

## INFLUENCE OF DURATION OF THE STEP OF CALCULATION OF THE INVESTMENT PROJECT ON RELIABILITY OF ACCEPTED ADMINISTRATIVE DECISIONS

© 2009 M.I. Rimer, A.A. Korolev\*

**Keywords:** duration of a step of calculation, the investment project, reliability of administrative decisions, economic efficiency indicators, indicators of financial stability, reliability of investment calculations.

Investigation covers a problem of influence of duration of a step of calculation of the investment project on increase of reliability of investment calculations and reliability of accepted administrative decisions. Laws of change of indicators of economic efficiency of the investment project are revealed at change of duration of a step of calculation. Necessity of minimisation of duration of a step of calculation for increase of reliability of values of indicators of economic efficiency of the investment project is proved.

The choice of a step of calculation makes considerable impact on level of indicators of economic efficiency and financial stability of the investment project (*IP*). On the basis of a combination of indicators of economic efficiency and financial stability, participants of investment process make the decision on participation or nonparticipation in the project.

In official scientific materials there are no recommendations about calculations of efficiency of projects at transition from a calculation step of *longer* duration to a step of calculation of *smaller* duration.

As it is known, when calculating indicators of economic efficiency and financial stability any investment project is represented in the form of cash flows on three fields of activity: operational, investment and financial. If the duration of calculation step is one year, features of movement of funds in time in a year are not visible. Thus all cash flows are considered unequivocal and are equally estimated at discounting that deforms real value of the discounted cash flows. During the transition to a step of calculation of smaller duration the concrete element of a cash flow becomes attached to a real date of its occurrence, and procedure of discounting of such sizes adequately reflects current cost of these sizes.

From our point of view, the most preferable method of the account of character of distribution of incomes and expenses under the project in a calculation step is use of a step of calculation of the least duration.

For this purpose, first of all, it is necessary to transform real annual cash flows to quarter

or monthly streams. Credit reception, payments of own capital, investment costs concern the first steps of the settlement period. Taxes, return of credits and percent on them concern the end of steps of calculation. A gain from realisation, current costs are considered in regular intervals in each step. Thus the total of steps of calculation under the project increases in 2, 4 or 12 times.

The following stage of a technique assumes recalculation of real norm of the income and discounting factor with reference to the chosen duration of a step of calculation. For this purpose the annual real norm of the income should be divided into quantity of steps of calculation in a year.

After that it is necessary to calculate discounting factor under the known formula for each step of calculation. All subsequent calculations of efficiency are spent under the standard scheme.

At an estimation of efficiency of projects taking into account inflation, first of all, it is necessary to correct all streams of money resources in established prices for rates of inflation. Secondly, should be calculated nominal (taking into account inflation) norm of the income.

All subsequent calculations of efficiency are spent under earlier considered scheme: calculate discounting factor on each step of calculation, the net present cash flows on each step of calculation, and then NPV the project. As a result application of a step of calculation of smaller duration allows us to estimate more precisely parameters of efficiency of the investment

\* Mir I. Rimer, Doctor of Economics, Professor of Samara State University of Economics; Andrey A. Korolev, post-graduate student of Samara State University of Economics. E-mail: nauka@sseu.ru.

project that raises reliability of administrative decisions accepted in investment sphere.

Application of the specified methodical positions in a course of an estimation of real investment projects has allowed us to reveal the following law.

Transition to a step of calculation of smaller duration necessarily results or in decrease in the discounted size of inflows of money resources (it is fair for the inflows which are carried out in regular intervals and in the end of a step of calculation of the big duration), or, at least, to preservation of the discounted estimation of monetary inflows (it is fair for the inflows which are carried out in the beginning of a step of calculation).

Consideration of the above feature have shown practical calculations, are completely fair and for outflows of money resources. However the basic difference in this case is that the calculation of indicators of economic efficiency outflows of money resources are considered with a sign "minus". As a result transition to a step of calculation of smaller duration necessarily results in reduction of the discounted size of outflows of money resources (it is fair for the outflows which are carried out in regular intervals and in the end of a step of calculation of the big duration), or, at least, to preserve the discounted estimation of monetary outflows (it is fair for the outflows which are carried out in the beginning of a step of calculation).

Finally when using a step of calculation of smaller duration the size of reduction of the discounted estimation of inflows of money resources appears much more than a reduction of the discounted size of outflows of money resources under the project. As a result reduction of duration of a step of calculation generally leads to decrease in indicators of economic efficiency of projects (as have shown practical calculations – in certain cases to two times).

At the same time, it is necessary to notice that in some cases the specified rule is broken:

1) investment under the project are carried out not only on a zero step of calculation, but also on other steps of the settlement period (under condition of negative value of balance of cash flows on these steps).

2) duration of a zero step of calculation is less, than the greatest duration of considered steps of calculation. For example, it occurs, if greatest of considered makes duration of a step is one year, and duration of a zero step is 6 months.

Besides, the revealed rule can not be observed in cases when transition to smaller duration of a step of calculation is made for all steps of the settlement period, except zero (for example if duration of a zero step of calculation is one year, and all other steps of calculation is one month).

At last, as a result of calculations the case (duration of a zero step of calculation coincided with the least duration of steps from all considered durations) when transition from a calculation step *bigger* duration to *smaller* duration led to increase of indicators of economic efficiency of projects has been revealed! The reason is that displacement of factors of discounting in a similar situation do not arise. The obtained data testifies: the most expedient duration of a step of calculation at investment designing is duration in *one month*.

Besides, it was found out that transition to a step of calculation of the project of smaller duration opens financial fiasco of some projects. Thus the size of the negative saved up balance of cash flows (a financing lack) exceeded 20 % of pure monetary receipts within the specified month. Importance of the received result, except the absolute value, is underlined by repeated excess of level of a reserve of finances recommended by official sources.

Thus, transition to an estimation of the investment project with application of a step of calculation of the minimum duration is the major element of increase of reliability and objectivity of administrative decisions accepted in investment sphere.

---

1. Kossov V.V., Livshitz V.N. Methodical recommendations on the evaluation of investment projects efficiency: (2<sup>nd</sup> edition) / The ministry of economics of RF, the Ministry of Finance of RF, Civil Code on Construction, architecture and housing politics. M., 2000.

2. Vilenskiy P.L., Livshitz V.N., Smolyak S.A. Evaluating the efficiency of investment projects: theory and practice. Study book. 2<sup>nd</sup> edition. M., 2000.