

# A Summary of Research on Enterprise-specific Risk Coefficients in Enterprise Value Assessment

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**Abstract:** The enterprise-specific risk refers to the individual risk that an individual company has in addition to market risk and system risk, and the enterprise-specific risk coefficient is one of the commonly used calculation variables in the enterprise value assessment return method model. The evaluation method of the special risk coefficient of an enterprise is an important and difficult problem faced by the theoretical and practical circles of enterprise value evaluation for a long time, but it has long lacked sufficient attention. Therefore, this paper combines the current academic research results and practical experience to sort out the influencing factors, evaluation methods and current practice status of the company's specific risk coefficient, with a view to supplementing the research on the specific risk of the enterprise, and provide reference for relevant scholars and practitioners in this field in the future.

## 1. Introduction

At present, Chinese capital market is becoming more active, various economic activities are frequent, and a series of economic activities such as mergers and acquisitions, restructuring, and investment have triggered a large number of enterprise value assessment needs. However, at present, the most commonly used income method in enterprise value assessment still has many limitations, and it needs to be continuously improved to keep the evaluation value close to objective facts. In the income method evaluation model, the determination of the discount rate is a very important step, and the calculation of the company-specific risk coefficient is the most complicated. Due to the late development of enterprise-specific risks in theory and the complexity of practical operations, the discussion and research on enterprise-specific risks in academic and practical circles have not been in-depth for a long time, and there is a lack of recognized scientific and practical evaluation methods. Therefore, it is necessary to clarify the definition of enterprise-specific risk and the relationship between it and the CAPM model from the concept of enterprise-specific risk, and on this basis to further explore the influencing factors and evaluation methods of specific risk.

## 2. The concept and origin of enterprise specific risk coefficient

### 2.1 The concept of enterprise specific risk coefficient

Enterprise-specific risk, also called enterprise-specific risk, refers to the individual risk that individual companies have in addition to market and system risks, and is risk that cannot be dispersed through changes in the market and investment portfolio. For companies with different characteristics, the specific degree of risk is often different.

The enterprise-specific risk coefficient is one of the commonly used calculation variables in the

enterprise value assessment income method model. It is used to calculate the equity capital cost of the assessed enterprise, which represents the additional risk required by the assessed enterprise shareholders in addition to the industry-related systemic risk rewards. Return.1.2 The origin of enterprise specific risk coefficient.

The calculation formula of the cost of equity capital in the enterprise value assessment income method originates from the capital asset pricing model (CAPM model), which calculates the return on investment from the perspective of risk. The CAPM model formula is shown in Equation (1).

$$E_i = r_f + \beta_{im}(E_{(rm)} - r_f) \quad (1)$$

Where  $E_i$  represents the discount rate in enterprise value assessment.  $\beta_{im}$  Represents the systemic risk factor.  $E_{(rm)} - r_f$  Represents the Market risk premium.

Most Chinese scholars' research on the cost of equity capital is based on the CAPM model, and there are relatively few studies on other methods. According to the public data of the securities market, but because the information of the securities market in my country does not fully reflect the true status of the enterprise, the data reflected by the valuation is not completely fair. Donghui Shi used the data of A shares from 1993 to 1996 as a sample, and found that the systemic risk of A share investment risk is more than 80%, while the systemic risk of foreign stock markets is much lower than that of China, which shows that the CAPM model is still Not completely applicable. However, with the development of my country's capital market and the continuous improvement of the economic system, the applicability of the CAPM model has continued to improve in my country. Many scholars have discovered the application of the CAPM model in my country through discussion. Mao Xinshu and others proposed to measure the cost of equity capital from a pre-engagement perspective, and tested the size of the error variance of the time series regression of the cost of equity capital under different calculation models to measure the stability of the calculation model. The results show that Stability has been significantly improved.[1]

In short, the CAPM model has more applicable premises and assumptions, and is more applicable to listed companies. For non-listed companies with low equity liquidity, on the one hand, it is difficult to obtain comprehensive information to compare with listed companies. On the other hand, due to the large gap between the company's own construction and listed companies, it cannot be measured only by the industry's average risk. In addition, the traditional CAPM model does not consider the personality characteristics of specific companies and measures the risks caused by individual factors. However, in the practice of enterprise value assessment, since most of the assessed companies are non-listed companies, it is necessary to compare individual risk differences with comparable listed companies in the assessment process, and adjust to obtain the specific risk coefficient of the assessed company. Therefore, when using the CAPM model to calculate the discount rate, the income method usually adds the company-specific risk factor. The calculation formula is shown in Equation (2).

$$E_i = r_f + \beta_{im}(E_{(rm)} - r_f) + r_c \quad (2)$$

Where  $r_c$  represents the Enterprise-specific Risk Coefficients.

### 3. Influencing factors of enterprise-specific risk factors

From a logical point of view, the evaluation model of an enterprise-specific risk coefficient needs to be constructed according to the influencing factors of the enterprise-specific risk. Therefore, it is necessary to understand and analyze the influencing factors of specific risks of the enterprise in detail, so as to provide correct ideas for the subsequent evaluation methods.

Foreign scholars have mostly discussed the influencing factors of enterprise-specific risks based on the theory of scale effect, and believe that enterprise-specific risks represent the enterprise scale risk premium. Representative scholars include Duff, Phelps and Grawboski. They believe that the smaller the scale of the enterprise, the greater the investment risk and the higher the risk premium.

Although Chinese scholars started research in this field late, they continue to explore and innovate on the basis of their predecessors. Hu Xiaoming and Feng Jun selected 11 factors that best represent the specific risks of an enterprise from four aspects: business risk, enterprise size, internal governance and product stage [2]. Xia Xu believes that a company's specific risk is the difference between profitability, so it analyzes the influencing factors from both financial and non-financial aspects [3]. Wu Chengcheng and others selected the company's scale and operating status, financial status and capital liquidity, and product specificity as the main influencing factors, taking into account the principle of quantification, using principal component analysis and factor analysis to obtain the scale of corporate assets. The three indicators of operating status and financial status can best reflect the specific risks of an enterprise. Hua Qian starting from the essence of the income method, combined with the static discount rate theory and the dynamic discount rate theory, proposed that the influencing factors of specific risks should be considered from the perspective of corporate cash flow, from operating activities, investment activities and financing Activities to build an evaluation index system in several aspects, and will also include four non-financial indicators of leadership, internal management, external environment and technological innovation into the evaluation system [4].

Summarizing the above research conclusions, it has been found that the most relevant influencing factors of specific risks have not been determined so far, and there is no suitable method to determine the influencing factors that can best measure the specific risks. And most of them are based on theoretical analysis or empirical analysis, and few empirical research methods are used to verify the influencing factors of specific risks of enterprises.

#### **4. Evaluation method of specific risk coefficient**

At present, whether it is academia or practice, there are a series of scientific and systematic methods for determining other parameters in the CAPM model, but there is no recognized and effective evaluation method for enterprise-specific risk coefficients. The reason is that the theoretically more complicated and rigorous measurement model is not practical in practice, the actual situation of different types of enterprises is complicated, it is not possible to obtain the required information, and it takes much time. Most evaluators will not use special cumbersome theoretical methods.

Summarizing the specific risk coefficient evaluation methods in theory and practice, there are currently the following:

##### **4.1 Empirical judgment**

Empirical judgment method is the simplest and subjective evaluation method of enterprise-specific risk coefficient, which is the most common in practice. The evaluation report is often expressed in a paragraph to directly give a company specific risk coefficient value. According to the 200 assessment reports selected in this paper, most of the assessors use the empirical judgment method to determine the specific risk coefficient of the enterprise, and different assessors have large differences in the process of use, and the factors considered are also quite different. For example: Xiamen University Asset Appraisal Land and Real Estate Appraisal Co., Ltd. considers the company's location in the asset appraisal report issued by Fujian Tanlong Group Co., Ltd. in the proposed equity transfer of Zhangzhou Water Resources and Hydropower Engineering Co., Ltd. shareholders. The eight stages of the business stage, historical operating conditions, distribution of business products and regions, internal management and control of the company, the experience and qualifications of management personnel, dependence on major customers, financial risks, and development stages of major business varieties. Impact, comprehensive consideration takes a specific risk factor of 2.20%. However, in the evaluation report of "The Northern Equity Co., Ltd. involved in major asset restructuring of North China International Vehicle Co., Ltd. shareholders' equity value impairment test project" issued by Beijing Tianjian Xingye Asset Appraisal Co., Ltd., only the enterprise size and financial risks were considered. Influences.

This method can quickly determine the specific risk factor of the enterprise without the need to

invest more time, and it is convenient and fast to execute. However, this method is more flexible and mainly depends on the knowledge experience and subjective feelings of the assessors. The lack of rigorous reasoning in the process is unconvincing.

#### **4.2 Wall's scoring**

The Wall's scoring method mainly considers the differences between various aspects and comparable listed companies from the perspective of the influencing factors of a company's specific risk, and designs a scoring measurement model, sets the scores of representatives at different levels, and solicits professional scoring. Such methods are mainly aimed at non-financial indicators that cannot be quantified by ratios. Chen Lei and Liu Xu pointed out that the Wall scoring method can be used to compare the scoring results of various financial indicators of the target company with the industry average to obtain a specific risk factor for the enterprise [5]. Xingui Kang scored Wall The method has been improved, and a total of 13 indicators in four aspects have been selected to calculate the target company, industry optimal and industry average, weighted to calculate the total score ( $\alpha$ ) of the target company, and the specific risk of the target company  $R_s = (100 - \alpha) \div 100 \times \text{Industry average risk reward rate}$ .

Chen Liuping and Cheng Jing also recognized the rationality of the Wall's scoring method in evaluating practice, but should comprehensively consider the personality characteristics and individual risks faced by the company. Zhao Keyi proposed the adoption of financial indicators and non-financial indicators calculate the unique risks of the enterprise. This method analyzes the unique risks from the aspects of the scale of the enterprise, the operating status, the management status, and the financial status, and conducts a detailed study of the factors that affect the unique risks of the enterprise. It considers both financial indicators and considerations. Non-financial indicators, the scoring standard is more comprehensive.

This method mostly relies on report data to consider financial indicators. Although it is easier to operate in practice, its rationality is easily questioned due to the lack of sufficient evidence to support the evaluation conclusion. For enterprises with different life cycles, the weights of various scoring indicators should be different. For example, for start-up companies, it is far more important to focus on their development capabilities than on current financial efficiency. However, although there are more controversies in the Wall scoring method, because it is easier to operate in practice than the well-proven econometric model, the current practice still uses the Wall scoring method to evaluate the specific risk coefficients of enterprises.

#### **4.3 Regression analysis**

The regression analysis method is mainly based on the relationship between the constructed ROI and the scale of enterprise assets and investment risk. Roger Grawboski and David King established a regression model between company size and return on investment, and found that the larger the company size, the smaller the risk premium. This view is widely accepted by the academic community. Based on the above view, Fama and French proposed that the market excess risk return rate and the scale excess return rate can be used to calculate the unique risks of the enterprise [6]. Roll, Campbell, Panousi and others believe that enterprise-specific risks represent the difference between individual stock returns and industry and market returns, so the fluctuations in individual stock returns are decomposed into market risk and industry risk, And establish a regression equation between the rate of return of individual stocks and market rate of return of the enterprise, and the weighted variance of the residuals is regarded as the unique risk of the enterprise. Gong Guangming and Yu Dongyong draw on the method of Roll et al. and use weekly data to establish a regression equation, using the standard deviation of the weekly residual value as the annual unique risk value [7]. Xu Xia believes that most of the current empirical studies in my country use the specific risk coefficients determined in the evaluation report, which is not convincing, so they choose to open market data. Then determine the explanatory variables through principal component analysis, construct a regression equation between the specific risk coefficient and the explanatory variable, and use the standard deviation of the residuals as the specific risk coefficient. Based on previous

research, Zhao Qiang further distinguished the scale of corporate assets and found that the negative correlation between the rate of return and the size of the company only exists in companies with a billion or less. Hua Qian starts from the essence of the income method, analyzes the influencing factors of specific risks and builds an evaluation index system based on the process of business activities and cash flow, and uses fuzzy comprehensive evaluation methods to determine the weight of each index to calculate specific risk coefficients.

It can be known from the above literature that the use of regression analysis to calculate the specific risk coefficient of the enterprise has the theoretical support and conforms to the logic of the analysis. Therefore, this method is theoretically feasible and provides a valuable idea for the calculation of the specific risk coefficient of the enterprise. And methods. Therefore, many appraisers in practice believe that the main influencing factor of special risks is the size of the enterprise, and a specific risk coefficient is obtained by establishing a linear regression equation between the scale of the enterprise and the rate of return on investment. There is a lack of discussion on how to determine the corresponding index weight examples.

Combining the current theoretical research literature, most of the research on enterprise-specific risk evaluation methods is devoted to how to use models and mathematical methods to better quantify evaluation indicators and optimize evaluation methods. For different natures, the specific risk influencing factors of enterprises in different industries are likely to be quite different. At present, there is no literature to study this aspect.

## **5. Insufficient research and outlook**

In this paper, through the research and combing of relevant literature at home and abroad, as well as the statistical summary of the enterprise value assessment practice, we can find that although the research in the specific risk field of the enterprise is slowly moving forward and obtaining research results, the practitioners are also constantly exploring and optimizing. However, this article believes that the current theoretical research and practical situation still has the following deficiencies:

First of all, the theoretical circle pays little attention to the specific risks of enterprises, and the research motivation is insufficient. On the one hand, the research on the specific risks of the enterprise started later, and it was carried out with the continuous evaluation of the enterprise value. There are still many theoretical studies in the field of enterprise value assessment that need to be improved, so it is easy to be ignored. On the other hand, there is a disconnect between theory and practice, the theoretical research results are transformed in practice, and the theoretical research results are easily criticized in practice.

Secondly, there is a lack of theoretical support in the course of practical operations, and excessive pursuit of efficiency. Practitioners do not pay attention to the parameter of the specific risk coefficient of the enterprise when evaluating the value of the enterprise. They believe that there is no universal conclusion and the calculation is complicated.

It is precisely because the theoretical research in the specific risk-related fields of enterprises is not perfect, and there are still few researchers involved in this field, so it is easier to obtain research results in this field. It is hoped that academia and practice will increase their focus and exploration on specific risk areas of enterprises, jointly promote the development of this area, and contribute to enterprise value assessment and social and economic activities. In addition, China's regulatory agencies such as the China Securities Regulatory Commission and the Evaluation Association should pay attention to the difficulties of specific risks in practice, publish operational guidelines for different industries, different life cycles and even different enterprise sizes, establish specific risk coefficient evaluation standards, or specify measurement standards and The range of the interval, so that each evaluation agency has basic guidelines for reference in the operation. Professional training in this area should be strengthened, and evaluation agencies and appraisers should be organized to study regularly to discuss specific risk issues with a view to finding operable scientific evaluation methods in practice.

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