

Nataliya Shmorgun

Ukrainian State University of Finance and International Trade, Kyiv, Ukraine

GROUNDS OF EFFICIENT USE OF METHODS OF EVALUATION PROCEDURE OF THE PROJECTS IN CAPITAL BUDGETING

Abstract: There are several methods of evaluation procedure of the projects in capital budgeting. Every method has some specific aspects and may be used autonomically or in combination with others. Many firms specify a limit on the overall budget for capital spending. Capital rationing is concerned with the problem of selecting the mix of acceptable projects, which provides the highest overall NPV. The profitability index (PI) is used widely in ranking projects competing for limited funds. The NPV method generally gives correct ranking, since the cost of capital (CC) is a more realistic reinvestment rate. The most important question for Ukraine is the question about financing of investment and innovation. The complex analysis of the statistical monitoring of innovation activity in Ukraine in 2007 indicated that a unit weight of own resource was 74% (for 90% enterprises), 18.5% was the credit facilities, 3% was a foreign investors' resource, 1.3% was the public finance, 0.2% was a domestic investors' resource [1]. The new Ukraine government has to give its careful consideration for investment problem.

Keywords: efficient, methods of evaluation, projects, capital budgeting.

1. Introduction

Capital budgeting is the process of making long-term planning decisions for investments. There are typically two types of investment decisions: selection decisions concerning proposed projects (for example, investments in long-term assets such as property, plant and equipment, or resource commitments in the form new product development, market research, re-funding of long-term debt, etc.) and replacement decisions (for example, replacement of existing facilities with new ones).

One of important aspects of capital budgeting is innovation as the way of utilization of scientific and technological achievement. Innovation activity gives the radical advance of any country industry, above all competitive ability of industry. According to *The Global Competitiveness Report 2007-2008* Ukraine has occupied the 73rd position, Poland – 51st, Russia – 58th [2].

The innovation structure of the development countries shows that nearly 60% is radical innovation in high technology economic departments which gives 70-85% of gross domestic product. For comparison this indicator is less than 6% for Ukraine [4].

In Ukraine only 1473 enterprises were in innovation business, it was nearly 14% [4]. In modern times some aspects of investment decisions are significant. Above all it is a current financial situation in the world. Economic crisis has modified the typical approach to long-term planning decisions. It is difficult to define some decisions, for instance, how long a period is suitable for getting benefit, what aspect of economic activity has been profit-making not for short-time period, which rate of discount is for separate periods.

2. Background

Capital budgeting as an important part of business management has supported the planning process of future business for any enterprise. This information is given in different scientific textbooks, monographs, etc. [1; 7]. There are varied special procedures proposed by research and development activities in this area. Above all these methods are divided into two main groups: static and dynamic methods. The dynamic methods recognize the time value of money and demand special financial calculations. The main indicator of these methods is the net present value (NPV).

Net present value (NPV) is the excess of the present value (PV) of cash inflows generated by the project over the amount of the initial investment (I). $NPV = PV - I$. As usually the initial investment (I) is the initial cash outlay necessary to purchase the asset and put it in operating order. It is determined as follows: Initial investment = cost of asset + installation cost – proceeds from sale of old asset. Decision rule is: if NPV is positive, accept the project, otherwise reject it. And remember: the bigger the margin is, the better it is.

The main problem of this method is to take into account the impact of inflation. In this case we have to update future cash flows and discount. At the first sight it must be very important in our time, during financial crisis, to take into account different changes in the economic life of any country but it is optional. The mathematical accounting has demonstrated the equality of equalized NPV and not equalized NPV of the project. It is correct when the influence of inflation is considered not as a whole but in relation to some products only.

The advantages of the NPV method are that it obviously recognizes the time value of money and it is easy to compute whether the cash flows form an annuity or vary from period to period.

Internal rate of return (IRR) is defined as the rate of interest that equates I with the PV of future cash inflows. In other words, at IRR, $I = PV$ or $NPV = 0$. Decision rule is to accept the project if the IRR exceeds the cost of capital (CC), otherwise, reject it.

The advantage of using the IRR method is that it does consider the time value money and, therefore, is more exact and realistic than the next one – the ARR method. The shortcomings of this method are that (1) it is time-consuming to compute, especially when the cash inflows are not even, although most business calculators

have a program to calculate IRR, and (2) it fails to recognize the varying sizes of investment in competing projects and their respective money profitability. The NPV method and the IRR method are called discounted cash flow (DCF) methods.

The profitability index (PI) (or benefit/cost ratio) is the ratio of the total present value of future cash inflows to the initial investment, that is, PV/I . This index is used as the means of ranking projects in descending order of attractiveness. If the profitability index is greater than 1, then accept the project. This index is used to range proposed projects for creating an optimal investment portfolio.

Accounting rate of return (ARR) measures profitability from the conventional accounting standpoint by relating the required investment – or sometimes the average investment – to the future annual net income.

The advantages of this method are that it is easily understandable, simple to compute, and recognizes the profitability factor. The shortcomings of this method are that it fails to recognize the time value of money, and it uses accounting data instead of cash flow data.

The simplest method is the payback period which measures the length of time required to recover the amount of initial investment. It is computed by dividing the initial investment by the cash inflows through increased revenues or cost savings. The advantages of using this method are that (1) it is simple to compute and easy to understand, and (2) it handles investment risk effectively. For a short time period of investment it is the main method.

The comparative analysis of estimation methods of capital investments shows that the main indicator is net present value, therefore the project with the maximal NPV is picked up.

As the NPV is turned on discount chosen its value is not constant. The more risk and the longer duration of the project are, the higher discount must be.

As the IRR is a relative number, it defines maximal expenses level. It cannot be used for untypical situations.

The relation between these indicators is as follows:

If $NPV > 0$, then $IRR > CC$, $PI > 1$,

If $NPV = 0$, then $IRR = CC$, $PI = 1$,

If $NPV < 0$, then $IRR < CC$, $PI < 1$.

As the ARR uses the accounting data instead of cash flow data, it does not include the depreciation expense and amortization expense.

A project is said to be mutually exclusive if the acceptance of one project automatically excludes the acceptance of one or more other projects. In the case where one must choose between mutually exclusive investments, the NPV and IRR methods may give contradictory results. The conditions under which contradictory rankings can occur are the following:

1. Projects that have different life expectancies.
2. Projects that have different sizes of investment.

3. Projects whose cash flows differ over time. For example, the cash flows of one project increase over time, while those of another decrease.

The contradictions result from different assumptions with respect to the reinvestment rate on cash flows from the projects.

1. The NPV method discounts all cash flows at the cost of capital (CC), thus implicitly assuming that these cash flows can be reinvested at this rate.

2. The IRR method implies a reinvestment rate at IRR. Thus, the implied reinvestment rate will differ from project to project.

References

- [1] Бочаров В.В., *Инвестиции*, СПб.: Питер, 2002.
- [2] <http://www.in.gov.ua/index.php?get=487&id=2169#2008>.
- [3] <http://www.ukrstat.gov.ua/>.
- [4] Максютя А.А., Державна інноваційна політика. Проблеми сьогодення та шляхи вирішення, *Інвестиції та інноваційний розвиток* 2008. № 3.
- [5] Мертенс А.В., *Инвестиции: Курс лекцій по современной финансовой теории*, К.: Киевск. инвестиционное агентство.
- [6] Ротар А.В., Статистико-економічна оцінка інноваційної діяльності у промисловості, *Статистика України* 2009, №3.
- [7] Федулова Л., *Інноваційний розвиток економіки: модель, система управління, державна політика*, К.: Основа, 2005.

PODSTAWY EFEKTYWNEGO WYKORZYSTANIA METOD OCENY PROJEKTÓW W BUDŻETOWANIU KAPITAŁOWYM

Streszczenie: Istnieją różne metody oceny projektów i budżetowania kapitałów. Każda metoda ma pewne specyficzne aspekty i może być stosowana autonomicznie lub w kombinacji z innymi. Wiele firm określa limit wydatków kapitałowych w ogólnym budżecie. Racjonalowanie kapitału dotyczy problemu wyboru zróżnicowanych form realizacji projektów i stanowi rozminięcie wartości zaktualizowanej netto (NPV). Wskaźnik rentowności (PI) jest powszechnie używany w rankingu projektów konkurencyjnych dla ograniczonych kapitałów. Metoda NPV daje zwykle poprawne klasyfikacje, ponieważ koszt kapitału (CC) jest bardziej realistyczny od stopy reinwestycji. Najważniejszym problemem dla Ukrainy jest pozyskiwanie źródeł finansowania inwestycji i innowacji. Dlatego nowy rząd Ukrainy wiele uwagi poświęca problemowi inwestycji i ich finansowania.