

# Research on the Investment Value of the Healthcare Industry: Analysis of Azenta, Universal Health Services, and Regeneron Pharmaceuticals

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**Abstract.** Nowadays, investors pay more attention to investing in different fields in order to generate significant value. There are numerous sectors in the stock market that have different characteristics, but it is obvious that there would be a shift, no matter good or bad, happening in the healthcare sector during the pandemic period. By collecting data of multiple ratios and factors from professional statistics websites including Yahoo Finance and Macrotrends, this paper focuses on three leading stocks in the healthcare sector by analyzing the risk, profitability, and investment value to produce a suitable investment strategy during post-covid-19 for the three stocks, thus applying it to the whole healthcare sector. The result shows that the healthcare sector, especially some fields in it, is worthy to invest. This paper provides a very distinct representation of stock analysis based on rigorous statistics, thereby the investors can come up with a preliminary investment plan for the present healthcare stock market. This paper will be an elementary analysis of healthcare in the US stock market today and provide valuable suggestions for investors.

**Keywords:** Healthcare sector; Stock market; Investment value; Risk; Profitability.

## 1. Introduction

The period from 2020 to 2022 is a disaster-prone time, with COVID-19 at the top of the list of troubles. As a new respiratory virus with extremely wide transmission and great harm, COVID-19 has caused a great impact on the entire healthcare industry. The healthcare sector consists of various industries ranging from pharmaceuticals to patient insurance. The systems on which these industries are built vary hugely from each other. A lot of factors can alter the decisions for investment, among which are positive factors like customer demographic and negative factors like reimbursement trends. The healthcare sector determines the production and service that are utilized to maintain patients' well-being. The healthcare industry in current days includes three main parts: services, products, and finance. It, however, can be traced down to a number of subsectors that rely on collaborative teams of professionals that undergo proper training to meet certain needs of the target population. Before the pandemic, healthcare had been one of the less popular topics in the investment world, and few could see future value in healthcare. However, the outbreak of the epidemic caused investors to pay more and more attention to their own health, which also let the healthcare industry gradually walk into the view of most investors. Investors began to invest in the healthcare sector because on the one hand, they want the healthcare sector to keep improving and thus can against the pandemic, and on the other hand, they want to gain financial benefits from investing in the healthcare sector. Therefore, in order to give investors a preliminary impression before investing in the healthcare industry and to provide some reference value for investors already invested in the healthcare sector, this study selected three stocks in different fields of the healthcare industry for data analysis and research. The results and investment strategies of this study will be presented in this paper.

The cognition of the healthcare sector has been developed for a long time. Forehand (2000) first discussed the performance of organizations in the healthcare industry in "Mission and Organizational Performance in the Healthcare Industry". She stated that the Healthcare industry may benefit if we continue to conduct research on the changes between the mission statements of the nonprofit and for-profit sectors. That opened a door for interpreting the healthcare sector from different views. Taner, Sezen, and Antony (2007) analyzed the healthcare sector using six sigma applications in "An

overview of six sigma applications in healthcare industry”. They indicate that 6 Sigma can minimize delays, measurements, and medical errors, resulting in near-perfect medical care. Lee, Lee, and Schniederjans (2011) analyzed the healthcare sector from a different point of view: the supply chain in “Supply chain innovation and organizational performance in the healthcare industry”. Their study discovers a positive correlation between the industry’s organizational performance and constructs of the innovation factor of the supply chains in the healthcare sector and provides us with useful planning information.

The stock market is no exception when it comes to the destruction done by the COVID-19 pandemic. Mazur, Dang, and Vega (2021) first discovered and analyzed such damage incurred by COVID- in the article “COVID-19 and the march 2020 stock market crash”. The S&P1500 shows evidence that could define the healthcare sector as one of the most well-performing sectors at that time. Then, Mittal and Sharma (2021) specifically focused on that change in the Indian stock market in “The Impact of COVID-19 on Stock Returns of the Indian Healthcare and Pharmaceutical Sector”. They suggest that the healthcare sector will encounter rapid growth in the near future in India. After reading their opinions, it can be seen that the American healthcare sector may have the same trend as the Indian healthcare sector, this is also one of the motivations for this paper.

Researchers also used different tools to predict the future trends of the healthcare sector. In “Analysis and Prediction of Healthcare Sector Stock Price Using Machine Learning Techniques: Healthcare Stock Analysis”, Ahmed, Neema, and Viswanadha (2022) predicted the future stock prices of the healthcare sector by using the algorithm. They got the result that the price of the healthcare sector will fluctuate up and down. Alam, Wei, and Wahid (2020) analyzed the sectorial performance by studying several events in Australia in “COVID-19 outbreak and sectoral performance of the Australian stock market: An event study analysis”. They suggest that the healthcare sector especially the pharmaceutical industry will perform well in the future.

Thus, this paper aims to understand the current situation for the healthcare sector in the stock market, then generate a suitable investment strategy for investing in the whole sector. The paper proves its significance as it provides investors with a general investment impression before investing in the healthcare sector, while the theoretical significance of this paper is to enrich the research on investing in the healthcare sector.

## **2. Method**

### **2.1 Analysis aspects**

This paper analyzed the three stocks from three perspectives: risk factors, profitability ratios, and market ratios. Each perspective will be composed of different variables. Risk, which occurs everywhere, is always considered primarily. In investment, the risk factor is the cornerstone, helping to interpret the representational rewards of the stock and the possibility of losing money in a business venture. As long as any asset is involved, risk factors will appear, from credit risk, and liquidity risk to investment risk, and currency risk, in many forms. By comparing the risk factors, it can be determined that the instability of the three stocks, effectively avoids an unnecessary loss. As a reason, this paper applied risk factors as the role of “threshold”. The second proportion of the analysis is the profitability ratios of stocks. These ratios can effectively calculate the firm's usage of its assets and produce an accreditable rate of return by controlling the rate of expense (Groppelli, p.442.). Therefore, they can indicate how efficiently a company profits and provides value for its shareholders. For the sake to make a good investment profit, this paper applied the profitability ratios as a good indicator. Besides, market ratios are also an indispensable part of the whole analysis. Since market ratios are the ratios used to assess the stock price, performance, and capability of a listed company. Current and potential investors use these ratios to determine whether a company's stock is overpriced or underpriced. In the end, this paper evaluated the three companies’ performance from different periods to see the general trends of the three companies.

## 2.2 Variables

### 2.2.1 Risk factors variables

This paper divided the risk factors into four parts: market performance, liquidity ratios, debt, and Beta index.

Market performance includes stock prices and market capitalization. Stock prices give basic information about the three stocks. Market capital refers to the total value of outstanding common stock owned by shareholders of a listed company. Combine with the stock prices, these two variables can show me whether the company is large or not.

Current ratios and quick ratios are involved in liquidity ratios. The current ratio gives an insight into the solvency of the company. It is calculated by dividing current assets by current liability. The current ratio, in this case, is below the industry average, which indicates that the corporation is at a higher risk of distress or default. Similarly, if a corporation has a very high current ratio in comparison to its peers, this is a sign that the management may not be using its assets wisely. The quick ratio measures a company's ability to use its near cash or quick assets to immediately eliminate or repay its current liabilities.

Debt includes debt ratio and debt-to-equity ratio. These two ratios which represent the debt that companies have currently can give investors a direct impression of whether the companies have the ability to pay their debt.

Beta is a measure of how individual assets move when the overall stock market rises or falls. Therefore, when the beta coefficient is added in small amounts, it is a helpful indicator of the individual asset's contributing risk to the market capitalization of a portfolio. Stocks with high beta are seen as riskier but likely to offer higher returns; Low-beta stocks have less risk and lower returns

### 2.2.2 Profitability variables

Profitability variables should represent the companies' ability to earn profit. Considering profit, total asset turnover, profit margin, return on assets, and return on net assets are selected in this paper. Total asset turnover measures a company's value of its sales or revenues relative to the worth of its assets. By checking the total asset turnover factor, individuals can understand how well a company is generating profits from its assets. Profit margin is calculated by dividing gross profit by net sales, which is the percentage of net sales transformed into earnings. Return on assets is computed by dividing a company's net income by its total assets. Return on assets is a quantitative financial ratio that describes the profitability of a company's total assets. Over time, an upward movement in return on assets suggests that the company is performing adequately in improving its profits per dollar invested. A declining return on assets indicates that the company may be overinvesting in assets that are not generating revenue growth, which suggests that the company is probably experiencing some difficulties. Return on equity is calculated by dividing net income by shareholders' equity. The higher the return on equity, the better a company is at turning equity financing into profits

### 2.2.3 Market ratios variables

To use different strategies to analyze the three stocks, the Market ratios should include the P/E ratio, P/B ratio, dividend yield, PEG ratio, MA50, MA200, insider buying, and stock buyback.

The P/E ratio is the price/earnings ratio, calculated as price divided by earnings. This ratio represents investors' expectations of the sustainability of the growth of the companies they invest in. A strong P/E ratio indicates that investors are being paid much more per share than the company is making, and a low P/E ratio indicates that growth is moderating, but is not necessarily an indication that the company is going into bankruptcy. The P/E ratio is the price to net worth ratio. It is computed by dividing a company's share price per share by its book value per share. A relatively low P/E ratio may indicate that the stock is under-valued. However, it can also indicate that there is something radically wrong with the corporation. The dividend yield is the annual dividend paid by a company as a percentage of the company's share price. Also known as P/E/earnings/growth rate, PEG is the stock's P/E ratio divided by the earnings growth rate for a specific time period. The PEG ratio is

regarded as an indicator of the true worth of a stock. The MA50 is the 50-day moving average of a stock's price. The MA50 and the MA200 are the 50-day moving average and the 200-day moving average, respectively. This is used frequently in momentum investing and if the MA50 is greater than the MA200, the stock would be considered a sound investment. Insider transactions are total purchases of stock by the owners of the company itself. A stock buyback is the re-acquisition by a corporation of its shares. Utilizing this concept, stockholders can receive dividend-related money through an alternative way.

## **2.3 Samples and data**

### **2.3.1 Sample companies' backgrounds**

Azenta (formerly Brooks Automation) was established in 1978. The company offers automation, vacuum, and instrumental equipment for a variety of markets, as well as semiconductor manufacturing (for sale), technical equipment manufacturing, and life sciences.

Universal Health Services (UHS) is a company that provides hospital and health care services. It has hospitals throughout the United States it is one of the Fortune 500.

Regeneron Pharmaceuticals is a US-based biotech corporation. The company initially focused on neurotrophic factors and their regenerative capabilities, hence the name. Its research then branched out into cytokines and tyrosine kinase receptors.

### **2.3.2 Data collection**

All the data is collected from Yahoo Finance and Macrotrends on August 2nd, 2022. All the data is the latest data on August 2nd, except for Azenta's profitability). And in particular, Azenta has an extremely high profit margin this year due to its sudden increase in the net income (Azenta sold its Semiconductor Automation to Thomas H. Lee Partners, L.P. and GOT 2.9 billion and received Cash), which also affects the return on assets and return on equity. So, Analyzing Azenta's ability to earn money using the data this year would not be appropriate for analyzing Azenta's ability to earn money. THIS PAPER chose the profit margin in 2021 to discuss the profitability.

## **3. Results**

### **3.1 Industry overall**

An analysis of the industry's leading companies found that investors were optimistic about the U.S. healthcare industry and expressed confidence in its long-term growth rate. Currently, the sector's P/E ratio has not moved much over three years. For the past three years, companies in the health care industry have seen their profits rise each year. At the same time, the majority of companies in the Healthcare sector have steadily improved their profits each year, indicating a promising outlook for the Healthcare sector.

The three companies are both industry-leading and valuable companies with large market capitalization, good P/E, and P/B ratios.

### **3.2 Enterprise heterogeneity**

#### **3.2.1 Risk analysis**

The risk factors of the three companies with their evaluated rankings are listed in table 1.

All three companies are large, but Regeneron Pharmaceuticals has a far more market cap than the other two, due to its high stock price and large number of shares. Azenta and Regeneron both have a high current ratio and a quick ratio above the industrial average, which suggests whether we suggest about the inventory or not, the two companies can liquidate their current assets more easily to pay down short-term liabilities. Although Universal Health Services has relatively low quick and current ratios, those ratios are still higher than one, representing a low liquidity risk.

Besides, the debt ratios and debt/equity ratios for Azenta are good, so it doesn't need to worry about its debt in recent times. Regeneron Pharmaceuticals and Universal Health Services have very high debt ratios, which suggests they may have problems paying their debts.

Comparing the beta, Regeneron has the smallest risk, thus Azenta and Universal Health Services all have a beta greater than 1, and Azenta has a higher risk among these two.

In conclusion, Azenta has the highest stock market risk, due to its highest beta. Universal Health Services is the second, followed by Regeneron.

Universal Health Services has the highest leverage risk because of its extremely high debt-to-equity ratio. Then Regeneron Pharmaceuticals is the next, followed by Azenta..

**Table 1. Risk Factors and Ranking**

Stock	Azenta (AZTA)	Universal Health Services(UHS)	Regeneron Pharmaceuticals(REGN)
Stock Price at 07/29/2022	68.2	112.53	581.52
Market Cap	5.112B	8.562B	63.275B
current ratio	4.92	1.22	4.76
quick ratio	2.08	1.04	3.07
debt ratio	0.27	0.53	0.26
debt/equity ratio	0.02	0.78	0.13
risk ranking (Beta)	1st	2nd	3rd
risk ranking (Leverage)	3rd	1st	2nd

### 3.2.2 Profitability analysis

According to profitability as summarized in table 2, Universal Health Services has a high total asset turnover compared to the healthcare industry, which suggests it has good asset management to increase sales. Regeneron has an average total asset turnover, meaning that it can use its assets appropriately. Azenta has a comparatively low total asset turnover, meaning that it does manage its assets properly.

**Table 2. Profitability Ratios and Ranking**

Stock	Azenta (AZTA)	Universal Health Services(UHS)	Regeneron Pharmaceuticals(REGN)
total asset turnover	0.3	0.99	0.63
profit margin	21.56%	7.25%	48.06%
return on asset	6.56%	6.34%	25.84%
return on equity	8.72%	14.79%	49.75%
net earnings	16,802	1,644,665	9,511,400
net earnings (EPS)	29.66	9.82	70.41
ranking	2nd	3rd	1st

Regeneron Pharmaceuticals has the highest profit margin, return on assets, and return on equity, so there is no doubt that Regeneron Pharmaceuticals is the number one in earning profit. Azenta has a high profit margin but low ROA and ROE, which suggests it is not making enough income from the use of assets, besides, it earns relatively little compared to its shareholder's equity. Universal Health Services has a low return on assets, so it has the same problem as Azenta. However, its return on equity is good.

In conclusion, Regeneron Pharmaceuticals is the No.1 for making a profit, that's without a doubt. According to the numbers, Azenta should be the second because although it has a low return on equity and return on assets, its profit margin is still high. Universal Health Services has the weakest ability to earn a profit, but considering its purpose is not to earn a lot of profit (it is a company that provides healthcare services for example hospitals), that's fair.

### Differences along the time periods

In order to do further research on the three stocks, this paper collected the data of the three stocks in 2020, and 2021 to see how their performances changed along with periods.

The first one is Azenta, the table 3 shows the ratios collected from Macrotrends for Azenta.

**Table 3.** Azenta's Ratios Along with period

Year	2020	2021	2022
P/E ratio	28.41	33.33	2.30
P/B ratio	2.91	5.82	1.42
profit margin	16.69%	21.56%	392.06%
return on asset	4.22%	6.56%	79.31%
return on equity	5.51%	8.72%	91.88%
current ratio	2.99	2.33	4.92
debt/equity ratio	6.20	7.60	1.58

From the table, the P/E ratio for Azenta increased from 2020 to 2021, then it dropped sharply in 2022. That is because of the great amount of cash received by Azenta this year (mentioned before). Those big amount of cash also affects the P/B ratio, profit margin, return on asset, return on equity, current ratio, and debt to equity ratio. This indicates that the outlook for Azenta's businesses this year is good, and the great amount of cash may change Azenta's predicament in previous years.

Universal Health Services has overall perfunctory progress. Table 4 shows the ratios of Universal Health Services.

**Table 4.** UHS's ratios along with time period

Year	2020	2021	2022
P/E ratio	13.51	10.44	11.46
P/B ratio	1.96	1.59	1.42
profit margin	7.72%	8.50%	7.25%
return on asset	7.25%	8.11%	6.34%
return on equity	15.36%	16.33%	14.79%
current ratio	1.12	1.19	1.22
debt/equity ratio	0.66	0.75	0.78

After analyzing the table, we can get the result that Universal Health Services' performance is floating around the average. It does have a significant increase or decrease in any of the ratios. According to that, the tock UHS is relatively stable.

However, Regeneron Pharmaceuticals is steadily improving, table 5 shows its ratios.

**Table 5.** REGN's ratios along with time period

Year	2020	2021	2022
P/E ratio	17.71	10.11	8.17
P/B ratio	5.10	3.98	3.23
profit margin	39.76%	51.65%	48.06%
return on asset	22.20%	36.60%	25.84%
return on equity	33.20%	51.20%	49.75%
current ratio	3.63	3.56	4.76
debt/equity ratio	0.25	0.14	0.13

Regeneron Pharmaceuticals' P/E ratios and P/B ratios are decreasing over the past few years, indicating that REGN is undervalued. It has more and more investment value along with time. Its profit margin is also increasing, which suggests that it has an increasing ability to earn a profit when time passes. Although it has a little bit high debt-to-equity ratio, it is still decreasing, indicating that REGN will have more power to pay its debt.

After all, by analyzing the performance of the three stocks during different time periods, this paper can generate the result that Regeneron Pharmaceuticals is the best company to invest in. Then Azenta is the next, followed by Universal Health Services.

#### 4. Discussion

This paper further investigates the market ratios as shown in table 6.

**Table 6.** Market ratios

Stock	Azenta (AZTA)	Universal Health Services(UHS)	Regeneron Pharmaceuticals(REGN)
P/E	2.3	11.46	8.17
P/B	1.42	1.42	3.23
dividend yield	0.30%	0.72%	0.00%
PEG	-0.03	1.53	5.1
MA50	71.36	111.32	611.28
MA200	87.49	128.2	631.74
insider buying	16,657	852,795	215,824
stock buyback	16,334(1.5%)	850,207(7.4%)	107,620(3.9%)

The three stocks both have low P/E and P/B ratios, so value investors will consider both. Although Universal Health Services has a P/E ratio higher than 10(11.46), it does not exceed a lot and its P/B ratio is good.

Income investors will not consider any of the three stocks, because their dividend yield is so low, that they fall far short of the standard: greater than 3%.

The growth investors will also not consider any of the three stocks, because none of them has a PEG ratio less than 1, even Azenta does, it has a negative PEG ratio due to the negative growth rate, so it is not a good investment for growth investors.

Since the three stocks' MA50 is less than their MA200, the momentum investors will not invest in any of them.

The investors considering the insider transactions and the stock buyback may take Universal Health Services into account since it has a good insider buying amount and its stock buyback is greater than 5% shares (7.4%).

#### 5. Conclusion

This paper analyzes whether the Healthcare sector has investment value in the current environment by using the most intuitive icon data combination method. There are 3 conclusions in this paper. Firstly, based on the background investigation and data analysis of the overall medical industry, it is found that the medical industry itself has certain investment value, and investors should be able to reap certain benefits from the investment in the medical industry. Secondly, according to the research of three medical industry companies, Regeneron Pharmaceuticals has the most investment value, followed by Azenta and Universal Health Services. Thirdly, in the process of research, it can be found that it is more appropriate to invest in drugs and medical equipment when making an overall investment in the healthcare sector.

There are several implications in this paper. After completing this survey, my suggestions are mainly divided into three aspects. The first aspect is about the investment indicators of the Healthcare sector investment, the second aspect is about the investment suggestions of different sectors of the Healthcare sector.

Regarding the selection of indicators, this paper focuses on the P/E ratio, P/B ratio, profit margin, return on asset, return on equity, current ratio, and debt-to-equity ratio. Because in the process of investigation, this paper found that these indicators particularly attracted my attention. P/E ratio and P/B ratio directly reflect whether the company has investment value. These two points should be considered when investing in any industry. In the beginning, investors may think that as a healthcare industry, its profit margin, return on asset, and return on equity should not be taken into consideration, but the fact is quite the opposite. In today's stock market, the earning power of the medical industry has greatly increased, thus indicating that we need to consider profitability, which measures the specific benefits investors are likely to get from the investment (39.0%). The current ratio and debt-to-equity ratio, as two important indicators to measure risk, cannot be ignored.

During the research, it is found that the pharmaceutical sector could be a good investment value, because Regeneron Pharmaceuticals is one of the leading companies in the pharmaceutical industry, and its performance is very good. The medical device industry is also worth investing in because the development of medical devices will be a very important aspect of the impact of the pandemic.

However, this paper still has certain limitations. The research method does not use a very accurate model, and there is no perfect statistical method, which suggests that the specific data may be somewhat different. In addition, Since the stock market is changing rapidly and continuously, this research may not provide a long-term investment strategy and long-term effective data. In the future, it needs to study the long-term validity of data, so as to obtain a complete set of investment systems in the healthcare sector that can be used for a long time.

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