Evaluation of investment projects at undeveloped markets

One of the innovative features of investment projects may be the formation of a segment of consumption at the undeveloped market of a particular product. With the availability of high risks of production and promotion of products to undeveloped segments of its market consumption, there is a need to form an appropriate infrastructure for selling this product in this segment. At the same time, the development of innovation and investment projects concerning the production and promotion of such products may be forward-looking as a result of receiving both economic and social, environmental effects or public importance of the realization. [6, p.278]

In this context, there is the problem of using the methodology of system evaluation of the expediency of developing investment projects with output of product (provision of services) for underdeveloped markets, taking into account the risks of product sales, assessing the competitiveness of its production technology, the volume of the consumption market, and others. Analysis of the recent publications and the highlight of unresolved problems in a subject area of research. Some aspects of the methodology for evaluating investment projects are discussed in a number of publications. In [3,4], approaches to project risk assessment have been analyzed, in particular in [4], an approach to manage financial risks been developed. In [6], a model of portfolio of project analysis has been introduced.
We will evaluate the effectiveness and relevance of project implementation according to the following indicators: payback period (PP), accounting rate of return (ARR), net present value (NPV), profitability index (PI), discounted payback period (DPP), and internal rate of return (IRR). [2, p.487]

On the basis of the found weighted average cost of capital and forecasted cash flows from two projects, we will find indicators of the efficiency of investment projects. They indicate that both projects are cost-efficient (Table 1) and their implementation has to bring additional cash to the enterprise. At the same time, production of gaprin according to calculations is more profitable than the production of motor fuel.

Table 1.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Gaprin</th>
<th>Methane</th>
</tr>
</thead>
<tbody>
<tr>
<td>PP, years</td>
<td>1,48</td>
<td>2,1</td>
</tr>
<tr>
<td>ARR, %</td>
<td>60,1%</td>
<td>35,1%</td>
</tr>
<tr>
<td>PI</td>
<td>1,37</td>
<td>1,06</td>
</tr>
<tr>
<td>DPP, years</td>
<td>3,66</td>
<td>4,73</td>
</tr>
<tr>
<td>NPV, thousand UAH</td>
<td>22 416</td>
<td>8 168</td>
</tr>
<tr>
<td>IRR, %</td>
<td>52,1%</td>
<td>38,2%</td>
</tr>
<tr>
<td>WACC</td>
<td>35,12%</td>
<td></td>
</tr>
</tbody>
</table>

Source: calculated by the authors

Despite a quite attractive effectiveness of the projects it is also necessary to take into account various risks connected with the implementation of the projects. In order to assess the risks, an expert survey of testing in which 15 specialists took part has been conducted. All the participants were asked to rank each of the proposed risks in accordance with an impact on the final project indicators. Also experts, participating in testing, were asked to evaluate a probability of occurrence of each risk.

The average weighted impact and probability of occurrence of each risk has been calculated on the basis of the given data. It has become possible to illustrate the primary risk map, according to which nearly all risks, except the risk of accounts receivable, were found in the critical area. [7]
However, despite the fact that people are subjective in their judgments, they have their own fears, habits, etc., let’s try to level out or at least minimize the impact of subjectivity on the final result by identifying the main mental traps. The first mental trap can be generally called as a habit or stereotypes, which lies in overestimating the probability of occurrence of negative consequences of typical phenomena in crisis situations.

First of all, the given situation deals with the change in the accounting rate of the NBU, which has changed a lot of times over the last few years, the similar situation is with the change of a currency rate. These phenomena are perceived by the population as extremely negative and a high probability of their occurrence is intuitively laid. [5, p. 192]

Another mental trap is the distorted projection, which is in projecting its own financial experience to an enterprise activity. For instance, an overestimated influence and probability of increasing prices on electricity or an uncontrolled level of inflation. These phenomena have a significant impact on the welfare of the population, therefore, experts project the negative consequences of these processes, which they feel on themselves, on the results of the enterprise activity.

Thus, taking into account mental traps, the risk map has to look such way that the following risks get into the critical area: change in sales prices, sales volume, inflation rate and a cost of electricity. Moreover, the last two risks are "on the verge".

That is, a price risk and an operational risk (risk of change in sales volume) influence most on the project results. Taking into consideration that gaprin is an innovative product for the Ukrainian market, we can estimate the risk of price changes only for motor fuel.

We will use the VaR historical method for quantifying the price risk for motor fuel. First of all, we find rates of price change based on 93 periods (each period is 14 days) and make up a histogram.

According to the histogram with a probability of 95%, the price for methane in the following period will not decrease by more than 1.3% of the price of the current
period. The final stage of the quantitative evaluation of price risk was a forecast of a lower limit of the price for methane for the next 15 periods (30 weeks) using VaR.

According to the calculations for the next period (14 days), a price for methane with a probability of 95% will not decrease by more than 2.15% or by UAH 0.32. However, for the 15 period, that is, after 30 weeks, the lower limit of a price for methane with a probability of 95% will be UAH 13.58, that is, UAH 1.22 (8.61%) lower than the current price. While calculating the project, the starting price in the first period was taken at the level of UAH 14.8, that is, there is a significant level of risk of price reduction. The impact of the change in the price for motor fuel on the indicators of effectiveness of investments is analyzed further.

As a result of the study, the following conclusions have been made regarding the peculiarities of evaluating the effectiveness of investment projects at emerging markets:

1. While considering various alternative investment projects, it’s necessary to characterize briefly each of them according to the following scheme: market volume and rated capacity, technology of production, competitors, consumers. This will allow to reveal the advantages and disadvantages of each of them at the initial stage of the study.

2. Planning investments, determining their reasonability, profitability is always a prediction of future cash flows. Accordingly, in calculations it is necessary to take into account the time change of their cost, that is, to use a discount rate, in order to bring cash flows to its present value. At emerging markets, it is most appropriate to take the weighted average cost of capital and calculate it for a discount rate according to the following features:

   ✓ to calculate the cost of equity capital according to CAPM model using the central bank discount rate as a risk-free rate;

   ✓ to calculate the risk premium using the methodology by A. Damodaran, based on the country's credit rating data by Moody's;

   ✓ to take a Beta coefficient at a level of industry-average value and adjust it to the structure of capital of a particular enterprise;
to use the value of only payable loan capital.

3. The effectiveness and reasonability of a project implementation should be evaluated according to the following indicators: payback period (PP), accounting rate of return (ARR), net present value (NPV), profitability index (PI), discounted payback period (DPP), internal rate of return (IRR). Also, when making a decision on the implementation of a particular project, its social effect has to be taken into consideration.

4. One way to determine the main risks of a project is to provide an expert method to conduct a survey of specialists, and to determine the importance and probability of occurrence of a particular risk. However, as people are subjective in their judgments, they have their own fears, habits, etc., it is necessary to level out or at least minimize the influence of subjectivity on the final result by identifying the main mental traps.

5. A more thorough study of the impact of each risk should be conducted using the VaR concept and analyzing a sensitivity of impact of two simultaneous risks on the net present value of the project.

References:


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До питання державного регулювання фінансового сектору в Україні

Складні завдання, що стоять перед Україною на сучасному етапі розвитку, засвідчують необхідність продовження курсу на реформи у політичній, соціальній та економічній сферах. Сценарій, що його було реалізовано у період 1991-2013 рр., з акцентом на еволюційний характер змін та відмовою від радикальних і швидких перетворень себе фактично не виправдав. Зрозуміло, що навіть зазначений «фрагментарний» підхід до реформ у певній мірі був результативним з погляду формування принципово нового формату економічних відносин, проте він же визначив і поглиблення відставання нашої