
| RESEARCH ARTICLE

Representative Stock Analysis in Chinese Medical Industry and Relevant Investment Recommendations Review

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| ABSTRACT

As one of the most important pillar industries of China, the medical industry can improve the quality of our lives in many aspects. It is also beneficial to the development of the national economy. Especially after the outbreak of COVID-19, the function of the medical industry was further displayed. Under these conditions, stocks coming from the medical industry are also popular among investors. For the analysis of these stocks, there are many valuation methods which can be used. This paper is aimed at discussing different valuation methods of stock analysis mainly based on the fundamental analysis theory and behaviour finance theory. Based on these relevant theories, we can conclude that factors affecting the stock price include both internal and external aspects. Internal and external factors can also interact with each other in some special cases.

| KEYWORDS

Medical industry, Fundamental analysis, Behavior finance

| ARTICLE INFORMATION

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1. Introduction

1.1 Overview of Chinese stock market

Chinese stock market, basically, provides a platform for investors and firms to take part in some trading activities like IPO or short selling. It was first used as a pilot project in 1989, and then in 1990, the Chinese government set Shanghai and Shenzhen as pilot sites to proceed with public offerings. In the past few years, the Chinese stock market went through a series of reformations and several major events, like the financial crisis in 2007. Also, because of some relevant policy requirements, only circulation stocks are allowed to be traded in Chinese stock markets. These circulation stocks all come from different industries, such as the food service industry or textile industry. In the following part, I would like to provide a brief introduction to the Chinese medical industry as the research background of this paper.

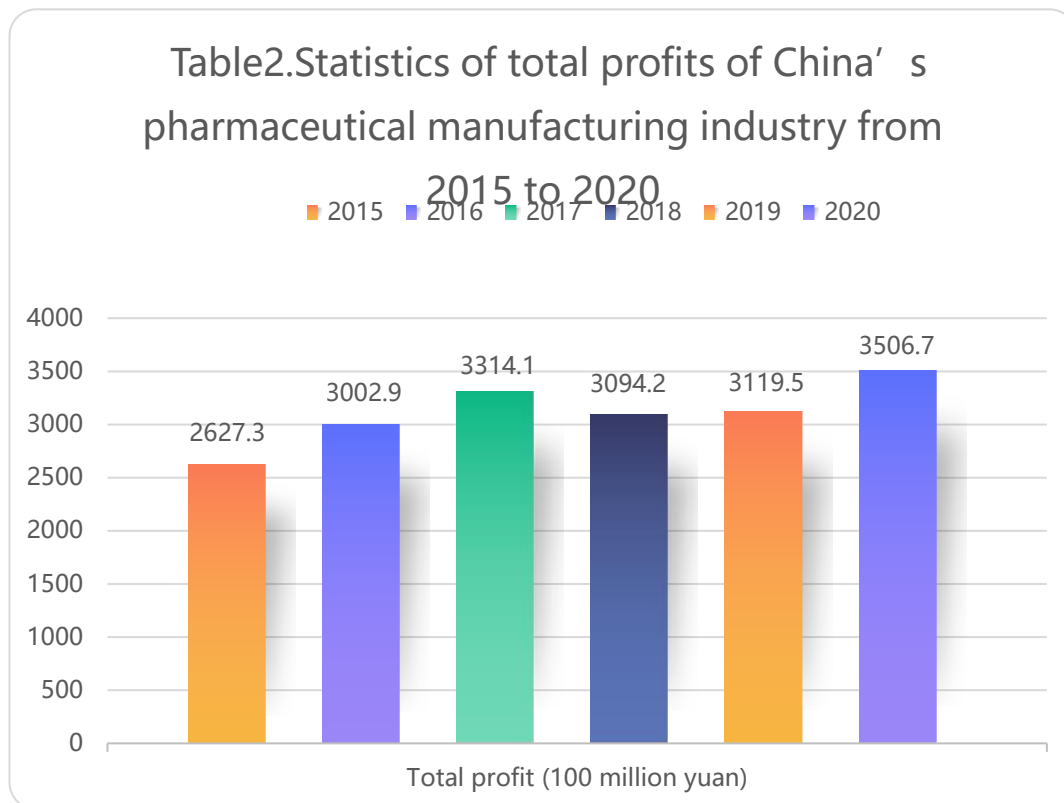
1.2 Introduction of Chinese medical industry

When it comes to the medical industry, it is no doubt that this industry has a close relationship with our life quality and healthy. For the most part, the medical industry is a significant part of the national economy. Nowadays, China has become one of the largest vaccine-producing and pharmaceutical preparation-producing countries around the world; during the epidemic, China offered some vaccine products to the WHO as well. In addition, for the Chinese medical industry, traditional Chinese medicine is a unique element which has attracted lots of attention. Nowadays, with the development of modern technology, the Chinese medical industry also comes across a new development space. Here are some influential companies in the Chinese medical industry in 2022 and the profitability of the Chinese medical industry in the past few years:

Table1. Some representative companies in the Chinese medical industry

Rank	Stock Code	Full name	Headquarters
1	600511	Sinopharm Pharmaceutical Group Co., Ltd	Beijing
2	600056	China Pharmaceutical Health Industry Co., Ltd	Beijing
3	000999	China Resources Sanjiu Medical & Pharmaceutical Co.,Ltd	Shenzhen
4	601607	Shanghai Pharmaceutical Group Co.,Ltd	Shanghai
5	000963	Huadong Medicine Co.,Ltd	Hangzhou
6	002603	Shijiazhuang Yiling Pharmaceutical Co.,Ltd	Shijiazhuang
7	300760	Shenzhen Mindray Biomedical Electronics Co.,Ltd	Shenzhen
8	600276	Jiangsu Hengrui Pharmaceutical Co.,Ltd	Lianyungang
9	603259	Wuxi Wuxi Apptec New Drug Development Co.,Ltd	Wuxi

(Data source: http://www.xhby.net/sy/cb/202212/t20221208_7774775.shtml)



(Data source: <https://m.askci.com/news/chanye/20210222/1451521364485.shtml>)

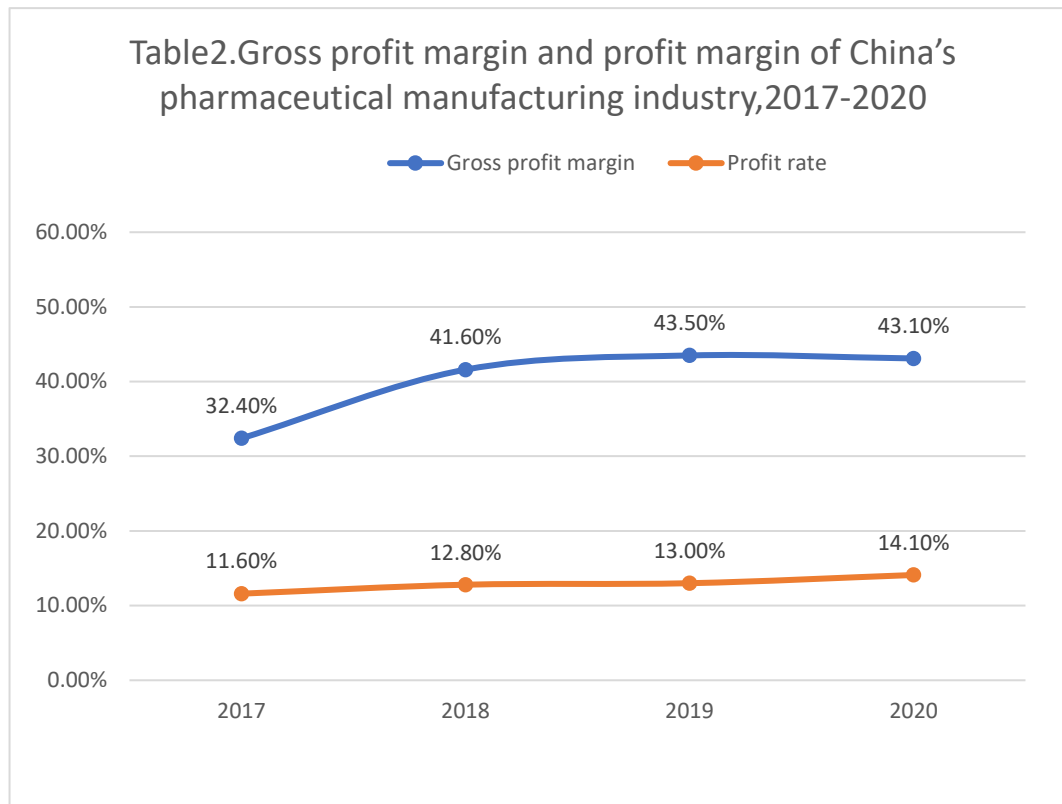
2. Theories of stock analysis

2.1 Fundamental analysis

As one of the most important stock valuation theories, the fundamental analysis contains a variety of criteria for valuing stocks. According to what Suzana and some other scholars investigated before, the main aim of fundamental analysis is to reveal the actual current value of the company (Suzana et al.). In general, the fundamental analysis method focuses on analyzing the general rule of price change in the stock market and then provides investment recommendations for investors from the following aspects:

2.1.1 Macroeconomic environment analysis

Macroeconomic and social factors are external factors affecting the movements of stock prices. Basically, macroeconomic factors mainly consist of two parts: economic policy and economic indicators. Policies like tax policy, fiscal policy, and even monetary policy can all impose effects on the stock price. Indicators like GDP, GNP, and inflation rate change from time to time in most cases, and they can impact the change of stock price to different extents. If the whole macroeconomic environment changes, investors should also alter their original investment decisions.



2.1.2 Industry analysis

In terms of industry analysis, comparing companies within the same industry can help investors make a more reasonable choice. However, different industries may have different development prospective; the policy requirements would also be varied across different industries. In the following section, I would like to analyze the Chinese medical industry from four aspects: political, economic, social, and technological factors, respectively, combining with some relevant literature.

2.1.3 Corporation analysis

This part is mainly about analyzing factors determining the stocks' internal value. In other words, it places emphasis on factors like financial conditions, the status of a company, and even the capital structure of a company. It also includes the analysis of some significant events like mergers and acquisitions and connected transactions. Corporation analysis could also be regarded as a process of analyzing those internal factors affecting the stock price.

3. Model specification and methodology

Based on the fundamental analysis theory, corporate analysis is a crucial part while valuing stocks. The valuation of stocks has different standards and methods. Generally, stock valuation mainly consists of two parts: absolute valuation and relative valuation. In this paper, these two valuation methods will both be used to value the stocks I picked later.

3.1 Absolute valuation

Absolute valuation is aimed at obtaining the intrinsic value of a stock by analyzing the companies' historical data and current financial information and forecasting the companies' future state of operation. And when it comes to absolute valuation, two main models can be used to value the stock of a company, which are the DDM model and the DCF model, respectively. Here I would like to take further valuation by combining both the DDM model and the DCF model.

3.1.1 Dividend discount model

DDM, or dividend discount model, is one of the most fundamental models used for valuing the stock's intrinsic value. This model was come up with Williams and Gordon in 1938 for the first time. It is generally expressed as:

$$V_0 = D_1 / (r - g)$$

Where V_0 is the current fair value of a stock, D_1 is the dividend payment in one period from now, r is the estimated cost of equity capital and used to be calculated by CAPM, g is the constant growth rate of the company's dividends for an infinite time. This valuation model is usually applied when an investor hopes to determine the intrinsic value of the stock which this investor will sell in one period from now (2022).

And suppose that an investor decides to hold the stock for only one year; another model named the one-period dividend discount model could be used. Under the assumption of a one-period dividend discount model, the cash flows expected to be generated by the stock are the single dividend payment and the selling price of the respective stock, which could be summarized as:

$$V_0 = (D_1 + P_1) / (1 + r)$$

Where V_0 represents the current fair value of a stock, D_1 is the dividend payment in one period from now, P_1 is the stock price in one period from now, and r is the estimated cost of equity capital (2022).

It is still possible that an investor chooses to hold a stock for multiple periods; in this case, the one-period dividend discount model could be extended, and we will get this expression:

$$V_0 = D_1 / (1 + r) + D_2 / (1 + r)^2 + \dots + (D_n + P_n) / (1 + r)^n$$

In the multi-period DDM, because an investor holds the stock for multiple time periods, the expected future cash flow will consist of numerous dividend payments. And P_n is the estimated selling price of the stock at the end of the holding period. However, in some cases forecasting dividend payments in multiple periods would be challenging since the dividend payment in a certain period could easily be affected by factors like the profitability of a company within a certain time (2022).

It is no doubt that the DDM model is a helpful tool for investors to value a certain stock; however, the DDM model still has some shortcomings. One feasible disadvantage of the DDM model is that it follows a perpetual constant dividend growth rate assumption, which tends to be too ideal because some companies have irregular dividend payments and dividend growth rates. Additionally, the DDM model is not suitable for valuing companies whose rates of return are lower than the growth rate of dividends.

3.1.2 Discounted cash flow model

Discounted cash flow is a valuation method that estimates the value of an investment using its expected future cash flows. It is aimed at helping investors estimate the money they would receive from an investment, adjusted for the time value of money. That is:

Where CF is the cash flow in a certain period, n is the number of periods, and r is the required rate of return, which could be obtained by the weighted average cost of capital (WACC) or CAPM model (2023). Such a model could also be considered as a calculation of NPV. If the valuation result produced by DCF is positive, then we can conclude that this company is worth investing in.

In addition, to estimate a company's future cash flow, we also need to forecast this company's revenues, expenses, capital structure and change in working capital and so forth. And a company's capital structure is directly reflected by the weighted average cost of capital, or WACC (2023).

To sum up, both the DDM and the DCF models are widely used in the absolute valuation of stocks. But compared with the DCF model, DDM also considers the future dividends of a company. Before using the DCF model, investors are required to have a relatively comprehensive understanding of the developing status of a company, but in some cases, it might be difficult for investors to identify whether this company has a good developing perspective or not. Nevertheless, in addition to absolute valuation, relative valuation can also be used while valuing stocks.

$$DCF = (CF / (1 + r)^1) + (CF / (1 + r)^2) + (CF / (1 + r)^3) + \dots + (CF / (1 + r)^n)$$

3.2 Relative valuation

Relative valuation estimates the value of a certain stock mainly by comparison and then reaches a conclusion about whether to buy this stock or not. It could be comparing a stock's current data with its historical data or comparing it with its competitors

within the same industry to find its location. To make the process of valuation more precise, using some financial ratios would be much helpful.

3.2.1 P/E ratio

P/E, or price to earnings ratio, is calculated by the price of a share of stock divided by a company's earnings per share. It is a direct way to compare the price of a stock to its earnings. Many factors can affect the value of earnings, such as the life cycle of an enterprise and even some macroeconomic factors. The average level of P/E ratio in different industries could also be various. To some extent, we can also use the P/E ratio to forecast the price change of a certain stock.

3.2.2 EV/EBITDA ratio

In general, EV/EBITDA method has some similarities with the P/E method, but the indicators contained in this method are different. EV/EBITDA also considers the market value and income level of an enterprise, the effects of taxes are also included in this method. In comparison with the P/E method, EV/EBITDA method is established from not only the perspective of shareholders but also the perspective of investors. But these two methods both require an enterprise's future income level to reflect the characteristics of risk level and so on. What's more, EV/EBITDA method may contain more information than the P/E method to some extent.

4. Conclusion

In conclusion, the fundamental analysis contains many aspects for valuing stocks, and corporate analysis would be more significant since it focuses on the internal factors affecting the stock price. Also, it is still possible that internal factors and external factors would interact with each other to impose impacts on the price of stocks, which also illustrates that investors need to combine some reality factors with those theories when valuing stocks.

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