

Research on Risk Assessment Technique of Financial Investment And its Applied Research

Fuqin Yue

Xi'an International University, Xi'an, Shaanxi, 710077

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Abstract: As the constantly development of the financial market, the risk assessment technique of financial investment, which is an important way and a key technique, is concerned by more and more people. The ability of risk assessment technique is excellent or not is significant to the investor in fact. The key point of risk assessment is the extent of controlling the goal to be invested, so we need to forecast the risk points and risk factors of the object of investing in order to achieve the goal of avoiding the risk. Although we could not know the risk totally in fact, we could not control the place where the risk comes and the time when it happens as well, but we could use the present techniques to analyze the risk according the regulations which we have known well. If we could avoid risks according to relevant analyses, it can greatly improve working efficiency, and improve the safety and efficiency of investment.

Introduction

A major feature of the financial investment is high risk, although most investors come into the investment market with the purpose of the high incomes, but it is known that the high incomes coexist with high risks. The effective risk assessment technique is the necessary factor of investment, and only by this, we could find out the possible risks of investment, calculate the possible influence and lost of the risk, and assess the risk of those factors. In one hand, it could improve the technique of current risk assessment; in the other hand, it could safeguard the customer's funds and decrease the possibility of risk, increase the rate of returns. Only when we control the risk of the project of investment in controllable range, the project could be carried out.

Outlook of financial risk

Financial risk expansion, financial investment risk and financial structure imbalance are the three current types of financial risk. The first type of risk is mainly reflected in the changes of exchange rate regime. Because of the changing interest rate, the risk could be easily expanded; the transformation of regime faces the higher risks than anytime before. The second type of risk can be divided into two kinds which are integral and dispersive. The integral risk, it could be shown that all the investments meet the some environment, the risk is unavoidable, and the only difference is that the different investors meet the different extent of risk in the different environment. The dispersive risk, it is reflected on the ways such as the curb funds and the differences of investment, the influences come from the differences of profits, and risks come from wrong operation or the other accidental factors.

In general, most scholars define the risk is that---risk is the uncertainty of loss, contingency and uncertainty are the two routine forms of risk. Objective uncertainty and subjective uncertainty are the two forms of uncertainty of the risk.

The formation of the risk is not occasional but has cause and effect. Its formation is affected by the surrounding things, and when the surrounding environment, objective factors, subjective factors interact, the risk will be developed and formed following the changes of its own regulations. Because the cause of risk is traceable, so when we change the conditions which cause the risks, the nature of risk and the influence of risk will be changed.

The particularity of contradiction is very obvious in the financial investment. The same risk

appears different effects in different environments. Because different people have different abilities to undertake and identify risks, and the differences of project scale and funds for investing, so the scale and the consequences of the risk are different.

Funds of financial investment is large in scale, it involves a wide range of risk factors. The risks of the project of investment are numerous and complicated in its whole life cycle, and lots of factors of risk that interacts each other, it become more complicated. The intersection of these inner factors and the external factors interact each other, in this time, the factors show it is longitudinal, this let the financial investment risk showing a diversity of characteristics.

We could deduce that risk is changing everlasting from the truth: the movement is absolute. There are different risks in each stage of the financial investment, especially in the complex market environment, because a large number of risk factors exist, we can more clearly see the change of risk.

Although the project risk is uncertain, but we still can grasp their changes. The objectivity of risk that determines we can predict and estimate the probability of the risk. We can also make subjective judgments about the consequences of the risk. The contemporary calculative methods and techniques bring out the objective bases of judgment that we could be used for measuring the risk of projects, in order to control or avoid risks of the projects by these methods.

(1) We could induce and arrange every factor of a risk according to the extent of the loss and influence, which are caused by the risk, compare and analyze those risks after induction, arrange those risks by its influences. The comparison between the risks can be taken as the theoretical basis for controlling and responding the risks.

(2) In the process of the happening of risk, there are a lot of internal relations, seemingly irrelevant, but after analysis, we will find that it is triggered by the same risk factors. From the universality of the relationship, we can see that the study of risk needs to coordinate the overall situations, to consider the problems macroscopically, to study and explore it with the point of view of connection, to make the ultimate risk management plan by following the thread of risk and sorting it out.

(3) Risk is a double-edged sword, which not only may bring about the bad consequences, but also new opportunities. How to turn risks to opportunities is what we need to understand and learn.

(4) For the loss and influence caused by the risk, we must assess it scientifically and seriously with the serious researching attitude in order to decrease the probability of the uncertain risk. When the gap between reality and prediction is obvious, the second assessment can be carried out according to actual situation. We must predict and calculate the risk and calculate its probability in order to make the project safe and steady.

The first step is to certain the risk identification and its target and object. Because the quantity of invested funds, rate of return, and expected target are used for measuring the expected effects of the investment project, so the risk identification of financial investment is to identify the whole process of the investment, to identify the bad factors affecting the project, and the risk of project's target, which is caused by these bad factors.

In financial investment, that the searching of the relevant data is not accordance with the preparations of the relevant informations usually causes the risk. Therefore, it is very important to collect and deal with every kind of data. In carrying out a project plan, it is necessary to make a thorough and comprehensive understanding of the investing projects, and also to sort out the market environment and the related policies. Information in investment is very critical, only when investors have a good understanding of the data and information can the risk assessment be carried out.

After identifying the risks of the financial investment project, risk managers also need to carry out a thorough investigation and study that based on project managerial experience and risk causation theory, to find out the causes of risk, and then, model this and analyze the result caused by the risk. The analysis of risk identification is not only beneficial to risk assessment, but also helps to make risk countermeasures, so as to cope with the risk effectively.

After the analyses of the whole financial investment project, all the factors that may lead to the risk should to be summarized in order to make the analysis reports. The report mainly includes: bill

of risk identification, risk analysis, risk of possible loss, etc.

Risk assessment techniques of financial investment

The mean-variance evaluation method is the theory of measuring the expected returns by means of mean, and measuring the risk of investment by means of variance. According to the different economic conditions, the investor makes the different estimates to the expected returns which come from the different assets in the future.

while every estimate appears with its own probability, and their weighted average is

$$E(r) = \sum_{i=1}^n h_i r_i$$

mathematical expectation, i.e.

In the formula, “ r_i ” is the expected returns of the invested securities which sequence is “ i ”; “ h_i ” is the probability that “ r_i ” may occur; “ $E(R)$ ” is the expected returns. The variance “ σ^2 ” reflects the extent of dispersion which the random variables aim at mathematic expectation, it defines the risk of investment as potential possibilities of the actual returns deviate from the expected returns, therefore, variance of expected returns can be used

$$\sigma^2 = \sum_{i=1}^n h_i [r_i - E(r)]^2 \qquad \sigma = \sqrt{\sum_{i=1}^n h_i [r_i - E(r)]^2}$$

to measure the risk. Variance:

standard deviation:

When we calculate the relevant data, if the variance of the data is too large, it means the risk of the project is out of control, and the investment is not recommended. Significantly, the algorithm is limited to a certain extent and can not be judged as the only criterion. In order to calculate and estimate the risk better, further calculation can be carried out, and the coefficient variation (CV) can be used as the criterion of evaluation to judge the extent of dispersion. Coefficient variation (CV) = standard deviation / mean, that is, $V = \sigma / E(X)$. In this formula, we need to pay attention to the fact that the final result is positively related to the risk, the larger the result is, the larger the risk is; and the smaller the result is, the smaller the risk of the project is.

To provide the independent risk measurement for portfolio is VaR(Value at Risk) which is to show the risks of financial institutions. The formula is: $\text{Prob}(\Delta P > \text{VaR}) = 1 - \alpha$, “Prob” is the probability that asset loss is larger than its upper limit, “ ΔP ” refers to the loss amount of the assets during the period “ ΔP ”. “ α ” refers to the certain confidence level, VaR refers to the loss upper limit at level α . When making financial investment risk assessment by means of VaR, you can explain it as below: during the period “ i ”, the probability of loss amount no more than VaR is $\alpha\%$. VaR refers to the function of “ i ” period and the confidence interval $\alpha\%$. In addition, VaR has become a commonly used managerial measure today.

The purpose of using stress testing method to test VaR model is to test the portfolio pricing of financial products in extreme conditions. The test makes a price for the products by means of differentiation according to the changing market and the conditions of it. By combining VaR and stress tests and using them together, stress tests will be focused more in the same conditions. The stress tests have shown great stability in a great number of studies, and it is the core part of risk management at present, it enables the financial institutions to fully consider the extreme phenomena which are caused by the factors that are ignored by the quantitative analysis, it can improve the efficiency of risk prevention and the accuracy of risk assessment.

Conclusion

Risk assessment exists for the purpose of studying and avoiding risks. After the overall analyzing of the whole project of investment, it identifies the possible risks and analyses the possibilities and consequences of these risks. And it reaches the goal of avoiding or reducing the risk according to the plans and countermeasures that is made ahead. The main current method for assessing and forecasting the risks are the Mean-Variance Evaluation and the VaR(Value at Risk) Assessment, etc. In the future, we still should improve the techniques of risk assessment in order to make a safer environment for investing and a market that is developing well. Because the author’s knowledge is

limited, the author's views on the relevant issues are still relatively simple, so it needs all the experts and scholars to study this field further.

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