

Value Assessment of Internet Healthcare Enterprises Based on DCF and EVA: Evidence from JD Health

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Abstract. The "Internet + healthcare" model of the medical industry has been existed for many years, and with the impact of the coronavirus pandemic and the general increase in people's health awareness. The demand for the industry has further increased, but most of the Internet healthcare industry is currently in a poor state of operation. Therefore, this study takes JD Health as an example and analyzes some problems arising from the development process of this industry by calculating the results of the DCF valuation model and EVA valuation model of this enterprise. According to the analysis, it was learned that JD Health is currently undervalued, meaning that the company's stock price may be lower than its true value, given that JD Health is earning more than the capital invested, suggesting that the company has a high level of profitability and return, which suggests that the company has a good potential for profitability. These results provide targeted suggestions and countermeasures for the development of the industry and promote the healthy development of the Internet medical industry.

Keywords: Business valuation; internet healthcare; economic value added valuation model; Discounted cash flow valuation model.

1. Introduction

In the current world medical field, the problem of uneven distribution of resources is particularly prominent, among which asymmetric medical information, uneven regional medical resources, and mismatch between supply and demand of doctor-patient relationship are the main problems [1]. With the development of the medical and e-commerce industry, the problem of "difficulty in seeing a doctor" still exists, Internet healthcare industry with the Internet as the carrier and technical means came into being [2]. Through the Internet technology itself can realize the convenience of remote dialogue, is expected to solve the status of the imbalance of domestic medical resources, and gradually become the focus of attention [3]. The Chinese government attaches great importance to the development of the Internet healthcare industry and has introduced a series of supportive policies. To be specific, it promotes electronic medical record sharing, medical insurance payment and telemedicine, which provides a favorable development environment and policy support for the Internet healthcare industry. Under the impact of COVID-19, the health awareness of domestic consumers has generally improved, and the Internet medical consultation without leaving home has been recognized and accepted by consumers, while the government encourages Internet medical enterprises to carry out technological innovation and business model innovation [4]. The government encourages Internet healthcare enterprises to carry out technological innovation and business model innovation, and supports enterprises to carry out research and development and innovation through tax breaks and scientific and technological innovation funds to promote the development and progress of the industry, which provides a good prospect for the development of "Internet + healthcare" related enterprises [5].

At present, major Internet medical enterprises, such as "JD Health", "Ali Health" and other large Internet medical platform competition began to become fierce, business activities have become relatively complex [6]. However, most of the "Internet + medical" type enterprises are in a "high traffic, low profit or even loss" situation [4]. The current research is mainly for the development of the industry analysis of Internet medical enterprises, business ecosystem and platform management mode and platform new media marketing research, the valuation of large enterprises related to the

industry is relatively small, through the mathematical model valuation analysis to reflect the business management of an enterprise will have an important reference and reference significance.

This study takes JD Health JDH as the object, uses the current financial statements and other data to make prediction calculations, and analyzes it through EVA and DCF models to reflect the real performance status of the enterprise and assess the intrinsic value of the enterprise, hoping that it can present a case study for other "Internet + Healthcare" enterprises in the same industry, and at the same time provide a certain degree of reference for business managers and potential investors. It is hoped to present a case study for other "Internet + Healthcare" companies in the same industry, and provide a certain degree of reference for managers and potential investors [7].

2. Background

2.1. Valuation basis

Typically, corporate valuation is based on a combination of factors including the company's financial condition, profitability, market position, competitive advantage, industry outlook, etc. For JD Health, this study makes a preliminary estimate by referring to indicators such as the price-to-earnings ratio, price-to-sales ratio, and the average valuation level of the industry for similar companies, as well as referring to relevant financial and financial research reports. However, the stock market is characterized by uncertainty and risk, and the stock price is affected by a variety of factors, including economic conditions, industry competition, market demand and so on. Therefore, caution is required when making reference to the results of valuation analysis.

2.2. Company profile

JD Health Retail Pharmacy provides a wide range of pharmaceutical and healthcare products, including prescription drugs, over-the-counter (OTC) drugs, medical devices and consumables, healthcare supplements, etc., and the number of SKUs has exceeded 40 million. The company's retail pharmacy business is mainly categorized into three modes: self-operated, third-party platform and omni-channel layout, creating a complex combination of "B2C + O2O" and "self-operated + platform" capability circle. These three models of the company form a complementary advantage: the self-operated model provides competitive prices and quality services with better user mind; the third-party platform model provides long-tail product supplementation, which also supports the richness of the company's ecosystem. Besides, the omni-channel model effectively responds to the urgent needs of the customers and combines with the network of offline pharmacies so as to cover the needs of the users in various medical scenarios. JD Health has proved its unique value in the epidemic, as China's largest online medical and healthcare platform and retail pharmacy, with revenues reaching 46.74 billion yuan in 2022, up 52.35% year-on-year, and 160 million annual active users, realizing above-expectation growth. As regulatory guidelines become clearer and users' minds continue to be strengthened, high-quality healthcare services are important for JD Health to consolidate its users' minds and open the way to long-term commercialization; and according to a report by the E-Commerce Newspaper in mid-May, JD Health pushed for a new round of organizational restructuring, announcing that it had set up two new divisions (Instant Delivery Retail and Offline Healthcare), which. In this case, it demonstrates the two main strategies of riding the wind of rapid growth of instant delivery and seizing the opportunity to revive offline healthcare demand, rapid growth and to capitalize on the revival of offline healthcare demand.

3. DCF & EVA

3.1. DCF

DCF (Discounted Cash Flow) model is a method used to evaluate the performance of a company, which is based on discounted cash flow calculations that can help determine the value and

performance of a company [8]. On this basis, it is assumed that the company's revenue in 2023/2024/2025 will be \$63.287/797.95/95.974 billion, and net profit will be \$2.302/3.504/5.154 billion. The perpetual growth rate is 5%; the free cash flow forecast of the company for the next 5 years is shown in Table. 1, Table. 2, Fig. 1 and Fig. 2.

Table 1. Free cash flow forecast for the next 5 years (Data sources: Corporate Financial Reporting, Huatai Securities).

	2020	2021	2022	2023E	2024 E	2025 E	2026E	2027E
Revenue (100 million Yuan)	193.8	306.8	467.4	632.87	797.95	959.74	1,103.70	1,214.07
YOY	78.80%	58.31%	52.35%	35.40%	26.08%	20.28%	15.00%	10.00%
Net profit (100 million Yuan)	-172.35	-10.73	3.83	23.02	35.04	51.54	60.70	66.77
YOY		-93.77%	135.69%	501.04%	52.22%	47.09%	17.78%	10.00%
Net profit ratio	88.93%	3.50%	0.82%	3.64%	4.39%	5.37%	5.50%	5.50%
Operating cash flow	36.99	34.31	59.05	67.24	56.96	72.53	76.96	85.36
Capital expenditure		5.18	22.73	13.26	6.35	-0.46	-6.91	-8.69
Free cashflow (100 million Yuan)		29.13	36.32	53.98	50.61	72.99	83.87	94.05
YOY			24.68%	48.62%	-6.24%	44.2%	14.9%	12.1%

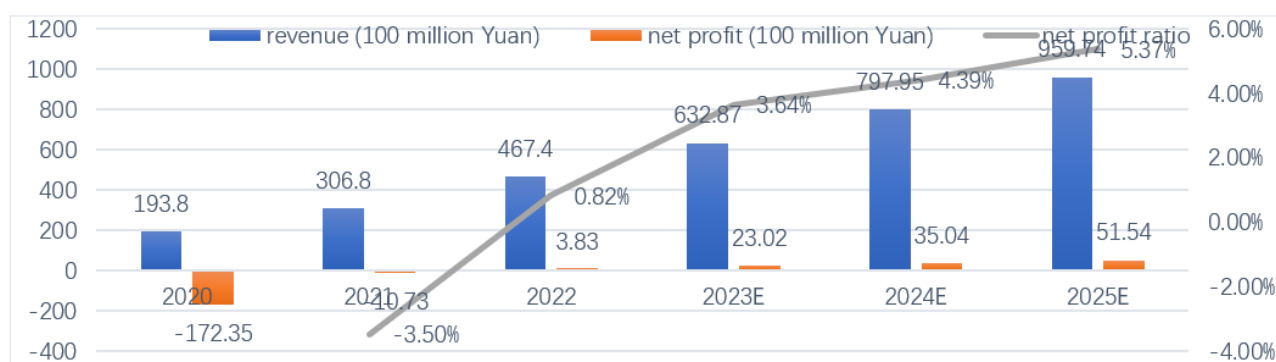


Fig 1. Run charts of revenue, net profit and net profit ratio (Data sources: Corporate Financial Reporting, Huatai Securities).

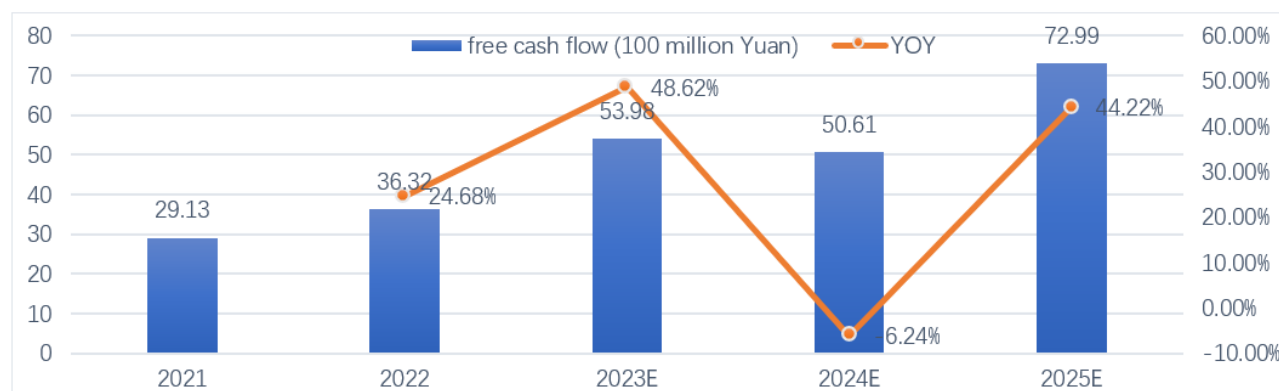


Fig 2. Run charts of free cash flow and its YOY (Data sources: Corporate Financial Reporting, Huatai Securities).

Table 2. Forecast the sustainable value of the company over the next four years (Data sources: Corporate Financial Reporting, Huatai Securities)

	2028E	2029E	2030E	2031E
Revenue (100 million Yuan)	1,274.77	1,338.51	1,405.44	1,475.71
YOY	5.00%	5.00%	5.00%	5.00%
Net profit (100 million Yuan)	70.11	73.62	77.30	81.16
YOY	5.00%	5.00%	5.00%	5.00%
Net profit ratio	5.50%	5.50%	5.50%	5.50%
Operating cash flow	97.44	121.04	132.98	103.30
Capital expenditure	-10.25	-12.00	-13.36	-13.36
Free cashflow (100 million Yuan)	107.69	133.04	146.344	153.66
YOY	14.5%	23.5%	10.0%	5.0%

Assuming that the company maintains perpetual growth at the perpetual growth rate after 2027, the perpetual value of the company is calculated here using a forecast of 4 years. Free cash flow is the cash flow generated by a business that remains after reinvestment needs have been met, which is the maximum amount of cash available for distribution to suppliers of capital to the business without jeopardizing the company's continued growth. Simply put, free cash flow is the difference between net cash flows from operating activities less capital expenditures. The Calculation of discount rate WACC is as follows:

$$WACC = R_e \times \frac{E}{V} + R_d \times \frac{D}{V} \times (1 - T_c) \quad (1)$$

The latest total debt of the company is 16.493 billion, and the market value of the company as of December 31, 2022 is about 207.38 billion yuan (calculated at 1 HKD = 0.914 yuan). Therefore, the company's debt ratio $D/(D+E)$ is 7.37% and equity ratio $E/(D+E)$ is 92.63%. The company has no short-term or long-term debt, the 2022 financial report shows interest expense of \$855 million, and the company has debt of \$16.493 billion, which is an after-tax debt-to-capital ratio of $R_d = 5.18\% \times (1 - 15\%) = 4.4\%$, assuming a bond interest rate of 5.18% and a deduction ratio of $T = 15\%$. The market 10-year treasury yield is 2.7%, the company's perpetual growth rate is assumed to be 5%, the risk premium is 5%, and the company's stock price BETA is 0.63 according to Yahoo Finance data, so the company's cost of equity capital ratio $R_e = 2.7\% + (5\% - 2.7\%) \times 1 = 4.15\%$. The company's discount rate (WACC) can be calculated as shown in Table. 3.

Table 3. Calculation of WACC (Data sources: Corporate Financial Reporting, Huatai Securities).

WACC	4.17%
(Perpetual Growth Rate) g	5%
(1-t)*Kd	4.40%
Re	4.15%
Rf	2.70%
(Rm-Rf)	2.3%
BETA	0.63
(D/D+E)	7.37%
(E/D+E)	92.63%

Table 4. Present value of future cash flows (Data sources: Corporate Financial Reporting, Huatai Securities)

Total forecasted free cash flow (100 million Yuan)	1,971.59
Net liabilities (100 million Yuan)	-22.25
Book value of minority shareholders	0
Equity value embedded in DCF (100 million Yuan)	1,993.84
Current market value	1549.13
Current price (Yuan)	48.76
Total equity capital at the end of 2022 (100 million)	31.8
Estimated stock price of 2023 in DCF (Yuan)	62.70
Expected increase: (target price – yesterday’s closing price)/yesterday’s closing price	28.58%

Discounting the firm's cash flows over the next 25 years at a discount rate allows you to calculate the firm's discounted cash flows as.

$$V = \sum_{t=1}^{\infty} \frac{FCFE}{(1+WACC)^t} \quad (2)$$

Substituting the free cash flow from 2023 to 2042 into the formula yields

$$V = \frac{21.24}{(1-4.17\%)^1} + \frac{28.12}{(1-4.17\%)^2} + \frac{42.78}{(1-4.17\%)^3} + \dots + \frac{190.04}{(1-4.17\%)^{20}} \quad (3)$$

The present value of cash flow in the next 20 years V=197.159 billion yuan, the total equity is 3.18 billion at the end of 2022, and the 2023 share price under the DCF model is calculated to be \$62.7, which translates to HK\$68.6; the share price of BOHS as of July 26th, 2023 is HK\$53.35, with an estimated total increase of 28.58%. The company is currently undervalued. The calculation results are listed in Table. 4.

3.2. EVA

EVA (Economic Value Added) is the return on investment in excess of the cost of capital, i.e., the amount of a company's operating earnings after deducting the full cost of capital employed [9]. The core concept of EVA is that a company creates wealth for its shareholders only if its net after-tax operating profit is greater than the cost of all invested capital; otherwise, the company is harming its shareholders' wealth. In other words, the return on invested capital must be higher than the cost of capital rate over the same period in order to create wealth [10]. The specific formula for EVA is as follows.

$$EVA = NOPAT - TC \times WACC \quad (4)$$

Here, NOPAT is net operating profit after tax, TC is total investment and WACC is weighted average cost of capital. Where NOPAT = operating profit - R&D expenses (excluding human intervention) + finance costs - investment income (the company has a negative investment income in 2022) - income tax. The company has no short-term or long-term debt, and equity and debt are included in TC; here, shareholders' equity plus payables are used as the total investment. In this case,

one can calculate the company's EVA = 48.88 - 589.01 * 4.17% = 24.33. The value of EVA is greater than 0, which means that the company is earning more than the capital it has invested, the shareholders are getting a positive return on this investment, and the company's long term growth will create new value for the shareholders. The calculation of EVA is listed in Table. 5.

Table 5. Calculation of EVA (Data sources: Corporate Financial Reporting).

	FY2022
Operating profit (100 million Yuan)	7.93
R&D cost (100 million Yuan)	10.67
Financial cost (100 million Yuan)	8.55
Investment income (100 million Yuan)	46.2
Income tax (100 million Yuan)	3.13
NOPAT(100 million Yuan)	48.88
Stockholders' equity (100 million Yuan)	447.8
Bonds payable (100 million Yuan)	141.21
TC(100 million Yuan)	589.01
WACC	4.17%
EVA	24.33

4. Conclusion

Since Capital Health is currently undervalued, investors may want to consider increasing their investment in the company. The fact that a company is undervalued often means that the company's stock price may be lower than its true value, so increasing the investment could provide investors with more returns in the future. Secondly, given that JD Health is earning more than the capital invested, the company has high profitability and returns, which suggests that the current business model and strategic direction is successful and has good profit potential, so investors can hold the stock for the long term and wait for future growth. Based on the current results and undervalued status, it can be expected that King Health will continue to realize stable growth. With the company's long-term growth set to create new value for shareholders, investors can expect the company to further expand its market share, launch new products and services, and improve profitability. In addition, JD Health, currently China's largest online medical and healthcare platform and retail pharmacy, may also achieve further growth and further increase investor returns through acquisitions and mergers or strategic partnerships.

However, the research methodology in this paper still has limitations. Free cash flow forecasts are affected by many uncertainties, including market firm decisions, demand changes, competitive pressures, price fluctuations, currency exchange rates, and so on. These factors may lead to some deviation of the forecast results from the actual situation. For example, a company may decide to increase investments, undertake new projects or acquire other companies, and these decisions may result in fluctuations in free cash flow. In addition, for example, increased competition in the market and adjustments in regulations and policies may have an impact on the company's income and expenses, which in turn may lead to fluctuations in valuation results. Secondly, in the collection and organization of data, some of the data on 2020 may indeed cause some errors. As far as the current situation is concerned, it is of great significance for industry practitioners and investors to study the problems arising from the development process of the Internet healthcare industry. Through the in-depth analysis of the problems and the proposal of solutions, it can help Internet medical enterprises find a sustainable development path in the fierce competitive environment and provide decision-making reference for investors. In addition, the study can also provide reference for relevant government departments and regulatory bodies to promote the standardized development of the Internet healthcare industry.

On this basis, it is hoped that in the future, under the development of Internet medical enterprises, intelligent medical equipment and technology will become more convenient and efficient, and

electronic medical records and health files will be comprehensively promoted. At the same time, through gene sequencing, big data analysis and other technical means, patients will be provided with more personalized diagnosis and treatment plans to achieve accurate treatment and individualized medical services. Eventually the Internet healthcare industry will accumulate a large amount of medical data, through the integration and analysis of which disease prevention, early diagnosis and treatment effect assessment can be better carried out. Overall, the future outlook of the Internet healthcare industry is full of hope, and driven by technological innovation and application promotion, it will provide people with more convenient, efficient and personalized healthcare services.

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