to rank them, to select the investment projects which meet the given correlation of effectiveness and risk. The results of bank's investment activity mostly depend on validity of investment decisions and accounting at their acceptance varied indicators, the basic of which are: investment resources limitation; variety of the investment types and investments decisions variants; differences in investment projects costs; differences in investment qualities, in proposed objects of investments; risks connected with investment decision making.
Conclusion. The authors have grounded the necessity of performing the risk management that should start from prediction the aftermath of the current (present) indicators deflection from the predicted under the influence of demand decreasing, decreasing the interest rates and varying of other parameters. Also, the authors have performed the cash flow systematization from the practical viewpoint of the bank's activity that is conditioned by investment project.
Keywords: bank; investment project; cash flow; incomes; expenses; efficiency; evaluation methods.
JEL Classification: G21, G24, C52

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ОЦІНКА ЕФЕКТИВНОСТІ ІНВЕСТИЦІЙНИХ ПРОЕКТІВ У ДІЯЛЬНОСТІ БАНКУ

Анотація. У статті проаналізовано взаємозв'язок методичних підходів до оцінки ефективності інвестиційного проекту, аргументовано необхідність розгляду бізнес-плану як основного інструменту управління інвестиційним проектом банку. Систематизовано методи оцінки інвестиційних проектів у діяльності банків за масштабами витрат, термінами їх використання і отриманими результатами. Визначено основні характеристики накопичених грошових потоків банку від реалізації інвестиційного проекту та запропоновано практичний підхід до їх розподілу. Розроблено методи оцінки ефективності інвестиційних проектів банку з точки зору ефективності їх використання d діяльності банківської установи.
Ключові слова: банк; інвестиційний проект; грошові потоки; доходи; витрати; ефективність; методи оцінки.

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ОЦЕНКА ЭФФЕКТИВНОСТИ ИНВЕСТИЦИОННЫХ ПРОЕКТОВ В ДЕЯТЕЛЬНОСТИ БАНКА

Аннотация. В статье проанализирована взаимосвязь методических подходов к оценке эффективности инвестиционного проекта, аргументирована необходимость рассмотрения бизнес-плана как основного инструмента управления инвестиционным проектом банка. Систематизированы методы оценки инвестиционных проектов в банковской деятельности по масштабам расходов, срокам использования и полученным результатам. Определены основные характеристики накопленных денежных потоков банка от реализации инвестиционного проекта и предложен практический подход к их распределению. Разработаны методы оценки эффективности инвестиционных проектов банка с точки зрения эффективности их использования в деятельности банковского учреждения.

Ключевые слова: банк; инвестиционный проект; денежные потоки; доходы; расходы; эффективность; методы оценки.

Introduction. In the ground of determination of the bank's investment in investment project is the definition of comparative advantages: the advantage for the bank of using resources, which supply the greatest satisfaction of its needs and give maximal return as the result of investment.

The basic task of bank's investment project development is to prepare information that is necessary to grounded decision making about the investments practicability. It is important to determine, whether the possible profit high enough (taking into account all future risks) for the aim to justify today's expenses and to answer a question: is the proposed investment variant an effective way for achieving the given investment goal? We need to find out the least risky and the most profitable investment, taking into account the availability of alternative investments. Therefore, the issue of the methodological approaches adaptation for investment project efficiency evaluation and their practical implementation in bank's activity gains the particular topicality in today conditions of investment business.

Brief Literature Review. Analysis of the latest researches and publications in scientific periodicals has pointed to the fact that the problem of investment efficiency evaluation and the investment project life cycle is brought up by next domestic researches: T. Mayorova, A. Azarova, and A. Duka. The problems of the economic efficiency of investment determination are considered by V. Trykin, N. Karachina, V. Klokov. The foreign knowledge in management of investment projects is presented within works of Wilson L. Deane (1996), Charles Moyer R. (2011), James McGuigan (2011), Ramesh Rao (2011), William Kretlow (2011). But in spite of the research presence in such direction and enough grounded approaches for determination the basic elements of investment project, there is the issue for discussion in the practical implementation of the base models of investment evaluation in bank's activity.

The purpose of this article is to ground the correlation between methodological approaches to investment project efficiency evaluation and their practical implementation in bank's activity.

Results. The classical interpretation [1] of the approaches to investment project efficiency evaluation comes to determination of its development cycle. At the first stage of the cycle, the business idea is formulated, and then its perspectives and evaluation of possibility of project's implementation within a context of financial, marketing, juridical and other aspects is analyzed. The basic information for this is the data about the economic practicability, supposed outlet volume etc.

At second stage, in a point of view of the practical features of the bank's activity, the relevant cash flows should be predicted on the basis of planned incomes and expenses of investment project implementation.

At the third stage, which is decisive within the investment project life cycle, as far as the investment efficiency evaluation is performed, it is necessary to note that initial information is a sum of the capital investment, the project incomes and expenses schedule, discounting rate. The purpose of this stage is to perform the aggregate economic evaluation of the project decisions.

At the fourth stage of the cycle, the indicators of investment project efficiency are under the evaluation and comparing with the criterion of investment decision making, which is computed by different methods of investment projects efficiency evaluation.

The basic tool for investment project management within the bank's activity is business plan [1]. This detailed, well-structured, thoroughly grounded document may be used as a case for the decision-making about the financing; helps to evaluate the project viability in conditions of market competition; includes the guidelines for the enterprise's activity efficiency increasing.

The aim of investment business plan design is to receive the full grounded information about the project implementation and practicability of financial resources using in conditions of their shortage.

We may mention that a financial plan of investment project is the base for decision making about the investment and concentrate information along all directions of project implementation that is a key section at plan design. As practical aim of bank financial plan at investment activity is the evaluation of project financial situation (plan of incomes and expenses), which is the dynamic analysis of varying of financial condition of future bank project during the planned term. For each of the planned intervals, the bank budget is designed (expected incomes and expenses which reflect the results of all operations, directly or indirectly associated with investment project implementations and that have appeared within current distance). Such budget balance is determined as a difference between incomes and expenses (the investment project cash flow of current planning interval). It is necessary to note, that only relevant cash flow should be taken into account, it means only that which appear within project implementation. The cash flow components, as a rule, can have as positive as negative volumes. The planning horizon of investment flows is determined in dependence on planned investment level. It is also necessary to note, that in banks' practice activities it is provided that in case if a project during the given distance is not compensated, then the planning horizon should be increased up to project payback.

In our opinion, one of the important task at bank's investment project evaluation in the conditions of today Ukrainian investment market functioning is identification and systematized selection of the project characteristics, which real influence may estimate its profitability. Such characteristics include a set of relevant information about the current investment project and should be mirrored in the appropriate cash flow during the investment efficiency evaluation. The planning of the project income part is performed on the basis of expected demand for present and potential needs, and also on the basis of bank's resources facilities. An expected demand can be determined taking into account the market capacity and supposed share of the market within its segment. The profit prediction from bank's

investment project implementation is performed with the help of classical approach, which is based on sequential planning of connected with project direct and indirect incomes (interest, commission and others) and expenses (interest, commission, overhead and others). The cash flow systematization from the practical viewpoint of the bank's activity that is conditioned by investment project, is shown at the Figure.

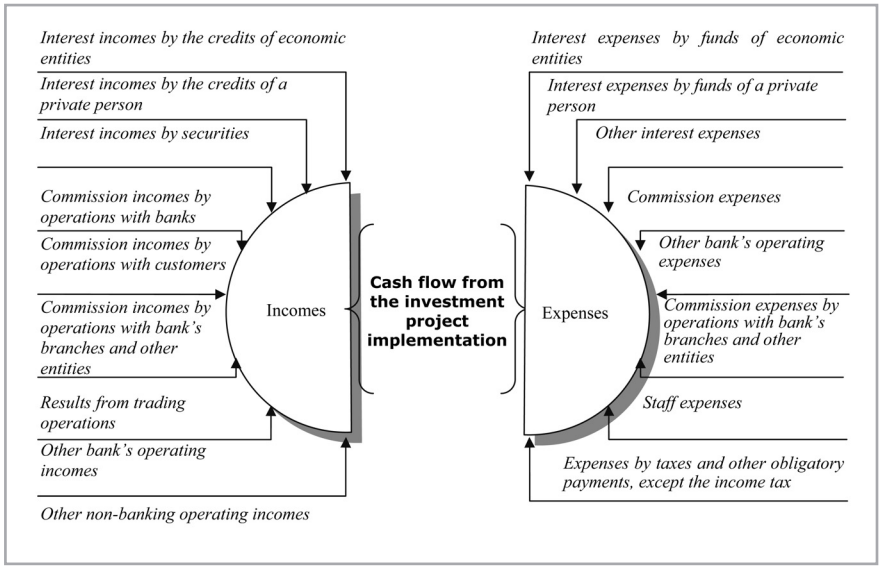

Figure: **An example of cash flow distribution from the investment project implementation**
Source: Authors' own development

The volume of predicted bank cash flow, generated by investment project, should defray the volume of integral sum of investment taking into account the principle of «value of money in time». It means that each new cash flow on the bank's balance, which is obtained in term (month), has less significance than equal to it by volume cash flow which is obtained in term (month) earlier [2]. In our view, the most important stage at the analysis of bank's investment project is the evaluation of predicted cash flow which consists of two elements: necessary investments and cash assets revenue with less current charges. It is necessary to note in this context that predicted estimation depends on many factors and the basic task during the prediction process is to coordinate the staff of all the bank's departments within the collection and systematizing of information taking into account the consistency of initial economic parameters which are used by participants of prediction process.

At each step the cash flow volume is characterized by:
- inflow from the investment project that equals to cash revenue on this step (interest, commission and others);
- outflow from the investment project that equals to expenses on this step (interest, overhead and others);
- balance which equals to difference between cash assets inflow and outflow.

If the relevant (expected) cash flow that are initiated by the project usual appear during the month and formal should be identified by days, then as to the practical part of the bank activity in the investment evaluation they should be taken into account as such that have appeared in the end of the month. Also, as all component of the investment project are represented in pecuniary valuation, and this composes the set of values of cash flow which describe the current project implementation process. The integral cash flow consists of package of flow of the particular bank activity category [3]:
- cash flow in the limits of bank's investment activity;
- cash flow in the limits of bank operating activity;
- cash flow in the limits of bank financial activity.

With the aim to avoid the double accounting at expenses planning, from the point of view of optimization it is advisable not to include depreciation reserves, because they do not generate the cash flow of the bank's investment project. In order that the investment decision was profitable for the bank from the commercial point of view, it is necessary that cash outflow and connected with it current expenses should be compensated by cash inflow as minimum. Taking into account the principle of «value of money in time», it means that the non-simultaneous cash flow have unequal values, it is necessary to reduce them to one moment of time at first. Side by side with the cash flow at evaluation of the bank's investment project, an accumulated cash flow is also used. This flow has next characteristics: accumulated inflow, accumulated outflow and accumulated balance. Necessity to evaluate the cash assets in time is the result of cash resources varying during the time. It means not the depreciation of the cash assets at the result of inflation, but other more fundamental aspects, connected with the cash assets turnover. The cash flow is discounted because of two reasons: first, the discount is based on conception of value of money in time, second, because of possible risk appearance. The determination of bank's investment effectiveness indicators allows evaluating the considered investment project from the point of view of acceptability for the next analysis, to perform the comparison evaluation of the competitive investment projects package and to rank them, to select the investment projects which support the given correlation of the effectiveness and risk. For the analysis of bank's investment projects in practice, the next systematized evaluation methods are used (Table).

The represented methods of investment projects evaluation in practice not in all cases can be common because they quite significantly differ by expenses scales, terms of their using, and also by obtained results. To the small investment projects which are not required great investment, not material effect on changing the sales volume in the bank, and also which have relatively small term of usage, one can apply the simplest methods of investment project evaluation. At the same time, the implementation of large-scale projects, which require more investment expenses, activate the necessity to take into account greater amount of indicators and, as consequence, to use more complex evaluation methods. Let us specify that the bank's investment activity results mostly depend on validity of investment decisions and accounting at their acceptance varied indicators, the basic of which are:
- investment resources limitation;
- variety of the investment types and investments decisions variants;
- differences in investment projects costs;
- differences in investment qualities, in proposed objects of investments;
- risks connected with investment decision making.

As the condition of feasibility of the bank's investment project is continuity of cash flow and surplus of accumulated balance, on each life step by all types of the bank's operating and financial activities.

Conclusion. Thereby, it is necessary to note that the management of the bank's investment projects on the stage of planning, side by side with effectiveness evaluation, supposes analysis of investment risk with applying the effective methods of investment evaluation, because the high effectiveness is achieved by risky actions. At risk, the bank could have a super profit, but, at the same time, could be under loss. In this case, the risk management starts from prediction of the aftermath of the current (present) indicators deflection from the project under the influence of demand decreasing, drop in the interest rates and varying of other parameters. This, in turn, grounds the importance of the interrelation between the methodological approaches for the investment project effectiveness evaluation and their practical implementation in bank activity. The condition of

Table: **Method of the bank's investment projects effectiveness evaluation**

Name of the evaluation method	Interpretation and value	Practical recommendations of usage
1. Indicators that are determined on the basis of discount conception:		
NPV (Net Present Value)	shows the absolute income volume: at positive value the project is practicable: $NPV = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + ... + \frac{CF_n}{(1+r)^n} - I_o = \sum_{k=1}^{n} \frac{CF_k}{(1+r)^k} - I_o,$ where $CF_{1,2...n}$ – cash flow during defined term, r – discount rate, I_0 – initial investment.	In accordance to the method, a present value of all initial cash flow is compared with a present value of all outflow that are conditioned by capital investments for the process implementation. The difference between first and second is a net present value the volume of which determines the rule of decision making: – for the particular project: if NPV greater or equal to zero, then the project is accepted; – for several different alternative projects: there should be accepted such project that has greater value of NPV in the case if it is positive.
PI (Profitability Index)	shows the investment capital increasing by unit of invested cash assets $PI = 1 + \frac{NPV}{I_0},$ where I_0 – initial investment, NPV – Net Present Value.	The decision making rule on the basis of method of profitability index: – if the value PI greater than 1, then the project is accepted; – if the value PI less than 1, then the project is declined.
MPI (Modified Profitability Index)	shows the investment capital increasing by unit of invested cash assets taking into account the future investment in the project (negative future cash flow) $MPI = 1 + \frac{NPV}{I_0 + PV_{\text{future investment}}},$ where I_0 – initial investment, PV – net future value of the future investment.	The decision making rule on the basis of method of modified profitability index: – if the value MPI greater than 1, then the project is accepted; – if the value PI less than 1, then the project is declined.
IRR (Internal Rate of Return)	mirrors the maximal discount rate at which the project is still profitable $I_0 = \sum_{k=1}^{n} \frac{CF_k}{(1+IRR)^k},$ where I_0 – initial investment, CF_k – cash flow during defined term.	The decision making rule on the basis of method of internal rate of return: – if the value IRR greater of equal to capital value, then the project is accepted; – if the value IRR less than capital value, then the project is declined.
MIRR (Modified Internal Rate of Return)	discount rate at which the cash flow future value during the whole term of project, that is computed by project financing rate (capital price) equals to present value of project investment, that is computed by project financing rate (capital price). $PV_I = \frac{FV_{CFk}}{(1+MIRR)^k}; MIRR = \sqrt[k]{\frac{FV_{CFk}}{PV_{Io}}} - 1,$ where PV_I – net future value of the future investment, FV_{CFk} – future value of the cash inflow.	The decision making rule on the basis of method of modified internal rate of return: – if the value MIRR greater than financing value, then the project is accepted; – if the value MIRR less than financing value, then the project is declined; – if the value MIRR equals to the financing value, then the project can be as accepted as declined.
DPP (Discounted Payback Period)	is the time period needed for compensation of the initial investment at the expense of net future value of cash inflow. $DPP = N + \frac{Sd}{CFd},$ where N – amount of years before the full project payback, Sd – non-payback discount expenses at the beginning of next year, CFd – net discount cash flow during next year.	The discount payback is the best criterion than non-discount, and it takes into account the value of money in time. The decision making rule on the basis of methods: payback period (PP) and discounted payback period (DPP): – if the value PP and DPP less than maximum admissible payback period then the project is accepted; – if the value PP and DPP greater than maximum admissible payback period then the project is declined; – if the value PP or DPP equals to the maximum admissible payback period, then the project can be as accepted as declined.
2. Indicators that are not determined on the basis of discount conception:		
PP (Payback Period)	is the time period needed for compensation of the initial investment. $PP = N + \frac{S}{CF},$ where N – amount of years before the full project payback, S – non-payback expenses at the beginning of next year, CF – net cash flow during next year.	The investment project is accepted if its payback period less than maximal period which bank considers as acceptable for its activity.
ARR (Accounting Rate of Return) (discounted profitability)	is the coefficient of correlation of accounting net profit obtained from the project to average annual balance investment. $ARR = \frac{EBIT \cdot (1-T)}{(I_O + V_{OC})/2},$ where $EBIT$ – annual profit before payment of taxes and dividends (12 periods from the beginning of present activity), T – profit tax rate, Voc – residual value of fixed assets which are used for the project.	This method is used in two cases: – for determination of effectiveness of independent investment projects (absolute effectiveness), when the conclusion about acceptability is made; – for determination of effectiveness of alternative projects (compare effectiveness), when the conclusion about what project should be accepted from the several alternative projects.

Source: Authors' own development on the basis of resources [4-11]

investment project viability is its correspondence to the bank's strategic goals that find out their main representation in effectiveness increasing of its activity.

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