Value Investment Analysis of U.S. Biotech & Pharmaceutical Companies to 2024 - Based on Financial Indicators and Valuation Analysis and Application

Jin Ding *

College of Economic and Management, Anhui Jianzhu University, 230071 Hefei, China

* Corresponding Author Email: dj21204170201@stu.ahjzu.edu.cn

Abstract. This paper analyzes the value investment in the Biotechnology & Pharmaceuticals industry in 2024 to analyze the investment value and investment risk of American biopharmaceutical companies. In 2024, the first year after the end of the COVID-19, the global economy begins to recover and the biopharmaceutical industry's propensity to evolve changes with the end of the epidemic. The COVID-19 has led to closer ties and cooperation in the global biopharmaceutical industry. Under the new market landscape and competitive dynamics, investments in the biopharmaceutical industry will also change. The high-investment and high-yield characteristics of the biopharmaceutical industry have also made it attracted much attention from investors. At the same time, its high investment risk makes investment analysis and risk assessment particularly important. This paper systematically analyzes the financial operations and value investment opportunities of four biopharmaceutical industries based on financial indicators and valuation models, providing investors with comprehensive industry insights and investment recommendations.

Keywords: Biotechnology, value investing, new crown epidemic, financial metrics, valuation modeling.

1. Introduction

The biotechnology and pharmaceutical industry, a field of great interest globally, has always been in the spotlight of the medical and scientific community. After the end of the COVID-19, the economy began to gradually recover on a global scale and the biopharmaceutical industry transformed itself from the original state it had been in under the epidemic. The global New Crown epidemic has greatly increased the focus on biopharmaceutical technology, and countries have increased policy support for vaccine development and drug discovery. At the same time, the cause of epidemic prevention and control has strengthened technical cooperation and data sharing in the biopharmaceutical industry. Against this backdrop, many investors from all walks of life are beginning to realize that the biopharmaceutical industry has a higher investment value.

This paper aims to conduct an in-depth discussion on the biopharmaceutical industry in the United States from the perspective of value investment, and evaluate the financial status and investment value of Amgen, UTHR, Pfizer and AbbVie by analyzing the development status, scale and structure of biopharmaceutical industry in the United States from 2023 to 2024 using scientific research methods. Provide comprehensive industry insights and investment advice to investors and the industry. Through this study, this assessment hopes to better understand this dynamic and challenging industry, explore its potential investment opportunities, and make our contribution to the advancement of medicine and the well-being of society. In the following chapters, we will conduct an in-depth value investment analysis of the four biopharmaceutical companies based on both financial indicators and valuation models, exploring their financial status and potential investment value to present readers with a comprehensive and clear value investment analysis.

2. Overview of the Biotechnology and Pharmaceutical Industry

2.1. Industry Overview and Prospects

A year after the end of the COVID-19, the biopharmaceutical industry is stabilizing from a shrinking trend. Since the industry trough in 2022, the pharmaceutical industry's cost of capital has remained high and its access to finance has stabilized. The industry estimates the global biopharmaceutical market size to be USD 516.79 billion in 2024 and is expected to reach USD 761.8 billion by 2029, growing at a CAGR of 8.07% during the forecast period (2024-2029); the North American market continues to exist as the largest of these markets. Meanwhile, the industry sees the U.S. biopharmaceutical industry transitioning in 2024, as drug companies begin to prepare for a significant drop in sales revenue due to factors such as U.S. government pricing restrictions on a portion of healthcare drugs and patent term. Venture capital investment in the biopharmaceutical industry has returned to pre-COVID-19 outbreak levels, despite many unfavorable factors. According to the Industry Report 2023, biotechnology companies will still need to deal with the challenges of a shrinking market in 2024.

The biopharmaceutical industry is characterized by high investment, high return and high risk. Therefore, in recent years, the industry has received extensive attention from various countries, societies and collectives around the world. Currently, the United States seeks to develop stronger industrial policies to advance its bioeconomy and consolidate its global leadership in the life sciences. This policy should focus on the critical areas of equipment, talent, information and capital [1].

2.2. Industry Size and Structure

The U.S. is one of the most advanced countries in the world in terms of biopharmaceutical technology, with a global biopharmaceutical resilience index of 6.96 in 2023, the second highest in the world; Its technology has a generational advantage globally, and it is at the forefront of industrial technology layout and development compared to its major competitors, such as the United Kingdom, Germany, Japan, Switzerland and other biomedical powerhouses. The U.S. biopharmaceutical industry is concentrated in five regions, Boston, San Francisco, Washington State, North Carolina Research Park and San Diego, covering nine biopharmaceutical clusters. The high degree of integration of industry, academia and research has provided sufficient talent protection for the industrial cluster, the perfect venture capital institutions have provided financial protection for the industrial cluster, and the successful commercialization of leading enterprises has attracted many innovative enterprises to land in the country, forming a more complete industrial chain. Meanwhile, the biopharmaceutical industry is characterized by high investment, high return and high risk.

3. Analysis of Financial Indicators

3.1. Overview and Role of Financial Indicators

Financial indicators are important relative indicators reflecting the financial condition and operating results of an enterprise, and are important information support for financial analysis. On the one hand, enterprises can summarize their past operating conditions in a specific time through the information reflected in financial indicators; on the other hand, financial indicators are used by investors to analyze profitability, solvency, financial stability and make reasonable estimates and value investment decisions. Investors can use a company's book value and relevant historical information to weed out companies with poor prospects and filter out their investment targets [2].

A variety of more common and effective financial indicators are utilized in this paper. The financial indicators used are based on financial statement data obtained on April 7, 2024 from NASDAQ.

First, earnings per share, i.e., after-tax profit per share, is the corporate net profit or corporate net loss that common shareholders can earn or bear for each share they hold; earnings per share is used

to reflect the operating results of the four biopharmaceutical companies, to measure the level of profitability and investment risk of their common stock, and to assess the profitability and expected growth potential of the companies. Gross margin was also used in this evaluation to analyze the profitability, ability to control costs, market competitiveness, and many other operating conditions of the four biopharmaceutical companies.

Also, for this investment analysis, the common stock price of the four biopharmaceutical companies on April 7, 2024 was selected and divided by the earnings per share to obtain the stock price-to-earnings ratio on that date. P/E ratio is one of the indicators commonly used to assess whether the level of stock price is reasonable or not, and it is also an important future valuation in value investing. By performing future valuations, investors seek to identify investment opportunities by recognizing the intrinsic value of each security. If the market operates efficiently, the price of each security should reflect all available information about the company and thus equal its intrinsic value [3].

In addition to this, this investment analysis also utilizes the Price/Earnings Growth Rate (hereinafter referred to as PEG Ratio), which is the ratio of a company's price/earnings ratio to its earnings growth rate, a stock valuation metric invented and proposed by Jim Slater. In contrast to the P/E ratio, the PEG Ratio considers the growth of the business over the next few years while reflecting the current and past value of the company and stock, balancing current value with expectations. Since PEG Ratio needs to be calculated without considering the company's debt and consider the valuation of corporate growth, it is mainly applicable to industries with stable growth (weak cyclicality) and low debt (low leverage), and the biopharmaceutical industry is more in line with these characteristics. PEG Ratio is a comprehensive metric with a considerable amount of literature validating its validity, and it is considered superior to the commonly used valuation metric PE [4].

3.2. Selection of Sample Companies and Analysis of Financial Indicators

This investment analysis selects four large-scale U.S. biopharmaceutical companies that are considered to have investment value: Amgen INC, United Therapeutics Corporation, Pfizer INC, and AbbVie INC, as the object of value investment research, and also analyzes the profitability and the investment value of their common stocks based on the financial statement data and the calculated financial indicators of the four The profitability of the biopharmaceutical companies and the investment value of their common stocks are analyzed.

Table 1. Total Revenue

Total Revenue				
	Amgen Inc	UTHR	Pfizer Inc	AbbVie Inc
2020/12/31	$25,424,000	$1,483,300	$41,651,000	$45,804,000
2021/12/31	$25,979,000	$1,685,500	$81,288,000	$56,197,000
2022/12/31	$26,323,000	$1,936,300	$100,330,000	$58,054,000
2023/12/31	$28,190,000	$2,327,500	$58,496,000	$54,318,000

Table 2. Rev growth rate

	Amgen Inc	UTHR	Pfizer Inc	AbbVie Inc
TTM Rev	28,190	2,328	58,497	54,318
NTM Rev	33,170	2,720	59,786	54,465
Rev growth rate	17.7%	16.9%	2.2%	0.3%

Firstly, this analysis starts with the operational performance and valuation to analyze the profitability of the four biopharmaceutical companies (Table 1 and Table 2). The operational performance of listed companies is a crucial factor in investment considerations and decisions, and it has a profound impact on the long-term portfolios of stock market investors. Investors select appropriate performance metrics to assess the value and growth potential of a business and then select their investment targets [5].

Amgen and UTHR's total annual revenues are trending upward between 2020-2023, both growing steadily. According to Wall Street estimates for both companies, Amgen and UTHR will also see steady growth in total NTM revenue; Both companies are at a more favorable level with revenue growth rates of over 15%. Therefore, it can be concluded that Amgen's and UTHR's operations are good and stable from 2020 to 2023 and they are expected to maintain good revenues in 2024 as well. In contrast, Pfizer Inc. and AbbVie Inc.'s revenues have shown a downward trend over the past few years, with Pfizer's revenues in particular plummeting from $10.033 billion in 2022 to $5.84 billion in 2023. According to Pfizer's official note, the main reason for the decline in total revenues was a sharp 41% contraction in sales of the neo coronavirus vaccine Comirnaty and the anti-neo coronavirus drug Paxlovid, which, if you exclude these two major products, would have resulted in a 7% increase in year-on-year revenues instead. However, Pfizer Inc. and AbbVie Inc. also saw NTM revenues trend upward, albeit by very small margins. Their revenue growth rates were only 2.2% and 0.3%, respectively.

Table 3. Gross Profit Margin

	2020/12/31	2021/12/31	2022/12/31	2023/12/31
Amgen's Gross Profit Margin	75.8%	75.2%	75.7%	70.0%
UTHR's Gross Profit Margin	92.7%	92.7%	92.2%	88.9%
Pfizer's Gross Profit Margin	79.6%	62.1%	65.8%	57.3%
AbbVie's Gross Profit Margin	66.4%	69.0%	70.0%	62.4%

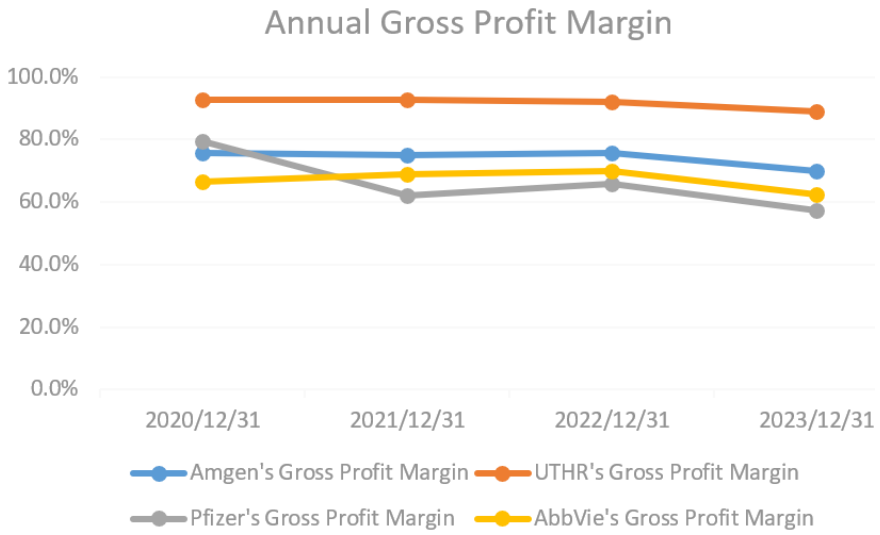


Figure 1. Annual Gross Profit Margin (Picture credit: Original)

Secondly, A company's operations and ability to earn profits is a major central concern in assessing the performance of a company and the value of its stock, and investors need to be able to judge a company's ability to meet its obligations to them by its profitability; At the same time, profitability is an important part of shaping a company's value, reflecting its prospects [6]. This this assessment focuses on the gross profit and gross margins of the four companies to determine their profitability, which combined with Table 3 and Fig. 1 shows that from 2020 to 2024, the gross margins of the four companies are on a downward trend. Among them, UHTR's gross margin is the highest, stabilizing at around 90%, reflecting its stable and strong profitability. The figures for Amgen and AbbVie are also stable, suggesting that these two companies have had more stable operations and profitability over the four-year period. However, Pfizer's gross margin is much lower and declines significantly in 2023; the main reason for this is the reduction in sales of its main products (the neo coronavirus vaccine Comirnaty and the anti-neo coronavirus drug Paxlovid) because of the end of COVID-19, as mentioned above.

Table 4. Investment Ratios (7-Apr-24)

	Amgen Inc	UTHR	Pfizer Inc	AbbVie Inc
Share price	$281.05	$228.57	$25.93	$179.72
TTM EPS	18.65	19.84	1.83	11.11
NTM EPS	19.54	23.38	2.22	11.19
EPS growth rate	4.8%	17.8%	21.3%	0.7%
Revenue growth rate	17.7%	16.9%	2.2%	0.3%
TTM P/E	15.07	11.52	14.17	16.18
NTM P/E	14.38	9.78	11.68	16.06
PEG	3.16	0.65	0.66	22.5
GP/A (most recent fiscal year)	20.3%	28.9%	14.8%	25.2%

On the other hand, in terms of investment ratios, Earnings per share (EPS) is the main primary indicator of the performance of the stock market price. Based on the changes and direction of the EPS and P/E ratios, it is beneficial for investors to identify potential valuable investment targets in the industry and make investment decisions [7]. Pfizer's TTM EPS and NTM EPS are much lower than the other three stocks (Table 4); One plausible reason for this phenomenon is that Pfizer's stock price is much lower than the other three stocks, at $25.93 on April 7, 2024; In addition, Pfizer's significantly lower net income in 2023 contributes to its lower EPS. However, Pfizer's EPS growth rate is the highest; the EPS growth rate is also significant for UTHR, suggesting that UTHR and Pfizer's stock have greater growth potential.

In addition, this this analysis notes the P/E ratios of the four companies. The rolling price-to-earnings (TTM P/E) ratios of all four companies are in the lower range and reasonable for the biopharmaceutical industry. UTHR has the lowest P/E ratio at 11.52%, followed by Pfizer at 14.17%. In contrast, the NTM P/E ratios of all four companies have declined. UTHR still has the lowest figure at 9.78. Pfizer has the most significant decrease in value at 11.68; this scenario has reasonable conditions for a significant decrease in Pfizer's operating position and earnings in 2023, which has led to a decrease in Pfizer's share price, which in turn has led to its lower NTM P/E ratio. The lower P/E ratios reflect, to some extent, the undervalued and more negative attitude of the market and investors towards UTHR and Pfizer.

Moreover, because of P/E ratio, this paper analyzes the P/E growth rate of four biopharmaceutical company stocks. If the stock price is fair, its P/E ratio should be equal to the dividend growth rate. If the PEG ratio is equal to 1, it indicates that the market is realistic in pricing stocks and is not making any mistakes considering the growth rate of earnings per share. If the PEG ratio is greater than 1, it indicates that the stock is overvalued or that the market expects a much higher dividend growth rate in the coming years. If the PEG ratio is less than 1, it indicates that the price of the stock is lower than its intrinsic value in the market or that the market expects that the company will not be able to achieve its expected goals and dividends. A low PEG indicates a low ratio of PE to dividend growth rate and promises a better future for stock returns. In contrast, a high PEG indicates a high ratio of P/E to dividend growth and is expected to provide a lower return for these stocks [8]. The P/E growth rates of the four stocks show a wide variation, with AbbVie's P/E growth rate being as high as 22.5, a value that is much greater than 1, indicating the willingness of investors to invest in this stock; At the same time, however, AbbVie's extremely high price-to-earnings growth rate suggests a significant risk of overvaluation, according to the Peter Lynch valuation method. In contrast, UTHR and Pfizer have the smallest P/E growth rates at 0.65 and 0.66, respectively. The values for UTHR and Pfizer are closer to 1, suggesting that the market and investors may be underestimating UTHR's growth potential, but still tend to be reasonably evaluating both stocks.

4. Valuation Model Analysis

4.1. Dividend Discount Mode

In this paper, the Dividend Discount Model (DCM) is selected to evaluate the expected return and value of the common stock of the above biopharmaceutical companies. The discounted dividend model is a type of stock valuation model based on the principle of applying the income capitalization method to analyze the value of common stock by discounting the stock's projected dividends over a certain period in the future to their present value using an appropriate discount rate. Investors can use the dividend discount model to assess the return spread and relative attractiveness among stocks, and can also use this return data and risk data to determine the optimal mix of assets within an asset allocation framework [9].

Dividend discount model equation:

$$V = \frac{D_1}{1+r} + \frac{D_2}{(1+r)^2} + \frac{D_3}{(1+r)^3} \quad (1)$$

$$= \sum_{t=1}^{\infty} \frac{D_t}{(1+r)^t} \quad (2)$$

V: Intrinsic value of stock
D_t: Dividends and bonuses expected to be paid in Period t
$r =$ Discount rate

4.2. Gordon Growth Model

Since dividends paid to investors cannot be projected indefinitely, in this this analysis we use the Gordon growth model, which is essentially a variation of the dividend discount model.

$$\mathbf{v} = \frac{\mathbf{D_1}}{\mathbf{r-g}} \quad (3)$$

V: Intrinsic value of stock
D_1: Dividends and bonuses expected to be paid in Period 1
$r =$ Discount rate
$g =$ dividend growth rate

Where the dividend growth rate is taken as the average of the growth rates over the period 2021-2024 (see Table 5). Because UTHR does not disclose information related to its dividend, this valuation model analysis was only used to evaluate the common stocks of Amgen, Pfizer, and AbbVie.

Table 5. Data of DDM

	Amgen Inc	Pfizer Inc	AbbVie Inc
Annual divdiend	$9.00	$1.68	$6.20
Discount rate	10%	10%	10%
Dividend growth rate	8%	4%	8%
Intrinsic value of stock	$450.00	$28.00	$310.00

5. Conclusion

According to the financial indicators and investment ratios, Amgen has good revenue capacity, gross margins are at a high level, and its common stock has high earnings per share. Also, the low P/E ratio indicates that it may be undervalued by the market and investors. On the other hand, according to the Gordon Growth Model, Amgen's stock value will increase significantly in the coming year. In conclusion, Amgen is a potentially valuable investment.

Due to the lack of relevant data information, the valuation model cannot be applied to evaluate UTHR. Therefore, based on the analysis of financial indicators, UTHR has good operating conditions and profitability, with the highest growth rate of earnings per share; the lower price-earnings ratio and price-earnings growth rate indicate that the market's expectation of UTHR may be underestimated

but still tends to be reasonable. UTHR's share price is high, and therefore it is more suitable for investors willing to take high risks or have a high-risk-high-return preference.

The market is really overestimating Pfizer's 2023 forecast relative to 2022. Although Pfizer's total revenue declined significantly in 2023 due to the reduction of its COVID-19 business, the higher EPS growth rate and lower P/E ratio and PEG suggest that it is undervalued by the market and has significant potential for growth. In addition, Pfizer's stock is much cheaper than other 3 stocks. On the other hand, based on the results of the valuation model analysis, Pfizer's stock value will increase in the coming year.

Regarding the analysis of financial indicators, AbbVie's revenue growth rate and earnings per share growth rate are relatively slight; compared to the other three stocks, AbbVie has the highest price-earnings ratio and the PEG Ratio is as high as 22.5, which suggests that the market and investors are more optimistic about AbbVie's estimation, but there is a high probability of overestimation. On the other hand, the Gordon Growth Model calculations show that AbbVie's stock value is still increasing in the coming year. Therefore, AbbVie can be a potential investment target, but it should not be prioritized over Amgen and Pfizer.

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