Research on Asset Division and Evaluation Methods

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Abstract. With the deepening of globalization in the world, the economies of various countries are also pouring into the international financial market. Against this background, China's securities market is also coming into the opening. China's inclusion in MSCI China Index has made it more attractive for global funds. However, since its inception in the early 1990s, China's stock market has been viewed as highly speculative always, which will interfere with investors' investment behavior. To allocate funds reasonably in the A-share market better, investors need to classify assets and formulate different stock selection strategies for different types of assets. Therefore, this topic is focused on how to select stock and how to evaluate assets from different views. We analyze different stock selection strategies through accounting, mutual funds managers, stock market and traditional views with various calculating methods. Through summarizing several related research, we found that the effectiveness of the Fama-French three-factors model in the Chinese stock market is poor and the investors' sentiment and the number of retailers both make a difference in investors' stock selection strategies. To evaluate assets, we discussed the evaluation of tangible and intangible assets separately. We conclude that it's easy to process data for intangible assets and this calculation method will perform better in the Chinese future market.

Keywords: Stock selection strategies; Asset evaluation; Fama-French method; Mutual funds.

1. Introduction

In previous research, more articles focus on how to select stocks in detail branches. We summarize these views and the data from the financial report and the company's internal information. This article would help investors choose a better strategy in-stock selection and evaluate the competitiveness of corporates which can get accurate information to call options. Therefore, to select stocks, we use different calculation methods including ROE equitation by accounting views, the idiosyncratic volatility of stocks for mutual funds, and Fama–MacBeth regressions in a traditional point. We make research on assets revaluation as well. Through making tangible assets and intangible assets separate from assets revaluation, we choose several data from the financial report and calculate Alpha in the Fama-French model which is processed by the Z processing method apart.

2. Quality asset division method

With the development of the Chinese stock market, investors need methods to divide several assets to formulate different stock selection strategies. There are several methods to classify asset quality from different points of view.

For accounting points, there is a formula ROE which uses accounting principles and the rationality of regulars as a prerequisite to classifying the quality of the asset.

$$ROE = P/(E_0 + \frac{N_p}{2} + E_i \times M_i/M_0 - E_j \times M_j/M_0) \quad (1)$$

Equation (1) can avoid the problem of falling earnings per share in the accounts because of the company's dividends. In this way, the actual profitability of the company can be calculated clearly to support information for investors [1].

For mutual funds, Duan concluded that it is a good way to classify high-quality assets through the idiosyncratic volatility of stocks [2]. Stocks with high volatility always share more information. The high volatility portfolios allow the appearance of mispricing as well. Furthermore, the analysis of Xiong indicated that there is a positive correlation between the idiosyncratic volatility of stocks and the rate of return on stocks. The elasticity of stock return to idiosyncratic volatility increases with investors' more positive sentiment. The more optimistic investors are, the larger the cross-sectional difference between the returns of the high idiosyncratic volatility portfolio and the low idiosyncratic volatility portfolio is [3].

For the stock market, Wu points out that there is a relationship between the rate of high-quality assets and retail investors [4]. More personal investors mean more arbitrage risks which impede informed trading. On the other hand, more retail investors have a positive function on the price movement. Because the increment of retail investors would add to the number of transactions among them which improve trading price. In other words, the greater number of retail investors is, the higher the stock price synchronicity is. Fei did the research with fluctuations in the net assets per share before and after adjustment as a variable. He used it to analyze the asset quality and the return ability of Chinese public companies. He concludes that when the variable gets smaller, the quality of assets would be better. In this case, the profitability of the stock increases this year. However, it not means the high profitability of this stock would remain stable in the future. Therefore, it is a good idea to classify assets but not to analyze future profitability [5].

Traditional methods of assets quality analysis are by Fama-French three-factor model.

$$R_{it} - R_{ft} = \gamma_{0t} + \gamma_t^m \beta_i^m + \gamma_t^{SMB} \beta_i^{SMB} + \gamma_t^{HML} \beta_i^{HML} + controls_{it} + \epsilon_{it} \quad (2)$$

By calculating the relationship between the stock market risks and the rate of returns, they can get several digital information to analyze financial assets quality. However, Hu founds that when the three-factor model is used in Chinese stock markets, there is no value premium. They attributed it to extreme value in the early Chinese stock markets. In this way, the timeliness of the three-factor model always does not perform well [6].

3. The difference to evaluate the asset quality

3.1 Tangible assets evaluation

It is a traditional and common method to evaluate the quality of enterprise assets through tangible assets. In terms of data acquisition, the data of tangible assets are often divided into profitability, liability, turnover, liquidity, payout, and security. For profitability, it can be obtained in the income statement. Liability can be obtained in the balance sheet. For turnover and liquidity, it needs to use the data in the income statement and balance sheet to obtain. For payout, it can be obtained in the statement of changes in equity. For security, it needs a beta in the Fama-French three-factor or five-factor model. In general, these data are relatively easy to obtain. It can be obtained through the financial statements of each company. However, security needs to do some regression operations to get beta. Therefore, the data needed to assess tangible assets are, to some extent, relatively simple.

In terms of data processing, many financial indicators need only a simple division of the data to obtain the final result. For example, profitability has ROE, ROA, GPOA, and GMAR. ROE's calculation is net profit divided by owner's equity. ROA's calculation is net profit divided by total assets. These calculations are easy, and the results can be easily obtained while processing the data. After obtaining various financial indicators, further processing should be carried out, which is to rank the resulting financial data and using the Z processing method calculates the score of each financial indicator. The Z processing method means that the ranking subtracts the mean of the cross-section ranking and then divides it by the standard deviation of the cross-section ranking to get the score of the secondary variable like ROA and ROE. After obtaining these data, the secondary variables are

processed by the Z processing method so that the main variable is obtained like profitability and liability.

In terms of empirical tests, the scoring results obtained by the Z processing method can be analyzed by univariate and bivariate combinations. Firstly, for univariate combination analysis, it needs to be divided into 10 groups from small to large. Then it is regressed with a factor model, which can gain a date of alpha. Next, according to the value of the alpha, the asset values can be assessed. Bivariate combination analysis, however, uses two different variables for statistical analysis. The effectiveness of the method of evaluating high-quality assets is judged by observing the T value. So, in this part, there will be a large amount of calculation, and the difficulty of data processing will also rise [7,8].

3.2 intangible assets evaluation

This is a new direction of asset evaluation, with a new role and explanation. In terms of data acquisition, the main indicators of intangible assets can be divided into Tech Level, Compete Level and Sustain Level. For Tech Level, its data comes from the income statement, balance sheet and the situation of the company's internal operations. For Compete Level, its data comes from the income statement and Industry related data. For Sustain Level, its data comes from the income statement, balance sheet, statement of changes in equity and company HR Data. So relevant data needs to be obtained in financial reports and internal statements of the company.

In terms of data processing, firstly, Tech Level is divided into three secondary indicators including R & D investment rate, the proportion of technological intangible assets and technician density. R & D investment rate is R & D expenditure divided by operating income. The proportion of technological intangible assets is technical intangible assets divided by total intangible assets. Technician density is the number of R & D technicians divided by the total number of employees. Then Compete Level is also divided into three secondary indicators including brand advantage, market share and excess yield. The brand advantage is selling expenses divided by operating income. Market share is enterprise sales revenue divided by total industry sales revenue. Excess yield is the net profit margin of enterprise revenue minus the average net profit margin of the industry. Finally, sustain level is divided into four secondary indicators including asset growth rate, intangible assets share, employee quality and intangible assets per share. For asset growth rate, it is the difference between the total assets of the current period and the total assets of the previous period divided by the total assets of the previous period. For intangible assets share, it is that total intangible asset divided by total assets. For employee quality, it is the number of undergraduates and above divided by the number of active employees. For intangible assets per share, it is the total intangible assets divided by the number of ordinary shares.

In terms of data calculation, to ensure objective and accuracy, two methods are generally used for indicator weight setting, which is the superimposition of subjective weighting and objective weighting. The reason is if only subjective data is used, then objective facts are ignored and if only objective data is used, there is no consideration of practical experience. For subjective, subjective analytic hierarchy process is used to determine the weight of each indicator. For objective, the objective entropy weight method is used to determine the weight of each indicator. Finally, overlay subjective results and objective results with equal weight method. After the index selection and weight setting steps are completed, the intangible asset model is built [9,10]:

$$\text{Intangible Assets Index} = \sum \text{Tech Level} + \sum \text{Compete Level} + \sum \text{Sustain Level} \quad (3)$$

3.3 Difference

For data acquisition, the data of tangible assets evaluation can easily come from a financial report, while the data of intangible assets evaluation need not only a financial report, but also internal data of the company, which is more difficult, and the accuracy of the data will decline. If the data is inaccurate or unavailable, it will have a certain impact on the calculation. So, the data acquisition of

tangible assets is easier than that of intangible assets, which indicates that the evaluation of the tangible assets is better achieved in data acquisition and better than the evaluation of the intangible assets in data accuracy.

For data processing, the calculation of indicators of tangible assets is relatively complex. It requires not only various financial data but also the Fama-French factor model to calculate alpha. After having financial data of various indicators, each data needs to be processed by the Z processing method separately. However, the processing of intangible assets evaluation is relatively simple, and the required index data can be obtained only by division. Therefore, intangible assets are more convenient and easier to process data, which can be realized for most people.

For data calculation, tangible assets evaluation needs to use various statistical methods to calculate, and obtain relevant data to verify the correctness of assumptions. Intangible assets evaluation uses a combination of subjective and objective methods to build models. In contrast, the calculation of the two methods is both difficult and professional, which requires professional data processing software and programming language to calculate and build the model. So, the calculation of the data reflects the characteristics of the two evaluation methods.

According to the introduction of tangible assets evaluation and intangible assets evaluation, it can be found that they have different adaptability. The former is more inclined to the manufacturing industry, industry, which are heavy assets enterprise, and the latter is more inclined to science and technology industries such as the information technology industry and technology service industry. Therefore, different evaluation methods should be used to obtain evaluation data from different industries.

With the development of the country and the progress of technology, China's primary and secondary industries are gradually shifting to the tertiary industry, and more science and technology companies have appeared in the national economy. This leads to the intangible asset’s evaluation method will be more suitable for future economic development. Moreover, the predictive ability of intangible assets evaluation is better than that of tangible assets evaluation. Because the proportion of intangible assets in enterprises is increasing year by year, which further reflects the core competitiveness of enterprises.

4. Conclusion

In conclusion, it is divided into two parts showing the quality asset division method and the Differences between different methods. The former introduces four methods, including the accounting principles method, the special volatility of stocks method, the number of retail investors method and the Fama-French three-factor model method. The latter mainly introduces the differences and applicability of the evaluation methods of tangible assets and intangible assets. And based on the Chinese market, the corresponding analysis is carried out.

At present, the market has a variety of asset division methods, of which the four methods introduced in this paper are the mainstream. The first is to divide the financial indicators of assets from the perspective of accounting. The second is to analyze that the stock situation is proportional to the fluctuation from the perspective of stock fluctuation. The third is from the distribution of investors, which is the more retail investors there are, the better the relative asset quality will be. Finally, it is a Fama-French three-factor model based on quantification. However, it did not perform well in the Chinese market. Through different asset evaluation methods, it can be found that the evaluation of intangible assets will occupy an important position in the future. Although the evaluation of tangible assets cannot fully reflect the development prospects and potential of a company, it is also an important part.

In this era of rapid scientific and technological progress, investment in scientific research is essential, and the evaluation of this part of the assets is also important. The initial accounting indicators and factor models have been difficult to evaluate the development prospects of a

technology company. Therefore, more methods of assessing intangible assets should be used to assess the state and prospects of the company realistically.

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