

Supply Chain Service Industry Evaluation-- Take ZT Company as an Example

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ABSTRACT. *This article uses the DCF method to evaluate the value of ZT's shareholders' equity. Through financial statements, understand ZT's historical revenue, cost and financial data, combined with the investigation and analysis of outstanding companies in the industry, comprehensively consider and evaluate ZT's future operating conditions, profitability and risk.*

KEYWORDS: *Supply Chain Enterprise value, ZT Company*

1. Introduction

Enterprise valuation has developed for a period of time in China, but the market demand for enterprise valuation is very strong. Assessment industry has become an important industry in social economy. Assessment industry can provide reference for economic decision-making of each industry, and provide support for enterprise asset valuation. With the rapid development of China's economy, new economic activities are also changing rapidly. Equity transfer, IPO, merger and acquisition, restructuring of state-owned enterprises and other economic activities are inseparable from the scientific guidance of asset evaluation.

With the deepening of the reform of state-owned enterprises, many state-owned enterprises began to adopt the strategy of diversified management, and integrated into group companies listed as a whole. This paper mainly focuses on the valuation of shareholders' equity of ZT Company, an integrated service provider in commodity supply chain industry. The enterprise studied in this paper is a commodity supply chain service industry, which is relatively unfamiliar to the public, but also an indispensable industry in the development of China's real economy. It is hoped that scientific methods can be used for reference in the evaluation of enterprise investment value, market value management of listed enterprises and other enterprises in supply chain industry.

In the process of rapid development of supply chain enterprises, the growth of business volume leads to the increase of operating funds and inventory, which leads to

the high net cash outflow. Asset-based method is used by appraisal institutions to obtain the shareholder equity value of ZT company. This method cannot fully demonstrate the company's ability to obtain profits. By studying the company's financial quotation and reviewing the historical data, we can forecast the company's future development. This paper will evaluate ZT Company based on the income method, in order to accurately estimate the value of the company.

The first two chapters of this paper summarize the relevant theories of enterprise evaluation. The third chapter introduces the development history and financial indicators of ZT Company. Chapter 4 predicts the future development trend of ZT company through past data, and estimates the value of shareholders' equity of ZT company by income method. To achieve the purpose of providing reference for shareholders' investment decision-making.

2. Case analysis-using the income method to estimate the value of ZT's shareholders' equity

2.1 Introduction of ZT Company

(1) ZT company profile

ZT company is positioned in the supply chain service industry in the modern service industry. It is customer-oriented and provides consulting, raw material procurement, inventory management, finished product sales, cutting processing, logistics distribution, information management, risk management, and asset management. As well as supply chain integration services such as supply chain financial management and services in each link, through penetration of all links in the supply chain, it will expand profitability and create value-added opportunities.

(2) ZT company's assets, financial and operating conditions

ZT's business scale and operating profit hit a record high, asset income has steadily increased, and both scale and efficiency have been increased.

Sales: The company achieved operating income of 63.294 billion yuan in the whole year, a year-on-year increase of 30.75%; annual sales of various metal materials of 11.7126 million tons, a year-on-year increase of 26.67%; ore 7,370,400 tons, a year-on-year increase of 17.36%; coal 6,114,100 tons, a year-on-year increase of 167.75%.

Profit situation: Net profit attributable to shareholders of listed companies was 306 million yuan, a year-on-year increase of 76.58%.

Assets situation: The company's total assets were 11.64 billion yuan, an increase of 8.1% from the beginning of the year; the composition of total assets was dominated by current assets, and monetary funds, notes receivable and inventories became the main line of total assets. Inventories at the end of 2018 were 3.14 billion yuan, mainly due to the company's new oil product business, which resulted in a large increase in oil product inventories. Monetary funds decreased by 2.45% from the beginning of the year; accounts receivable increased by 1.64% from the end of the previous year.

2.2 Forecast of main business income

According to ZT's financial statements, ZT's operating income mainly comes from supply chain integration services. From the product perspective, it is mainly construction materials, industrial materials, furnace materials, coal and coking coal, non-ferrous metals, and chemical products. Therefore, in the supply chain integration service revenue forecast, the main need to consider product sales. Product sales are often determined by predicting product price trends, the intensity of national investment in infrastructure construction, and domestic macroeconomic forms. In the forecast, the author made an operating income forecast based on a weighted proportion of 35% for the construction industry, 25% for the industrial industry, 15% for the chemical, coal, and non-ferrous metal industry, 10% for the bulk commodity transportation industry, and 10% for the financial industry. The prediction results are as follows:

2.3 Forecast of operating costs

ZT company belongs to the commodity integration service industry, and the commodity purchase cost is the main component of the company's operating cost. After understanding, other operating costs also include sales expenses, research and development expenses, financial expenses and so on.

(1) Business taxes and surcharges.

Business taxes and surcharges have a strong correlation with ZT's operating income. During the evaluation process, the business tax and additional value of ZT's previous years as a percentage of total operating income are used to estimate the business tax and additional forecasts in the next few years .

(2) Income tax expenses.

According to existing tax-related policies, the applicable income tax rate for ZT Company is 25%. When forecasting profits in the next few years, the income tax rate of 25% will continue to be used to estimate the amount of income tax expenses in the future years.

(3) Asset impairment losses.

In this assessment, ZT has a large inventory and price fluctuations, so the item of asset impairment losses is considered. Taking into account the increase in turnover and the increase in inventory in the next few years, the asset impairment loss in the next few years is predicted.

(4) Forecast of physical cash flow.

This assessment focuses on the above items, and then adds investment income items. Based on the forecast values of the above income statements, the annual net profit for the next few years is obtained, and finally the cash flow of the enterprise entity is obtained. The results are shown in the table below.

(4) Determination and calculation of parameters

1) Risk-free rate of return RF

Generally, the national bond interest rate announced in recent years is used as an approximate value, and the risk-free rate of return RF=4.08% is obtained based on the average level of the national bond interest rate over the past 20 years.

2) Determination of Beta

When calculating the beta coefficient, I am going to use the following formula to evaluate the expected market risk coefficient of the target equity capital:

$$\beta_e = \beta_u \times 1 + 1 - t \times \frac{D}{E} \quad (1)$$

Among them:

β_u : Unlevered market risk coefficient of comparable companies;

$$\beta_u = \frac{\beta_t}{1 + 1 - t \frac{D_i}{E_i}} \quad (2)$$

β_t : The expected market average risk coefficient of comparable company stocks (assets)

$$\beta_t = 34K + 66\beta_x \quad (3)$$

In formula (3), K is the average risk value of the stock market in a certain period of time, and the standard value is 1. For the reasons mentioned above, the author moderately lowered K to 0.8.

β_x : The historical market average risk factor of comparable company stocks

$$\beta_x = \frac{Cov(R_x; R_p)}{\sigma_p}$$

In this formula:

$Cov R_x R_p$ is the covariance of the return rate of the sample stocks and the return rate of the stock market portfolio in a certain period;

σ_p is the variance of the stock market portfolio return rate in a certain period.

In this assessment, ZT's listed companies in the same industry are selected as comparable companies. Through comparison and screening, WC Zhongda, XM Xiangyu, and XM International Trade are finally determined as the reference companies for determining the Beta coefficient. The calculation results: the above three sample companies propose capital The factor's average Beta coefficient is 1.223.

Substituting the above values into formula (3), β_t is 1.079

- T is the income tax rate;
- D is the book value of interest-bearing debt;
- E is the book value of equity.

Put $\beta_t=1.079$, D= into formula (2) to obtain

$$\beta_u = \frac{\beta_t}{1 + 1 - t \frac{D_i}{E_i}}$$

$$=1.079/[1+(1-25%)]*114/31$$

$$=0.168$$

Put $\beta_u=0.168$ into formula (1) to get

$$\beta_e = \beta_u \times 1 + 1 - t \times \frac{D}{E}$$

$$=0.168*(1+(1-25%)*125/51)$$

$$=0.72$$

After the above steps, the β coefficient of ZT Company is obtained as 0.72.

3)Market expected rate of return

The expected rate of return in the market can be estimated through historical data or in advance. Due to the large fluctuations in the Chinese A-share market and the large changes in the risk premium, historical data is not reliable. Therefore, the author adopts industry practice, adopts the Chinese debt credit rating announced by the US market, and calculates the expected market return rate of 6.15%.

4) Enterprise-specific risk adjustment coefficient ϵ

When estimating the company's unique risk return rate, it is generally divided into scale excess return rate and other unique risk return rate. Regarding the excess return to scale, domestic scholars generally believe that the excess return to scale exceeds 1 billion yuan in net assets, which is in line with the return of excess return to scale and adjusted net assets:

$$\text{Scale excess return} = 3.139\% - 0.2485\% * \text{NA}$$

Since ZT's net assets exceed 1 billion yuan, NA is calculated at 1 billion yuan. Taking into account the maturity of the industry and the stable period of the company's other unique risks, we get:

Enterprise-specific risk adjustment coefficient = scale excess return rate + other unique risk return rate

Among them, the calculation result of the scale excess return rate is 0.654%, and the other unique risk return rate is set to 0.146% by the author through the above analysis

Through calculation, the company-specific risk adjustment coefficient in this assessment is 0.8%.

5) Discount rate

This assessment uses the CAPM model to calculate the discount rate. The specific process is as follows:

$$re = rf + \beta e \times (rm - rf) + \epsilon$$

among them:

- rf: risk-free rate of return;
- rm: market expected rate of return;
- ϵ : The characteristic risk adjustment coefficient of the assessment object;
- βe : the expected market risk coefficient of the target equity capital;

Bring in the above parameters to get

$$\begin{aligned} r_e &= r_f + \beta \times (r_m - r_f) + \varepsilon \\ &= 4.08\% + 0.72(6.15\% - 4.08\%) + 0.8\% \\ &= 6.37\% \end{aligned}$$

6) Value of operating assets

It can be seen from the above: n is set to 6, R_1 to R_6 are respectively 31221, 40462,

$$P = \sum_{i=1}^n \frac{R_i}{(1+r)^i} + \frac{R_{n+1}}{r(1+r)^n}$$

52439, 67961, 88078, 114149, $R_{n+1}=R_6=114149$, $r=6.37\%$

Substituting the above parameters into the formula, ZT's operating assets are 3.589 billion yuan.

3. Conclusion

Analysis of evaluation results

This article uses the DCF method to evaluate the value of ZT's shareholders' equity. The DCF method is an absolute valuation method, which estimates the intrinsic value of ZT company. Through financial statements, understand ZT's historical revenue, cost and financial data, combined with the investigation and analysis of outstanding companies in the industry, comprehensively consider and evaluate ZT's future operating conditions, profitability and risk. However, in this process, the assessment has been adjusted accordingly based on the particularity of the supply chain service industry. ZT's industry covers a wide range of industries, from industrial finance to automobile sales, from e-commerce to energy technology. In the specific evaluation process, taking into account the particularity of the industry, the beta coefficient and forecast period were adjusted accordingly.

The results of the evaluation of the DCF method model yielded ZT's shareholders' equity of 3.564 billion yuan. As of December 28, 2018, ZT's closing price was 4.89 yuan per share, with a total share capital of 675 million shares and a total market value of 3.3 billion yuan. It can be seen that the valuation of this article has a small deviation from the A-share market, and the valuation is relatively reasonable.

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