Investment Risk Assessment and Application of Private Equity Funds

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Abstract: Private equity funds are used to invest in non-listed companies with development potential. Due to the late development of China's private equity funds, the regulatory system is not fully formed, facing many risks. Risk assessment is therefore very important. This paper introduced the investment risk assessment method of private equity funds for the invested enterprises and creates "D.I.C.S" risk assessment system for enterprises' reference.

1 Introduction

Most Chinese private equity investment funds invest in non-listed companies that have difficulty in financing and have development potential. Private equity investment funds have good development prospects in China and have diverse income channels and large returns. However, due to the late development, China's Private equity funds still have deficiencies in risk assessment, imperfect performance comparisons, and no uniform standards. When investing in private equity funds, inadequate valuation tools can increase the valuation error of private equity investment funds in investment projects. As a result, the success rate of investment has been greatly reduced. The current investment multiplier method does not consider the time value of money, and the internal rate of return method has been confirmed to be unscientific. (Jiang Aike 2018) The source of private equity investment fund profits is mainly from the fund's equity Selling, so from the inflow of funds, fund companies to formulate corporate development strategies, to the enhancement of corporate value, it requires a relatively long investment cycle, and also faces many risks. This article studies the investment process of private equity investment funds to invest in funded enterprises Introduce the four risk assessments of private equity funds' investment in funded enterprises Law, and the creation of "D.I.C.S" system to help control the risk of private equity funds, a private equity investment fund used as a reference.

2 Risk analysis of the investment environment of private equity investment funds

The financial crisis triggered by the subprime mortgage crisis in 2008 swept the globe, causing a significant decline in the various performances of the global private equity fund industry, including fundraising, investment, and returns. Therefore, the global supervision of private equity investment funds and the management of investment risk have been strengthened. In recent years, under the circumstances that Chinese policies have stimulated economic development, private equity investment funds have continued to expand (Ni Ming). The national concept of wealth preservation is being strengthened. For some high-net-worth individuals and institutional investors, private equity investment funds are a good choice, so investors are gradually becoming more extensive and diversified, and large institutional investors are becoming more and more active. The risks in financial markets are divided into systemic Risks and non-systematic risks (Wang Weihua 2016). The systemic risks of private equity investment funds focus on highly unstable market external factors, such as interest rate risk and policy risks. Non-systemic risks of private equity investment are caused by internal market factors Yes, the risk management of private equity investments is mainly aimed at their non-systematic risks. Is mainly for domestic enterprises are subject to risks, namely risk management, technology risk, market risk and financial risk (Xin Yufeng 2012).

3. Investment risk assessment methods and applications of private equity investment funds

3.1 Mean-Variance Measurement

The measurement of the non-systemic risk of private equity investment funds is a measure of the uncertainty of corporate profits (Wang Yang). The variance, coefficient of variation and standard deviation are calculated by collecting historical data of the target company. According to the company's degree of risk, the mean-variance measurement method can enable private equity investment funds to evaluate target companies. The basic measurement method of the mean-variance measurement method is that for a random variable X, the actual application data for private equity investment funds is the profit rate or actual return of the target funded company. E(X) is the expected value of the random variable. σ^2 is the variance of the data, and σ is the standard deviation of the σ^2.

$$E(X) = \sum_{i=1}^{n} X_i * P_i (1), \sigma^2 = \frac{1}{n}\sum_{i=1}^{n}[X_i - E(X)]^2 (2)$$

The standard deviation is a measurement that measures the size and range of the degree of dispersion between the measured value and the average value. The larger the standard deviation, the more dispersed the measurement data of each group is. At this time, the investment behavior of private equity investment funds appears the chance of a large loss is large. Under normal circumstances, the mean of the two sets of data is not equal. At this time, the coefficient of variation should be used to compare the degree of dispersion to measure the risk. The coefficient of variation (V) is the standard deviation and the expected value. V=σ/E(X). The deviation between the coefficient of variation and the data and the mean is proportional (Cai Siyuan). The smaller the coefficient of variation, the smaller the deviation between the data and the mean. The smaller the risk, and conversely, the larger the coefficient of variation, the greater the deviation between the data and the mean, and the greater the risk of investment. Private equity investment funds can rely on the profitability or actual returns of the target funded company and companies in the same industry. The average rate of return or the average actual return is compared to obtain the magnitude of the risk, and finally the size of the risk of the private equity investment fund's investment behavior of the target funded company affects decision-making.

3.2 β-Coefficient Balance Method

The β-coefficient measurement method uses formulas to specifically describe the overall returns of the target funded enterprise and the related industry data of the entire industry and measures the profit fluctuations of the target funded company. R_i is the target funded The expected rate of return or historical rate of return of an enterprise, R_M is the average rate of return of the entire industry. The calculation formula is as follows:

$$\beta_i = \frac{COV(R_i, R_M)}{\sigma_M^2} = (\rho_M * \sigma_i)/\sigma_M (3)$$

If the β value is less than 0, the return of the target funded company relative to the industry's overall return trend is a reverse change, and the private equity fund investment risk is greater; if the β value is greater than 0 and less than 1, the target funded company's return rate It has a positive relationship with the overall industry income level, but compared with the overall industry, the overall fluctuation is small, indicating that the company is a company that caters to the industry trend, and the risk of private equity investment fund investment is small; if β value is greater than 1, then the target company's return rate has a positive change relationship with the overall industry, but the target company's rate of return fluctuates greatly, and private equity investment funds have greater investment risks.

3.3 VaR model measurement method:

VaR is the abbreviation of "Value at Risk", which refers to the fact that under the circumstances of normal fluctuations in the financial market, if the financial assets of the funded enterprise lose, the most likely loss is the value at risk. It refers to the probability of the loss caused by the value of

the asset than the upper limit of the possible loss. ΔP mainly refers to the amount of loss due to risk. α represents a certain level of confidence (Chen Ni). The calculation formula is as follows:

$$Prob(\Delta P > VaR) = 1 - \alpha \quad (4)$$

For VaR, the confidence level parameter has important reference significance. Confidence level and VaR usually have a proportional relationship. Before calculating VaR, we need to verify whether the data conforms to the normal distribution. The commonly used method is the skewness kurtosis detection method. Skewness is used to describe the asymmetry of the distribution curve, and kurtosis is used to describe the thick tail of the distribution curve. After calculating the skewness and kurtosis, it is compared with the critical value of the normal distribution, such as falling into the rejection area It does not obey the normal distribution, so this analysis method cannot be used (Tang Jingbei 2014). The VaR model measurement method is mainly used in the value enhancement stage and value amplification stage of private equity investment funds. Make a listing and judge the current situation in the market, but you need to really consider the normal choice of confidence level parameters.

3.4 Field inspection method

The project risk of the funded enterprise must be comprehensively analyzed when it is invested by the private equity fund (Zhao Rongbin). Therefore, the private equity investment fund needs to send professional investigators to conduct a detailed field inspection of the target funded enterprise In order to smash target companies' deliberate concealment of their own financial and management situations, the investigation required by the field inspection method must address four aspects: management risk is mainly focused on examining the quality of corporate leaders, the structure and capabilities of the management team; technical risks It mainly examines the possibility of research and development of high-tech products, and the speed at which new technologies are developed to obtain benefits; market risk is the grasp of market uncertainty, and financial risk is to study the internal operation of the funded enterprise and the flow of funds for private placement. Equity funds can help funded companies in a timely manner and avoid the failure of funded companies.

4. Proposals for the risk assessment method of private equity investment funds and the construction of the "D.I.C.S" system

The mean-variance measurement method and the β coefficient balance method use historical data. Although the VaR model measurement method can make advance predictions, we also need to rely historical data, therefore, may also fail. The mean-variance measurement method cannot target emerging industries, and they have not yet formed a complete industry chain. Therefore, private equity investment funds should build quantitative and qualitative analysis measurement methods. According to the different nature of enterprises, corresponding measures are used to identify risks.

This article analyzed the risks of private equity investment funds investing in funded enterprises (Bai Yichi), and built a "D.I.C.S" system to help private equity investment funds manage risks. The entire system is mainly used to build private equity investment funds in the early stages of investment projects. "D" refers to Due diligence. Due diligence must be conducted in the early stage of investment in order to understand the internal operating environment of the company, the development of the industrial chain, the status of the market in which it is located, the status of suppliers and competitors, etc. By virtue of due diligence, the fund can also comprehensively understand the overall of the funded enterprise to make the most reasonable management and remittance of various risks of the enterprise. "I" refers to Incentive, which is mainly divided into three aspects. For investors, Promoting investment activities with legal and reasonable means to encourage more investors to invest in funds, and also ensure that the funded enterprises have more adequate capital operations. For private equity investment funds themselves, explicit and implicit incentive mechanisms should be optimized to control the funds Insiders, such as raising incentive standards to motivate fund managers to invest more energy in managing investment activities. The investment behavior has a positive feedback effect. "C" refers to Constraint, which is mainly divided into two aspects. For the private equity investment fund itself, a more detailed management

plan should be adopted to prevent illegal or private profit behavior. For foreign-funded enterprises, a reasonable business plan should be prepared, and internal managers with rich management experience should be deployed in advance to serve as the company's management, formulate corporate development strategies, and prevent corporate misconduct. S refers to Sign out, private equity investment The source of the fund's profit is the sale of equity. Therefore, when a private equity investment fund chooses an investment target company, it should formulate a good way to exit the company, so as to formulate different schemes to ensure the realization of benefits and enhance risk management and control.

Reference

[1] Jiang Aike (2018). Research on Risk Forecast and Governance of Private Equity Investment. Private Equity; Investment Risk; Data Flow; Concept Drift; Classifiers. CNKI, Beijing Jiaotong University. Ph.D.

[2] Ni Ming "Current Situation and Risks of Private Equity Funds in China." China Finance (3): 77-78.

[3] Wang Weihua (2016). "Research on Financial Investment Risk Analysis and Control." Times Finance (20).

[4] Xin Yufeng (2012). Research on Risk Management of Private Equity Investment Funds in China, Shandong University of Finance and Economics.

[5] Wang Yang "Research on Technology and Application of Financial Investment Risk Assessment." Productivity Research (10): 93-94 + 147.

[6] Cai Siyuan "Technology and Application Analysis of Financial Investment Risk Assessment." Finance and Economics (Academic Edition) (21): 125-126.

[7] Chen Ni "Research on the Risk of China's Sunshine Private Equity Market Based on VaR." Times Finance (26): 95 + 97.

[8] Tang Jingbei (2014). "Analysis on the Risk Evaluation Technology of Financial Investment and Its Application." China Business Review (25): 141-142.

[9] Zhao Rongbin. Research on the operational risk of China's private equity funds, Suzhou University.

[10] Bai Yichi "Discussion on Risk Management of Private Equity Fund Investment." Finance and Economics (Academic Edition) 502 (02): 75.