DOI: 10.54254/2754-1169/107/2024.15428

Analysis of Financial Performances for REGENERON: Comparison with AMGEN, GILEAD, and BIOGEN

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Abstract: As a matter of fact, plenty of biomedicne companies are grown faster especially after the impact of Covid. This paper analyzes the financial performance of REGENERON in comparison to its peers AMGEN, GILEAD, and BIOGEN. The study reveals that REGENERON exhibits robust financial health, characterized by a high and steadily rising gross margin throughout 2023, a revenue growth rate of 7.76%, and strong profitability driven by its popular Eylea series in the ophthalmology market. Conversely, GILEAD faces significant challenges, including declining gross margins, stagnant revenue, and unfavorable investment metrics such as a negative PEG ratio and increased P/E ratio. AMGEN shows stable performance with moderate growth, while BIOGEN struggles with lower profitability and fluctuating financial metrics. According to the results, REGENERON is well-positioned for continued growth, provided it maintains operational efficiency and adapts to competitive market dynamics. This research offers critical insights into the financial strategies and market positions of leading biopharmaceutical companies, serving as a valuable guide for investors and stakeholders in making informed decisions in a rapidly evolving industry.

Keywords: Comparative analysis, pharmaceutical industry, biotechnology companies, financial metrics, profitability comparison.

1. Introduction

The biopharmaceutical industry, an essential player within the broader pharmaceutical sector, specializes in the development and production of medications using biological processes. The industry traces its origins to the mid-20th century with the advent of biotechnology. One of its cornerstone moments was the development of recombinant DNA technology in the 1970s, which allowed scientists to manipulate genetic material and paved the way for producing complex biological drugs [1-3]. Over the decades, biopharmaceuticals have become increasingly significant due to their capability to treat various conditions that are beyond the reach of traditional small-molecule drugs.

The industry's development has been marked by notable milestones such as the approval of the first recombinant protein, human insulin, in 1982, and subsequent breakthroughs in monoclonal antibody therapeutics in the late 20th century [4, 5]. These advances have opened new horizons in treating chronic and life-threatening diseases, including cancer, autoimmune disorders, and genetic diseases. In the present day, the biopharmaceutical industry stands as a rapidly evolving sector within the global healthcare landscape. This industry is characterized by its high level of innovation and substantial investment in research and development (R&D). Companies involved in this sector, such

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as Amgen, Gilead, Biogen, and Regeneron, are known for their intensive focus on R&D, which often accounts for a significant portion of their annual expenditures. According to data, the global biopharmaceutical market was valued at approximately USD 237.90 billion in 2020 and is projected to reach USD 526.39 billion by 2028, growing at a compound annual growth rate (CAGR) of 10.2% [6, 7]. The selected companies, i.e., Amgen, Gilead, Biogen, and Regeneron, have unique positions in the biopharmaceutical industry. Amgen, established in 1980, has made substantial contributions to the field with its innovative therapies that address serious illnesses like cancer and cardiovascular diseases. Studies highlight Amgen's strong portfolio and continuous investment in R&D as key factors driving its competitive edge [8, 9]. Gilead Sciences, known for its antiviral drugs, particularly in HIV and hepatitis treatments, has expanded its market presence through strategic acquisitions and robust R&D practices. The company's focus on developing accessible antiviral medications has been extensively analyzed, underlining its significant impact on public health [10]. Biogen, with its emphasis on neurological diseases, is recognized for pioneering therapies for conditions such as multiple sclerosis (MS) and spinal muscular atrophy (SMA). Research on Biogen’s strategies points to its sustained investment in neurology research and its ability to develop disease-modifying therapies [10]. Regeneron, distinguished by its proprietary technology platforms like VelociGene and VelocImmune, has gained recognition for its innovative approach to drug development. The company's advancements in monoclonal antibodies and its strategic collaborations are frequently cited as critical factors in maintaining its strong market position [11].

The motivation for this research is driven by the critical role the biopharmaceutical industry plays in advancing global healthcare, especially in addressing unmet medical needs. Understanding the financial performance, research strategies, and market positions of leading companies like Amgen, Gilead, Biogen, and Regeneron can provide valuable insights into the industry's future trends and challenges.

2. Data and Method

The data for this analysis are sourced from the annual and quarterly financial reports of the selected companies, financial data platforms, and publicly available market information databases. These sources provide an accurate reflection of the companies' financial health and market performance. The companies selected for this comparative study are Amgen, Gilead, Biogen, and Regeneron. These companies are all major players in the biopharmaceutical industry, with significant influence and market share. The selection of these companies is based on several factors:

- Industry Representation. These four companies are globally renowned biopharmaceutical enterprises that hold a large market share and influence, providing a broad representation of the industry.
- Product Diversity. Each selected company offers a wide range of products across various therapeutic areas, including treatments for cancer, cardiovascular diseases, HIV, and ophthalmology, among others. This diversity helps in comprehensively understanding the biopharmaceutical industry's landscape.
- Data Availability. The financial and market data for these companies are transparent and readily accessible, ensuring the reliability and accuracy of the analysis.

The data used spans the most recent five fiscal years, including up to the fourth quarter of 2023. This time frame ensures that the analysis remains relevant and up to date. Comparative parameters and indicators are as follows:

- Share Price. The current share price is used as an indicator of market valuation and investor confidence.

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- EPS Growth Rate (Earnings Per Share Growth Rate). EPS Growth Rate=(Current period EPS – Previous Period EPS)/(Previous Period EPS)*100%. This metric reflects the company's growth in earnings per share, which is a critical measure of profitability.
- Revenue Growth Rate. Revenue Growth Rate= (Current Period Revenue – Previous Period Revenue)/(Previous Period Revenue)*100%. This indicator measures the growth in the company's operating income, representing its market expansion capabilities.
- TTM P/E (Trailing Twelve Months Price-to-Earnings Ratio). TTM P/E= (Current Share Price)/(EPS for the Last Twelve Mouths). The TTM P/E ratio evaluates the company's profitability relative to its share price over the past year, helping investors gauge the rationality of its market valuation.
- NTM P/E (Next Twelve Months Price-to-Earnings Ratio). NTM P/E= (Current Share Price)/(Expected EPS for the Next Twelve Months). This metric provides a forecast of the company's profitability for the upcoming year, influencing investment decision-making.
- PEG Ratio (Price/Earnings to Growth Ratio). PEG Ratio = (TTM P/E)/ (EPS Growth Rate). A PEG ratio below 1 typically suggests that the company is undervalued relative to its growth. potential, whereas a ratio above 1 may indicate overvaluation.
- GPA Ratio (Gross Profit to Asset Ratio). GPA= (Gross Profit)/ (Total Assets) *100%. This ratio measures the efficiency of the company in generating gross profit from its assets, indicating its asset utilization effectiveness.

For interpretation of indicators, it has been given as follows:

- Share Price reflects the company’s popularity and investor confidence in the capital market.
- EPS Growth Rate indicates whether the company’s per-share earnings are growing, an essential metric of profitability.
- Revenue Growth Rate determines the company’s capability in expanding its market reach and operational performance.
- P/E Ratios (TTM and NTM) are key metrics for evaluating whether a stock is fairly valued, often influencing investor decision-making.
- PEG Ratio offers a nuanced view by relating P/E ratio to earnings growth, aiding in understanding if a stock is undervalued or overvalued.
- GPA Ratio provides insight into how effectively a company utilizes its assets to generate gross profit, an indicator of asset efficiency.

3. Results and Discussion

Analyzing the financial data provided for AMGEN, GILEAD, BIOGEN, and REGENERON, one offers an expanded discussion keeping the intended message intact with a thorough exploration of the numbers from the image as shown in Table 1.

Table 1: Financial Analysis of Four Companies: AMGEN, GILEAD, BIOGEN, and REGENERON.

Share Price	306.03	70.92	224	1053.14
EPS Growth Rate	3.13%	23.63%	-61.81%	-9.03%
Revenue Growth Rate	7.09%	-0.60%	-3.32%	7.76%
TTM P/E	16.52	10.52	15.22	27.96
NTM P/E	15.83	18.8	14.31	28.37
PEG	4.39	-44.1	6.31	-1.43
GP/A (Last Fiscal year)	20.32%	33.19%	27.20%	34.16%

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AMGEN's stock price stands at $306.03. While many financial metrics for AMGEN are rather average, its revenue growth rate is relatively excellent at 7.09%. This indicates the company's ability to increase its top line reasonably well. However, other financial data points, such as the EPS growth rate at 3.13%, TTM P/E at 16.52, and NTM P/E at 15.83, are quite general and do not stand out compared to industry peers. Its PEG ratio is high at 4.39, suggesting that investors might be paying a premium for future growth. The Gross Profit to Assets (GP/A) ratio of 20.32% is moderate compared to the other companies. GILEAD exhibits the highest EPS growth rate among the four companies at 23.63%, indicating strong earnings performance. Its TTM P/E ratio of 10.52 is the lowest among the companies, suggesting that it may be undervalued relative to its earnings. The GP/A ratio for GILEAD is 33.19%, ranking it second, but it is close to the leader, REGENERON. Despite these strong points, GILEAD has a substantial drawback, with a PEG ratio of -44.1, the worst among the four. This negative PEG ratio can be misleading and generally implies that the company may not have sustainable growth expectations. Additionally, its NTM P/E sits higher at 18.8, reflecting uncertainty about future earnings. BIOGEN's financial data depict some significant challenges. It has the worst EPS growth rate of -61.81% and a negative revenue growth rate of -3.32%. These figures indicate that BIOGEN is currently facing performance issues both in terms of profitability and revenue generation. Nonetheless, its TTM P/E ratio at 15.22 is relatively low compared to others, indicating that its stock may be undervalued relative to its current earnings. The NTM P/E at 14.31 suggests that future earnings expectations could improve, showing some optimism among investors. BIOGEN's PEG ratio is positive at 6.31, although high, it indicates that there might be some potential for future growth. However, its GP/A ratio at 27.20% is lower than most of its peers, except AMGEN. REGENERON's data depict a mix of strong and weak points. Its EPS growth rate is -9.03%, and both its TTM and NTM P/E ratios are notably high at 27.96 and 28.37 respectively. These high P/Es suggest that the market expects significant future earnings, yet the current performance is not favorable. The PEG ratio for REGENERON is -1.43, indicating anticipated negative earnings growth. Despite these negative aspects, REGENERON excels in other areas. Its revenue growth rate is the highest among the companies at 7.76%, showcasing strong top-line expansion. Additionally, REGENERON has the highest GP/A ratio at 34.16%, reflecting efficient use of assets to generate gross profit.

Table 2: Annual Gross Margin and GP/A Ratio for Gilead.

	gross margin	GP/A
2020	81.48%	29.41%
2021	75.82%	30.47%
2022	79.26%	34.23%
2023	76.03%	33.19%

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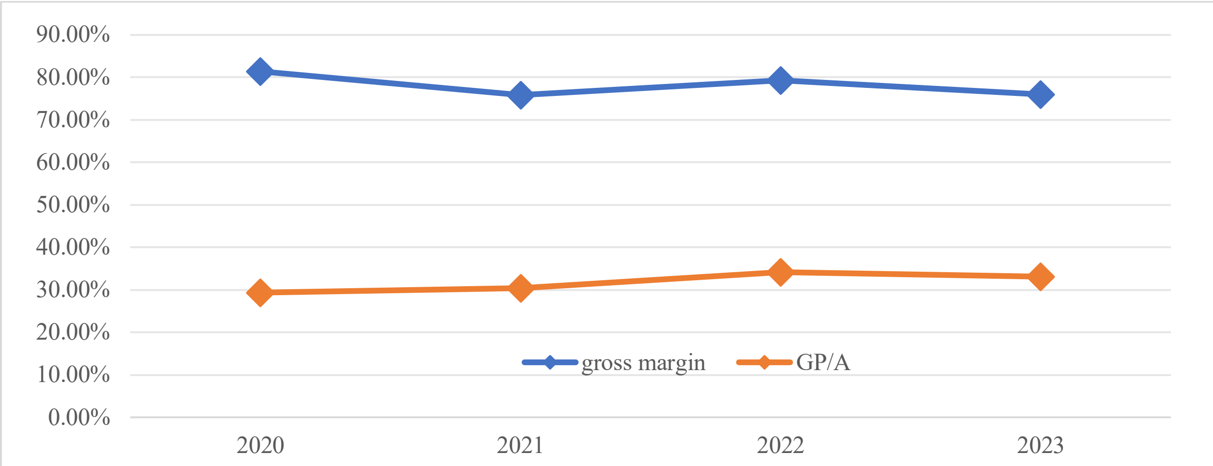

Figure 1: Annual GP/A and Gross Margin Trend of GILEAD.

Considering the analysis provided, GILEAD and REGENERON are recommended for further review. GILEAD (seen from Table 2 and Fig. 1), despite its negative PEG ratio, demonstrates the highest EPS growth rate and the lowest TTM P/E, suggesting it might be undervalued with strong earnings performance. REGENERON, on the other hand, shows robust revenue growth and efficiency in asset utilization, despite its negative EPS growth and high P/E ratios. Both companies have unique strengths and potentials that merit deeper analysis. Therefore, from the above analysis, GILEAD and REGENERON can be considered for the pending set for the next detailed evaluation stage. By analyzing the provided financial data for GILEAD, one observe a steady rise in the Gross Profit to Assets (GP/A) ratio over the years from 2020 to 2023. The GP/A ratio has seen a consistent upward trend. In 2020, the GP/A was 29.41%. In 2021, it increased slightly to 30.47%. This growth trend continued into 2022 with the GP/A reaching 34.23%. By 2023, the GP/A stood at 33.19%, indicating a slight decrease compared to 2022 but still maintaining an overall upward trajectory over the period.

However, when examining GILEAD's gross margin over the same period, one notes some variability. The gross margin started at a high of 81.48% in 2020. In 2021, it experienced a decline to 75.82%. There was a recovery in 2022 with the gross margin climbing back to 79.26%. In 2023, a slight decrease was observed again, bringing the gross margin to 76.03%. Additionally, quarterly data from 2023 Q2 to 2024 Q1 shows further fluctuations in the gross margin is as follows: 2023 Q2 with 78.15%; 2023 Q3 with 77.80%; 2023 Q4 with a significant drop to 70.62% and 2024 Q1 with light recovery to 76.79%. Overall, GILEAD's GP/A ratio has risen steadily over the years, reflecting improved efficiency in generating gross profit relative to its asset base. This consistent upward trend indicates robust operational performance. However, the gross margin, despite being generally stable, has shown some signs of variability and a minor downward trend recently.

The gross margin dipped noticeably in 2021 compared to 2020, recovered in 2022, and showed a slight decrease again in 2023, indicating fluctuations in the company's cost management or pricing strategies. The quarterly data further reinforces this observation with a marked drop in Q4 2023. The overall analysis highlights that while GILEAD's GP/A has consistently improved, its gross margin exhibited a steady yet variable trend with recent minor decreases, suggesting areas for potential cost efficiency improvements or strategic adjustments.

An analysis of REGENERON's financial data showcases a noticeable and significant downward trend in the Gross Profit to Assets (GP/A) ratio over recent years (seen from Table 3 and Fig. 2). Starting from 2020, the GP/A was at 42.98%. By 2021, though the GP/A showed an initial increase to 53.60%, it sharply declined to to 36.33% in 2022 and reaching 34.16% in 2023. This consistent decrease in GP/A over the years indicates that REGENERON has been less efficient in generating

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gross profit relative to its asset base recently. Despite the significant downward trend in GP/A, REGENERON has managed to maintain a steady gross margin. The gross margin was 86.82% in 2020; slightly decreased to 84.83% in 2021; rebounded to 87.18% in 2022 and dipped slightly again to 86.16% in 2023. The gross margin data reveals that despite fluctuations, the variations have been relatively minor, showing a generally stable trend. This stability indicates consistent control over cost of goods sold relative to revenue, maintaining a stable profitability from core operations despite changes in operational efficiency.

Analyzing the quarterly gross margin data from 2023 Q2 to 2024 Q1 supports this observation of sustained stability, where 2023 Q2 is 86.82%, 2023 Q3 is 84.83%, 2023 Q4 is 87.18% and 2024 Q1 is 86.16%. These quarterly figures further corroborate the annual trend, highlighting only minor fluctuations quarterly, confirming REGENERON’s ability to sustain its gross margin effectively.

To summarize, REGENERON’s GP/A ratio has demonstrated a substantial and clear downward trend over the analyzed period from 2020 to 2023, reflecting decreased efficiency in generating gross profit from its assets. Conversely, the gross margin has shown remarkable stability, with only minor variations year over year and quarter over quarter. This steadiness in gross margin highlights REGENERON’s strength in maintaining profitability from its core operations, despite the challenges evident in its asset utilization efficiency. In essence, while the GP/A ratio signifies potential areas for improvement in operational efficiency, the reliable gross margin underscores REGENERON’s consistent productivity and effective management in keeping production costs relative to revenue stable.

Table 3: Annual Gross Margin and GP/A Ratio for Regeneron.

	gross margin	GP/A
2020	86.82%	42.98%
2021	84.83%	53.60%
2022	87.18%	36.33%
2023	86.16%	34.16%

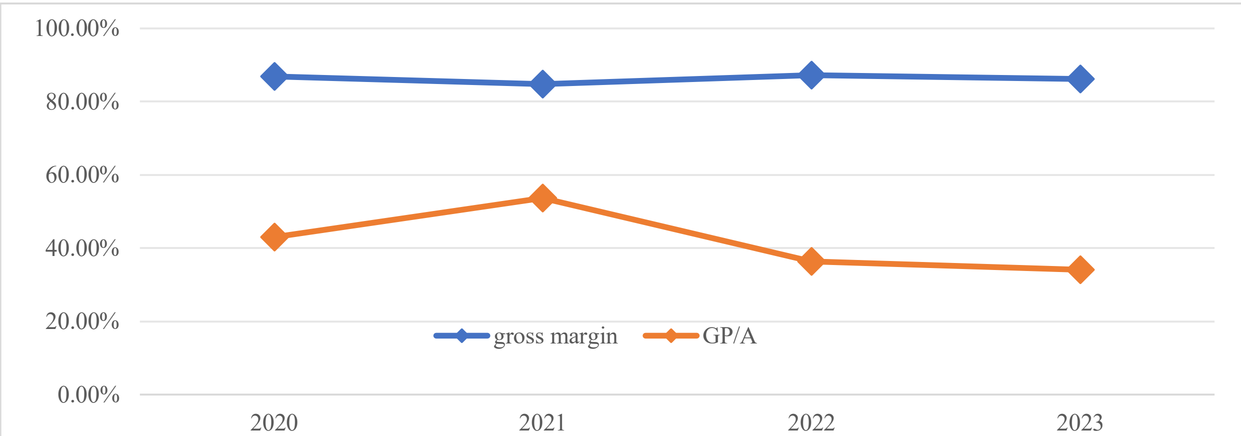

Figure 2: REGENERON: Annual GP/A and Gross Margin Trend.

By comparing the two results, one can derive more detailed insights into the quarterly performance of gross margins for these two companies, while aligning with the existing conclusions. From the provided, REGENERON’s gross margin has shown a steady and continuous upward trend over the last four quarters. In 2023 Q2, REGENERON's gross margin was 86.82%. It decreased slightly in 2023 Q3 to 84.83%. There was a significant rebound in 2023 Q4 to 87.18%, marking its highest point in this period. As of 2024 Q1, the gross margin maintained a robust level at 86.16%. Overall, REGENERON has demonstrated a steady and sustained gross margin over the last four quarters, with slight fluctuations but maintaining a generally high standard. This trend indicates reliable operational efficiency and cost management, reflecting positively on the company's ability to consistently convert revenue into gross profit.

In contrast, GILEAD experienced more noticeable fluctuations in its quarterly gross margin. The gross margin was 78.15% in 2023 Q2; slight decrease in 2023 Q3 to 77.80%; significant drop in 2023 Q4 to 70.62%, indicating a substantial decrease during this quarter and partial recovery in 2024 Q1 to 76.79%. The data shows that GILEAD's gross margin has been more volatile compared to REGENERON. The gross margin experienced a considerable drop between 2023 Q3 and Q4, followed by a recovery in 2024 Q1, suggesting instability in operational or cost management aspects during this period. By comparing the quarterly gross margin data for GILEAD and REGENERON, one finds that REGENERON has maintained a steady and continuous upward trend in its gross margin over the past four quarters. Despite minor fluctuations, REGENERON's gross margin has generally been stable and high, reflecting consistent performance in converting revenue into gross profit.

In contrast, GILEAD’s gross margin has fluctuated significantly over the same period, demonstrating less stability. The noticeable decline in 2023 Q4 followed by a partial recovery in 2024 Q1 highlights the volatility in GILEAD’s gross margin, affecting its overall performance negatively compared to REGENERON. From the quarterly data, it is evident that REGENERON's gross margin has remained steady and relatively high, indicating strong and consistent operational efficiency. On the other hand, GILEAD’s gross margin has shown larger fluctuations and more variability, illustrating a relatively less stable performance. Thus, REGENERON's ability to maintain a steady gross margin over recent quarters places it in a more favorable position compared to GILEAD in terms of gross margin stability and consistency.

Regarding to reasons for rejecting GILEAD, in Q4 2023, GILEAD experienced a significant decline in its gross margin, which decreased by 7.18% compared to Q4 2022. This reduction indicates that the company's cost efficiency is diminishing, raising concerns about its ability to maintain profitability margins. The overall gross margin for each quarter in 2023 was consistently about 8% - 10% lower than that of REGENERON, illustrating a notable discrepancy in operational efficiency between the two companies. Besides, GILEAD’s revenue decreased by -0.60% during the period, reflecting a lack of growth in its top-line income. This stagnant or diminishing revenue stream is a red flag for potential investors as it suggests the company is struggling to expand its market presence or maintain its current customer base. Moreover, the PEG ratio for GILEAD is alarmingly low at -44.1, indicating negative growth expectations. Moreover, the P/E ratio has increased significantly, which implies that the stock is becoming more expensive relative to its earnings. This escalation in P/E ratio reduces the overall cost performance of buying GILEAD’s stock, making it less attractive for value-focused investors. Moreover, due to the above factors, the cost performance of buying GILEAD stock has decreased significantly. The extensive fluctuations in gross margin coupled with revenue decline and unfavorable PEG and P/E ratios suggest that investing in GILEAD may not be prudent given the current financial outlook.

For acceptance of REGENERON, it boasts a compelling revenue growth rate of 7.76%, indicating robust expansion and effective market penetration. This performance stands out as the highest profitability among the four analyzed stocks. The company’s flagship product, the Eylea series, is highly regarded in the ophthalmology sector, enjoying considerable consumer demand. This prevalent usage underlines a solid market base and contributes to REGENERON’s dominant position in the field. Throughout 2023, REGENERON’s gross margin has steadily risen and consistently maintained at a high level. This increase reflects improved cost efficiency and solid operational management, further enhancing the company's attractiveness to investors. With a PEG ratio of -1.43, the market holds relatively optimistic future expectations for REGENERON. Despite the negative EPS growth rate, the low PEG ratio may indicate potential for future growth and value, contingent upon market conditions and company performance.

For risks associated with REGENERON, one of the key risks for REGENERON is its high P/E ratio, which suggests that the stock is already priced at a premium. This high valuation might lead to overpricing concerns, making the stock less attractive from a valuation perspective. Considering the negative EPS growth rate, there are apprehensions about further reductions in earnings per share due to changing market demand and competitive dynamics. Such changes could adversely impact the valuation of REGENERON’s stock. The biopharmaceutical field is on the cusp of significant technological transformations, particularly with the advent and explosive development of deep learning models in artificial intelligence. These advancements may usher in new competitors and innovations that could threaten REGENERON’s market position. Consequently, the company's ability to maintain its market dominance might be challenged by evolving technological landscapes and emerging industry players.

In conclusion, given the present financial and market conditions, GILEAD presents several concerning factors that suggest a cautious approach for potential investors. The company is experiencing declining gross margins and revenue, coupled with unfavorable PEG and P/E ratios. These financial indicators collectively lead to a recommendation against investing in GILEAD currently. Conversely, REGENERON exhibits significant promise due to its strong revenue growth, popular product line, stable gross margins, and optimistic market outlook. However, investors should be mindful of the high P/E ratio, potential declines in EPS, and technological disruptions that could pose risks to REGENERON’s market standing. These comprehensive insights aim to guide informed investment decisions, encouraging investors to carefully balance the attractive opportunities with the inherent risks associated with each company. Such a balanced approach ensures a more strategic and informed investment strategy.

4. Conclusion

To sum up, this analysis compares the financial performances of REGENERON with its peers AMGEN, GILEAD, and BIOGEN to assess relative strengths and weaknesses. REGENERON demonstrates robust financial health with a consistently high gross margin throughout 2023, bolstered by a strong revenue growth rate of 7.76% and sustained profitability. In contrast, GILEAD faces challenges such as declining gross margins and stagnant revenue, contributing to unfavorable investment metrics. AMGEN shows competitive stability with moderate growth metrics, while BIOGEN struggles with lower profitability and fluctuating financial metrics. Looking ahead, REGENERON’s strong market position and steady financial performance suggest potential for continued growth, contingent upon sustaining operational efficiency and navigating competitive pressures in the biopharmaceutical sector. This study provides valuable insights into the financial strategies and market competitiveness of leading biopharmaceutical companies, aiding investors and stakeholders in making informed decisions amidst dynamic market conditions.

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