RISK MANAGEMENT IN THE INVESTMENT PROCESS

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ABSTRACT

Investment decisions are strategic decisions that require a thorough analysis of risk, because the risk management is a basis of decision making. The goal of investing is not just profit in a certain period of time, but depending on the preferences of the decision maker, there should be a compromise between maximizing the expected return on investment and efforts to reduce the risk to a minimum. Analysis and risk assessment is an integral part of any investment process, because during the life of the investment project, there is a risk that the project will not achieve desired result. There is no such situation in which is known all factors that influence the choice and implementation of investment decisions and investors are inevitably faced with certain risks. In order to reduce the risk to the lowest possible level, the risk must be adequately considered, assessed, monitored and avoided. In this way, management of the company are trying to quantify the potential risks of investing and by making rational decisions provide quality and cost-effective investment projects that are undoubtedly a conditio sine qua non for optimal allocation of capital.

Key words: risk management, investment decisions

1. INTRODUCTION

Investment decisions, as decisions of strategic nature which initiate action in the present to improve the strategic position of the company for the foreseeable future, must be subjected to risk analysis that often fundamentally changes the decision. In this way, risk management becomes the basis for decision making. Risk is unavoidable until the moment we do not know what the future brings. As a result, all management decisions are the choice of the size of the risk taken and ways of managing such risk. Accordingly, the assessment of risk in the investment process is a function of investment options for you to decide.

Uncertainty regarding the return of the project determines the risk of investment in relevant projects which should be addressed in the process of making an investment decision. The degree of risk and profitability of the investment project determine its acceptability. Impact of risk on the profitability is multiplied and depends on the nature of the investment project. Decision making under risk is a decision problem in which the decision maker is considering several alternatives and for each of these alternatives determines likelihood. In terms of risk, decision maker has more information than in conditions of uncertainty.

2. DETERMINATION OF RISK IN THE INVESTMENT DECISION

The risk is a function of the length of investment process. Risk analysis should enable more efficient implementation of the investment project, because more realistically looks at the relationship between time, cost and technological parameters. In addition, risk analysis contributes

to more realistic economic and financial evaluation of the project, revealing those risk factors that influence the formulation of decision making criteria.

The risk in the investment decision can be understood as a quantitative measurement of the occurrence of a result, when the likelihood are anticipated. Risk can be viewed from different viewpoints, and therefore made its classification. Risks may originate from known sources, such as the conditions of economic and social environment. These are known sources of risk, but unknown probability of occurrence, so they are more uncertain.

Risk in the investment decision can be viewed as the distribution of probability that the expected return on investment of the project will be realized (Krasulja, 1998). When the probability interval of the possible return of the project is short and dense, the risk of investing in the project is proportionally smaller. The decision maker on investment often revises its decision and faced with the problem of whether to invest or not, due to the presence of risk. Gaving up from investing in the short term may be protect against risks. However, by declining to invest in the uncertain future often take a greater risk than in a situation where investment in terms of risk.

According to Andric (1993), risk in the investment decision can be viewed as: 1. The risk on return initial investment which is a function of time. The investment is risky as the time longer. Investment decision maker provides of this risk by depreciation and revaluation; 2. The risk that the expected return of investment depends on the life of capacity utilization, price changes, the dynamics of market development, investments in the market;

Investment decision maker in terms of risk has to define its own policy in relation to the risk. It may be a policy of taking over or disclaimer risk. Disclaimer risk policy is not consistent in terms of risk. Withdrawal from investment where the risk is present only apparently good in the short term to protect the investment decision maker, but in the long term risk exposure is greater because the competition certainly has a different attitude towards risk. The policy risk is consistent. Investing in terms of acceptable risk is a sure protection against risks in the future, because the attitude towards risk is appropriately placed.

Some research suggests that it would be useful to identify different risk tolerance which would all investment projects reduced to a common ground. Among the riskiest investment projects could be classified projects aimed at producing new products, expansion of markets and integration into the existing competition. Gains are achieved when committed investment in return and investment in modernization and higher productivity, mainly characterized by a minor or insignificant share of risks.

3. MEASUREMENT OF RISK IN THE INVESTMENT DECISION

Estimated level of risk has the same impact on investment decision making by different decision making. Impact of risk will primarily depend on the economic power of the investor and his attitude towards risk.

Risk factors may be classified as:
1. risk events
2. probability of risk
3. the size of losses as the negative effects that may have quantitative and qualitative expression (Malesevic, 2003)

The process of analysis and risk management in investment decision making process begins with identification of risk parameters and dependent and independent variables and their interdependence. After that, there are grouping the sources of risk according to primary goals of the investment project and the primary sources. The first criterion is based on the parameters that

determine the realization of the project, such as time and costs. The second criterion groups the sources of risk to the primary sources of external and internal sources of risk. After that, it analyzes the impact of risk factors by sensitivity analysis and probabilistic analysis. Depending on the results that are obtained by analysis, it should decide whether to accept or not the proper variant. If the option is accepted, it should select the method of risk management in the investment decision. In this regard, the choice of a particular method focuses on the avoidance of risk, risk reduction, transfer or allocation of risks among the participants. In accordance with the chosen method of risk management, there should be the realization of investment decision. Avoiding risk is a method often used by investors to avoid high-risk projects and chose the designing variant that is less risky. Reducing risk means that the already selected projections made some modifications which are directed towards the introduction of time reserves and alternative strategies, corrections costs, and adequate selection of the agreed strategy. It is not rare that risk would be transfered to other participants, but it is not optimal solution.

The introduction of probability theory has the mission to determine the final outcome of a range of projects, which corresponds to the real-present uncertainty in the environment (Cvetkovic, 2004). The degree of risk in the investment decision is measured by the probability distribution and probability of each possible score effect of investment. Assessment of probability based on past experiences, present experiences and possible assessment of the situation and predictions for the future. Probability assessment can be subjective and objective. Subjective assessment of probability is a rating that is based on intuition and personal rating of usefulness of the decision maker. However, the intuition in the investment decision is not sufficient, since it can be used only as a supplement to decision on the basis of available data. In line with this, there is determined objective assessment, which is based on the statistical data and statistical methods.

Based on the distribution of probability, the investor can estimate the size and risk of the expected return, or can determine with much probability would be realized predicted yield. Comparing the probability of net present value of multiple projects, there can be identified how much is the individual value of investment projects risky. The ability to achieve a net inflow is known as its likely which should be determined in the range from 0 to 1. The schedule probability is presented as a set of all possible results for all events in probability. In order to determine the expected net cash yield of projects, each offering will be multiplied with the probability of its realization and the results add up. The expected value of net return does not have to match the average yield, because it is a mathematical hope. The expected value will match the average yield, if the yields are the same and the same schedule of probability exist in the long run.

Depending on the variability of accepted returns, we will depend on appropriate level of risk. The measure of variability of the expected return is the standard deviation. It can not be used for comparison of investment projects with different net cash returns, as an absolute measure. In this case, using the coefficient of variation is a measure of relative dispersion of probability distribution. Coefficient of variation is the ratio between standard deviation and expected value of return. Lower coefficient of variation means accepting a smaller risk.

After determining the expected net cash flows for each year, we can determine the current and net present value of the project. The present value of the project involves discounting expected net cash return per year. Net present value and standard deviation of the probability distribution of possible net present values give us information on which we evaluate the risk of the project. If the probability distribution of expected yield corresponding to approximately normal distribution, we can determine the likelihood of the proposal and get a net present value. Compare the net present value to zero often called the specified amount. If the net present value equal to or greater than zero, the project is acceptable.

Measuring risk in a situation where the expected cash flows are independent of each other is not a special problem, since the yield at time t does not depend on what happened at time t-1. However, in practice, most often the case that cash flows are mutually dependent, which means that the investment risk increases with time. Standard deviation of net present value is usually higher in the dependent cash flows than independent. In reviewing the risk assessment, the degree of temporal correlation of cash flows is very important. The risk of the project will be higher if the cash flows are correlative at a time, but if they are independent of each other under equal other conditions. The independence of the expected cash flow is often assumed in order to facilitate calculations.

Standard deviation, the expected value and coefficient of variation do not bring investors always reliable information. If there is a small number of alternatives among which should choose, it is considered that more efficient means is distribution of probability. If, however, there is a large number of alternatives among which should choose, it is considered that more effective tool for decision making and risk assessment is comparison of the expected value and coefficient of variation.

The attitude of investors towards risk can be quantified by utility function that represents the attitude of investors towards the probability of achieving a decision, assigning a number to each possible outcome of uncertain events. The number attributed to each possible outcome can be determine as an index of relative satisfaction that a person will experience if the result is actually happening. The investor will make a choice that provides the highest expected benefit. One of the main reasons for the investment process is to maximize the personal benefit of investors. Therefore, the investor's satisfaction is a function of wealth that he owns, where the function is to maximize benefits from the wealth of investors in relation to the periodic rate of return. The aim of the maximum magnification of wealth is not clearly defined in terms of uncertainty, unless defined in the form of expected value. In terms of large investments, the use of expected monetary value as the criterion would be completely wrong, since undesirable investment threatens the whole future of the company. The distribution of possible outcomes could be too wide for these companies, regardless of the favorable expected monetary value.

The attitude that the individual decision maker has to risk is an important factor that must be taken into account when considering the favorable investment opportunities under uncertainty. In such conditions, the ability of decision making depends on the comparison of the expected rate of return in an investment project and knowledge of preferences toward risk. In this regard, the investor may not be inclined to risk, to be neutral to risk or to count on a certain risk. Aversion to risk is a common attitude in decision making. This means that decision makers do not like the risk itself and are willing to tackle with risk only if they would get some compensation. If the utility function of the individual is concave in relation to the vertical axis in the coordinate system in which the horizontal axis indicates a potential value at the end of the period, and the vertical axis measures the utility, will be one who avoids risk. So, anyone who avoids risk, will avoid investment with uncertain expected return. Preference for risk is a willingness to depart from the expected earnings due to increased risk. Such individual is characterized by a concave utility function, or the knowledge that the marginal benefit of each additional unit earned money grows. Neutrality towards risk is measured by the indifference to risk or constant marginal benefits of money. The decision maker who has a neutral attitude towards risk investments elected investments solely by the criterion of expected repayment from them.

Using the utility function makes possible to guantify the benefits and risks, and it also reflects investors' preferences in choosing an acceptable investment alternatives (Malesevic, 2003). Utility function shows that investors prefer an investment that brings greater benefits and observe investor attitude towards risk in two ways. The first way is taken as a criterion the amount of total capital, or consideration of how investing in risky business investor can increase the total capital. The second criterion is based on the height of part of the total capital that is intended for investment, which is accompanied by risk. Therefore, it is the realization of benefits to increase capital, looking at the risk of total capital and risk capital to be invested. If investor’s equity increases by investment in

risky jobs, investors are characterized by decreasing absolute risk aversion. If the investor's attitude towards risky investments does not change, it is considered that the investor has constant absolute risk aversion. If, however, the investor invests in less risky projects than in the previous period, it is considered that it shows an increased absolute risk aversion.

Employer's relative aversion to risk is proportional to the ratio of capital in relation to investments in risky projects. Growth of relative risk aversion implies that the percentage amount of investment decreases with the increase of capital. If the percentage amount of investment unchanged with the change of capital, investors are characterized by constant relative risk aversion. Decreasing relative risk aversion implies that the percentage amount of investment increases with the capital. It was pointed out that subjective attitudes toward risk should play a dominant role in making investment decisions under uncertainty. However, when we look at a company where are multiple groups with different interests such as owners, managers, workers, it is difficult to determine whose views play a dominant role. If the owners are clearly separated groups, their interests dictate business in order to allow them legal and regulatory frameworks. However, the company may be that there are several sub-decisions so that one group of owners controlled, and the other group owners do not control the operations of the corporation, but has a stake in the company-owned business. In such circumstances, it must be clearly defined whose attitudes towards risk will prevail.

In making investment decisions under risk, there should be a clear idea of whose attitudes towards risk are relevant and how much should be considered. If the group, whose attitudes toward the risk are dominant, relatively small and cohesive, it is possible by decision makers to communicate and present a risky alternative. In this way, people whose attitudes toward risk are relevant may be directly included in the process of investment decision. If the group whose risk preferences are relevant, large and diverse, it is not possible effective use of communication and people whose attitudes towards risk are relevant can not directly be involved in the process of investment decision.

4. CONCLUSION

The goal of investing is not just profit in a certain period of time, but depending on the preferences of the decision maker, there is a compromise between maximizing the expected return on investment and efforts to reduce the risk to a minimum. The degree of risk in the investment decision is measured by the score of the probability of every possible effect of investment in accordance with the constant uncertainty in the environment. Some studies have shown that the investment decision in most cases can not use statistical data and past experience in the assessment of probability because it is subjective probability. At what probability will be achieved provided yield and how much the individual values of investment projects are risky, are issues of particular importance for investors to measure the risk of investment projects and selection of the most adequate solutions. Taking into account the net financial returns of the project, the likelihood of achieving these yields, the discounted expected net cash returns, standard deviation and coefficient of variation, the investor will be able to estimate the standard deviation of net present value or the risk of investment alternatives between which choose the most appropriate. Depending on whether the cash flows are correlative in time or not, under equal other conditions, there should be assesses a greater or lesser risk, taking into account the importance of assumptions about the degree of temporal correlation of cash flows in the risk analysis.

Basis for rational investment decisions under uncertainty and risk are sufficiently reliable, timely and relevant information. As each investment is challenge with risk, efforts to make rational and appropriate decisions will ensure quality investment projects that are undoubtedly a conditio sine qua non for optimal allocation of capital.

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