Corporate Financial Analysis of American Health Companies

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Summary of Companies

Johnson & Johnson is an American multinational medical devices, pharmaceutical and consumer packaged goods manufacturer founded in 1886. Johnson & Johnson is headquartered in New Brunswick, New Jersey with the consumer division being located in Skillman, New Jersey. The corporation includes some 250 subsidiary companies with operations in over 57 countries and products sold in over 175 countries. Johnson & Johnson's brands include numerous household names of medications and first aid supplies. The company will be denoted in this report by its traded symbol: JNJ.

Moderna is an American biotechnology company founded in 2010. Moderna is headquartered in Cambridge, Massachusetts. The company's only commercial product is the Moderna COVID-19 vaccine; however, the company has 24 vaccine candidates The company will be denoted in this report by its traded symbol: MRNA.

Pfizer an American multinational pharmaceutical and biotechnology corporation founded in 1849. Pfizer is headquartered on 42nd Street in Manhattan, New York City. Pfizer develops and produces medicines and vaccines for immunology, oncology, cardiology, endocrinology, and neurology. The company ranks 64th on the Fortune 500 and 49th on the Forbes Global 2000. The company will be denoted in this report by its traded symbol: PFE.

I. Corporate Governance Analysis

For this analysis, I analyzed 3 American health companies that manufacture COVID-19 vaccines. JNJ and PFE are larger and older pharmaceutical companies with numerous divisions, while MRNA is a comparatively younger company that focuses solely on vaccine manufacturing. Through such a spectrum, I found some interesting similarities in the executive leadership of these companies. First, the CEO of all 3 companies has been in the firm for a relatively long time. Among the 3 companies, 2 have CEOs who have been in positions for at least 10 years. Even with Bourla (CEO of PFE) only being in position for 2 years, he has taken numerous executive positions and has served 28 years in PFE.

The Board of Directors of these companies shows another example of these companies having similar setups. Both PFE and JNJ have a chairman of the board who is also the CEO, this could be a conflict of interest because the CEO would vote for their compensation. The average number of members on the Boards is 11 members, with MRNA having the lowest count at 8. MRNA's board has the most insiders on the board, which puts the company in a difficult position to go against the CEO in any critical business decision. However, research done by the Wall Street Journal shows that smaller boards tend to receive larger returns because smaller boards tend to be more decisive, cohesive, and hands-on. In the research, companies with less than 12 members on their board were considered small. Given these metrics, only MRNA's board meets the qualification to be called a small board.

https://www.wsj.com/articles/smaller-boards-get-bigger-returns-1409078628
https://www.investopedia.com/financial-edge/0912/3-reasons-to-separate-ceo-and-chairman-positions.aspx

Note that none of the board members of the 3 companies serve as executive members in the other companies. Based on this, the companies will not be biased towards each other even if some board members are also board members in other companies.

CEO Summaries	JNJ	MRNA	PFE
Name	Alex Gorski	Stéphane Bancel	Albert Boula
Age	61	48	59
Tenure at Firm	13	10	28
Tenure as CEO	9	10	2
Board Membership	IBM	Indigo AG	0
Stock Ownership	0.11%	7.20%	1.45%
CEO Pay (Million)	29.6	12.85	17.9

(Data as of June 2021)

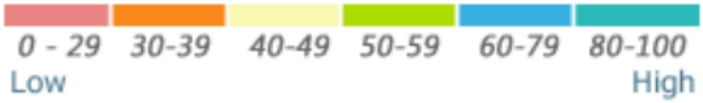
Board of Directors	JNJ	MRNA	PFE
# of Members	14	8	12
# of Insiders	1	3	1
% of Insiders	7%	38%	8%
CEOs at other Companies	1	1	2
CEOs at related companies	0	0	0

Analysts	JNJ	MRNA	PFE
# Analysts	39	25	29
# Buy	22	17	13
# Sell	0	2	0
# Hold	5	6	16
# Mean Recommendation (Strong Buy) 1-5 (Sell)	1.0	1.5	2.0

The table above shows aggregated data from marketwatch.com and NASDAQ.com, placed on a Mean Recommendation scale based on the analysts' recommendations.

ESG Metrics	JNJ	MRNA	PFE
CSRHub Score	96	48	91
MSCI Rating	BBB	BB	B

The data above is from CSRHub and MSCI. CSRHub measures how companies perform in their overall Corporate Social Responsibility. CSR helps identify companies that empowers employees to leverage the corporate resources at their disposal to do good. Their numbers are based on the following scale:



The MSCI ESG rating weighs ESG risks, according to time horizon and impact. ESG ratings helps investors identify companies that are leading or lagging within their industry. Their ratings are based on the following scale:

The primary difference between the two scales is that CSR aims to make a business accountable, while ESG criteria make such efforts measurable. Based on the two scales, JNJ has the highest CSR and ESG ratings. MRNA falls slightly below the average CSR score, but they could move their way up by making correct changes. PFE has the lowest ESG rating but has a high CSR score indicating that the companies are making changes in the right direction.

I further analyzed Corporate Governance by using another source, the Institutional Shareholder Service's Governance QualityScore system applied to the companies.

Corp. Governance	JNJ	MRNA	PFE
ISS Quality Score	8	N/A	2
Board Structure	8	N/A	7
Compensation	9	N/A	1
Shareholder Rights	4	N/A	1
Audit & Risk Oversight	10	N/A	10

*Note that 1 indicates low governance risk, while 10 indicates high governance risk. (Scores as of Jun 2021)

JNJ: The best performer in CSR and ESG. Highlights include auditing and accounting for large negative consequences, board structure potentially for having a large board size, and compensation.

MRNA: Not listed on ISS.

PFE: Highlights include Audit and Risk Oversight and board structure, which could be because of the large board size.

While CSRHub and ISS show that PFE have the best combined score for Corporate Governance, the company has the worst MSCI ESG rating. Similarly, JNJ has the best CSRHub

and MSCI score, yet falls behind in ISS' Corporate Governance score. MRNA has the lowest CSR score, a below average MSCI rating, and lacks information from the ISS.

II. Stockholder Compensation

Stock Ownership	JNJ	MRNA	PFE
Insiders	0.08%	9.69%	0.04%
Industry Avg.	13.85%	8.82%	13.85%
Institutional	69.34%	53.49%	66.66%
Industry Avg.	25.70%	37.32%	25.70%
Top Holders	Vanguard Group, Inc. (8.72%)	Baillie Gifford and Company (11.3%)	Vanguard Group, Inc. (8.1%)
Total Shares (Top 10 Institutions)	30.20%	34.58%	35.03%

As seen in the table above, all of the companies varied greatly in the stock ownership of Insiders and Institutions versus the industry averages of those groups. The larger companies have little Insider stock ownership, while MRNA has above industry average Insider stock ownership. Overall, all companies have greater institutional ownership against the average.

Top 10 Institutional Ownership	JNJ	MRNA	PFE
Investment Managers	70%	60%	60%
Banks	30%	30%	40%
Venture Capitalists	0%	10%	0%

Note that Bancel is both the founder and CEO of MRNA; he holds 7.2% of the company's stock. His position in the company could imply that he would be incentivized to take actions that are in the interest of stockholders.

In breaking down the Top 10 institutional ownerships, the largest owners are traditional investment managers. The institutions are correlated with their marginal investors, which shows that these institutions are highly diversified; therefore, the only risk that cannot be diversified away must be included in the discount rate for these companies.

III. Risk and Return

To assess the risk profile of the companies, I ran a regression on the company's stocks against the market from Jan 2016 to Dec 2020. The regression computed the beta, intercept, correlation, and standard error of beta for each company. The regression beta for the companies ranged from 0.67 to 1.98, indicating varying volatilities for each company. Note that volatility represents a greater level of risk, but also a greater possibility of returns for the company. PFE

and JNJ have a lower volatility compared for MRNA, which could be because of the maturity of the two companies.

Using the regression data, I calculated the annualized Jensen's alpha for each company to determine the risk-adjusted performance. MRNA had the highest Jensen's alpha, stipulating that the company "beat" the market. A Jensen's alpha of 0 indicates that the company's stock returned a price corresponding to the risk. The Jensen's alpha was calculated using historical performance of the company against the S&P 500. Moderna's book value for net income from 2018-2020 has been negative; however, their stock price grew 1166% since the company's IPO in 2018. MRNA's excess returns can be explained by the surge in the company's stock prices since the beginning of the COVID-19 virus. To determine whether the excess returns of the company were because of company-specific actions, I checked the R squared of the companies. The R squared can be interpreted as the correlation between the movement of the index and the company's stock prices. MRNA had the lowest R squared, stipulating that success can be attributed to management decisions, and therefore the company's stock faces less market risk.

Risk Profile	JNJ	MRNA	PFE
Risk Free Rate	1.57%	1.57%	1.57%
Risk Free Rate (Monthly)	0.068%	0.068%	0.068%
Jensen's Alpha (Monthly)	0.16%	12.05%	0.23%
Annual Excess Return	7.07%	10.92%	6.77%
Regression Beta	0.70	1.98	0.67
Intercept	0.20%	11.92%	0.28%
R Squared	45.80%	12.01%	31.17%
Standard Error of Beta	0.03	0.13	0.03

Bottom-Up Betas

Bottom-Up Betas are estimated from the betas of specific businesses in the company. Bottom-Up Betas tend to have a lower standard error, and thus a better estimate of each company's risk relative to the market. Bottom-Up Betas are found by examining the different divisions the company is in, then use the average industry unlevered betas for each respective division. Next, apply the division weights by multiplying the proportion of revenue from each division by the industry's sales multiple. The unlevered betas can be seen below:

JNJ (operating)	Division Weights	Unlevered Beta
Household Products	9.78%	0.88
Drug	47.61%	1.03
Healthcare Information	42.60%	0.98
Total		**0.99**

MRNA (operating)	Division Weights	Unlevered Beta
Biotechnology	100.00%	1.3
Total		**1.3**

PFE (operating)	Division Weights	Unlevered Beta
Drug	36.13%	1.03
Biotechnology	63.87%	1.30
Total		**1.20**

	JNJ	MRNA	PFE
Levered Beta for Operating Assets	1.04	1.30	1.41

Levered Beta Estimates

To level up the bottom-up betas, calculate the debt-to-equity ratio of each company using the market value of debt and equity. The debt-to-equity ratios and the levered betas are seen below.

	JNJ	MRNA	PFE
Unlevered Beta(company)	0.95	0.98	1.19
Marginal Tax Rate	25%	25%	25%
D/E Ratios	8.82%	0.38%	24.66%
Levered Beta(company)	1.00	0.98	1.37

Cost of Equity

To calculate the cost of equity for each company, I used a risk-free rate of 1.57% based on a 10Y U.S. T-bond rate. Additionally, I also calculated a weighted equity risk premium based on the proportion of revenues generated in each region. The cost of equity for each company is seen below:

	JNJ	MRNA	PFE
Cost of Equity	9.51%	8.91%	12.12%

Cost of Debt

To calculate the cost of debt, I used Moody's when applicable and a synthetic rating system that provides a rating based on the company's interest-coverage ratio otherwise.

	JNJ	MRNA	PFE
Bond Rating (Synthetic*)	AAA	B-*	A
Default Spread	0.63%	7.25%	1.08%
Risk Free Rate	1.57%	1.57%	1.57%
Pre-tax Cost of Debt	2.20%	8.82%	2.65%
After-tax Cost of Debt	1.65%	6.62%	1.99%

Weighted Average Cost of Capital (WACC)

Provided below is a summary of the data above. The resulting cost of capital is then calculated:

(in millions)	JNJ	MRNA	PFE
After-tax Cost of Debt	1.65%	6.62%	1.99%
Cost of Equity	9.51%	8.91%	12.12%
Share Price	$164.84	$219.57	$38.99
Shares Outstanding	2,630	401.53	5,632
Market Value Equity	$433,529	$88,164	$219,592
Market Value Debt	$36,548	$220	$48,062
E/D+E	92.23%	99.75%	82.04%
D/D+E	7.77%	0.25%	17.96%
Cost of Capital	8.90%	8.90%	10.30%

IV. Investment Return Analysis

	Divisions	Project Characteristics	Future Projects
JNJ	Household Products, Drug, Medical Technologies	JNJ is a mature company that takes on short-term projects focusing on consumer goods and long-term projects on medical devices and pharmaceutical drugs. These products require a large cash outflow during the R&D period, followed by higher profits during the protection period granted by regulatory agencies.	JNJ plans to continue growing the number of drugs in the company's pipeline. Furthermore, JNJ is reaping the benefits of their research on oncology and plan to continue their research. Additionally, the pharmaceutical and medical devices are positioned to deliver a consistent flow of new products over the upcoming years from the scale of the company.
MRNA	Biotechnology	MRNA is a growth company that focuses on biotechnologies that use messenger RNAs. All of company's projects involve making new vaccines. R&D expenses will make up a large portion of the cash flows.	MRNA has an existing pipeline that they plan on growing. A large portion of the pipeline includes exploratory modalities to prevent diseases that cannot be vaccinated yet.
PFE	Biotechnology, Drug	PFE is a mature company focusing on long-term projects on pharmaceutical drugs and biotechnological cures. Similar to JNJ, these products require a large cash outflow during the R&D period. PFE also has a history of acquiring firms of various sizes in the healthcare industry	PFE's future projects will be to continue growing the company's existing pipeline. Currently, PFE plans to dedicate its resources to manufacturing the COVID-19 vaccine.

Measuring Past Returns

To assess each company's project portfolio, I analyzed the Return on Equity (ROE) and calculated the equity return spread and the equity Economic Value Added (EVA). Based on the analysis, JNJ had the highest ROE, while MRNA was the only company that had a negative ROE. MRNA's negative ROE is not significant because it was from a highly negative net income because of negative operating cash flow. The negative net income can be offset by the company's significant increase in stock price, allowing the company to raise capital. PFE's ROE is lower than JNJ because the company had a decline in net income. Overall, JNJ and PFE's positive equity returns indicate that they are investing in successful projects.

Risk Profile	JNJ	MRNA	PFE
Return on Equity	56.96%	-63.59%	64.60%
Cost of Equity	9.51%	8.91%	12.12%
Equity Return Spread	47.45%	-72.50%	52.48%
Equity EVA	$15,711	-$805.29	$3,179

Risk Profile	JNJ	MRNA	PFE
ROIC	50.76%	-69.97%	9.92%
Adjusted ROIC	49.91%	-56.29%	10.15%
Cost of Capital	8.90%	8.90%	10.30%
Capital Return Spread	38.35%	-65.20%	-0.15%
Firm EVA	$15,810	-$805.18	$3,563

In terms of Return on Invested Capital, JNJ outperformed PFE primarily because of PFE's larger goodwill and lower operating income. The adjusted ROIC is adjusted for capitalized leases. MRNAs ROIC is insignificant again because it is highly negative due to a net loss from operations. Because of this, I will be using the industry average of the biotechnology sector for the ROE and ROC of MRNA.

MRNA	ROE	ROC
Biotech Industry	-1.19%	6.22%

An EVA analysis of the companies below shows similar results to the ROE/ROIC analysis:

Risk Profile	JNJ	MRNA	PFE
Equity EVA	$15,711	-$805.29	$3,179
Equity EVA (Industry)	$21,161	-$11,445.7	-$11,685.78
Firm EVA	$15,810	-$805.18	$3,563
EVA (Industry)	$43,493	-$3,327.15	-$3,870.36

Both measures indicate that JNJ and PFE contribute a large amount of economic value. The biotechnology industry has a negative EVA, implying that the industry is not generating value. In the case of MRNA, the company is still growing, explaining the negative net income. Despite this, investors are confident in MRNA explaining the increase in stock prices.

V. Optimal Capital Structure

Company	Debt	Amount	Percentage	Book Interest Rates	Years to Maturity
JNJ	Total Commercial Papers	$2,600.00	7.4%		
	Total Senior Bonds and Notes	$32,628.00	92.6%	0.26-7.16%	0-40 years
	General/Other Borrowings	$7.00	0%		
	Total:	**$35,235.00**			
MRNA	Capital Lease	$33.67	100%		
	Total:	**$33.67**			
PFE	Total Commercial Papers	$2,703.00	6.8%		
	Total Senior Bonds and Notes	$37,133.00	93.2%	0.8-5.6%	1-30 years
	Total:	**$39,836.00**			

As the table above demonstrates, JNJ and PFE both being mature companies rely heavily on debt. JNJ and PFE both have similar debt structures, favoring senior bonds and a small percentage of commercial papers. MRNA is a growth company, which is reflected in the company's heavy reliance on equity. The lack of debt financing reflects the company is in its early growth stage.

JNJ and PFE both being large, publicly traded companies with little insider holding would benefit from debt being an instrument to add discipline to management. MRNA, having negative net income has less capacity to take on new debt.

The risk for bankruptcy for the companies are low. The current ratios of JNJ, MRNA, and PFE are 1.21, 1.43, and 1.35, respectively. MRNA having no goodwill and intangible assets will have a lower agency cost compared to firms such as JNJ and PFE, which receive a large portion of assets from goodwill and intangibles. Each of the companies invest heavily in R&D; therefore, their future cash flows depend on flexible financing, as returns from pharmaceutical products can be unpredictable.

VI. Moving to the Optimal

Current Cost of Capital

In Risk and Return, the market value of equity was calculated using the bottom-up betas and cost of debt. Afterward, weighing the market value of equity by the capital ratio, the current cost of capital for each firm was calculated. Despite the size differences across the companies, the cost of capital was around 8.90-10.30% range.

	JNJ	MRNA	PFE
Cost of Capital	8.90%	8.90%	10.30%

Optimal Cost of Capital at Various Debt Ratios

Debt Ratio	JNJ	MRNA	PFE
0.00%	9.04%	**8.90%**	10.63%
10.00%	8.86%	9.38%	10.42%
20.00%	**8.75%**	11.00%	**10.28%**
30.00%	12.49%	13.74%	15.71%
40.00%	15.74%	15.48%	17.46%
50.00%	17.48%	17.22%	19.20%
60.00%	19.23%	18.97%	20.95%
70.00%	20.97%	20.71%	22.69%
80.00%	22.72%	22.46%	24.43%
90.00%	24.46%	24.20%	26.18%

Current vs Optimal Debt

Debt to Capital	JNJ	MRNA	PFE
Current	7.77%	0.25%	17.96%
Optimal	20%	0.00%	20.00%
Rating at Optimal	A1	Aaa	A2

As evident in the table above, the companies are conservative with regards to their optimal debt ratios with PFE is the closest toward its optimal. JNJ and PFE being mature companies will have a lower expected return, so they use more debt compared to a young growth company like MRNA.

	JNJ	MRNA	PFE
Increase in Firm Value	$25,349.45	$355.00	$2,578.81
% Increase	6%	0.41%	0.97%
Increase in Stock Price	$9.64	$0.88	$0.46

MRNA has an optimal debt ratio of 0% because the company has negative net income, this leads to model to give the company a low rating and thus a high cost of capital. Additionally, the model considers high bankruptcy cost. MRNA being a biotechnology company relies on the confidence of consumers to buy their products.

Market and industry Analysis

	JNJ	MRNA	PFE
D/(D+E)	7.77%	0.25%	17.96%
D/(D+E) Industry	15.38%	13.42%	13.42%
Cost of Capital	8.90%	8.90%	7.43%
Cost of Capital Industry	6.22%	7.46%	7.63%

Among the firms, JNJ and MRNA are under-levered relative to their respective industries. Furthermore, the cost of capital of all three companies are higher than their respective industries. Of the companies analyzed, only JNJ and PFE have the capacity to increase debt.

VII. Mechanics of Moving to the Optimal

Company	Actual/Optimal	Threat of bankrupty	Suggestions for moving towards the optimal
JNJ	JNJ's current debt ratio is 7.77%; its optimal is 20.00%	Very low risk because of a large market cap, positive Jensen's alpha.	JNJ has too little debt compared to the pharmaceutical drugs sector. The company is in a good position, and it should consider using debt to finance more projects that meet its ROIC requirements. The company is not a takeover target and should increase its debt ratio gradually.
MRNA	MRNA's current debt ratio is 0.25%; its optimal is 0.00%	Moderate risk because of a low market cap and cash reserves, but has a positive Jensen's alpha and insider holdings	Relative to the biotechnology sector with a debt ratio of 13.42, MRNA has too little debt. However, the company is relatively young and still growing. With the sudden rise in stock price, MRNA should capitalize on equity and avoid taking more debt to match the industry to avoid bankruptcy risk.
PFE	PFE's current debt ratio is 17.96%; its optimal is 20.00%	Low risk because of a large market cap and positive Jensen's alpha.	Relative to the pharmaceutical and biotechnology industry, PFE is slightly over levered. PFE should maintain its current capital structure and avoid going closer to the optimal to avoid a rating decrease and taking on the unnecessary risk of bankruptcy.

Qualitative Analysis of Revenue Streams

Industry Category	Project Characteristics	Debt Characteristics	Companies
Biotechnology and Pharmaceuticals	Long term, stable, highly regulated, mix of US and foreign cash flows.	Long term, US + foreign, fixed, and floating rate debt	JNJ, MRNA, PFE
Healthcare Devices	Medium term, stable, highly regulated, mix of US and foreign cash flows.	Medium term, US + foreign, fixed debt	JNJ
Consumer Products	Short term, stable, US + foreign cash flow.	Short term, US + foreign, floating rate debt	JNJ

I attempted to use macroeconomic data from 2005 to 2020 to perform a regression for JNJ and PFE. MRNA, being a young company did not have sufficient history to perform a regression. JNJ had a small but positive correlation coefficient with inflation and cyclicality

of the firm's assets indicating pricing power. The regression showed that PFE had greater pricing power than JNJ but had a negative correlation coefficient with regards to inflation. Both companies have pricing power over the industry, which supports that both companies should consider the use of floating-rate debt.

VIII. Dividend Policy

Dividends	Company Lifecycle	Current Policy
JNJ	Mature	Consistent payment and increase in dividends
MRNA	High growth	Never paid; zero dividends.
PFE	Mature	Consistent payment and increase in dividends

All companies that pay dividends are at the appropriate lifecycle stage to do so. As a growth company, MRNA has limited capacity to pay out dividends. The company has low internal financing capabilities and therefore needs more external funding. It would be an appropriate decision for MRNA not to pay out dividends.

Clientele Effect

Shareholders have different preferences for receiving dividends or buybacks depending on which method is advantageous to the shareholder from a tax perspective. The Clientele Effect explains the self-selection of investors by investing in companies that use their preferred method of cash flow.

JNJ: As a company with a long history, JNJ started paying out dividends in 1972 and have been consistent in their payments. Their investors are likely those who prefer to receive dividends.

MRNA: As a growth company, MRNA is unlikely to attract investors who expect to receive dividends. It is possible in the foreseeable future that as MRNA matures, shareholders will begin to demand dividends.

PFE: The company has been consistently paying dividends since 1980 with fluctuations in the prices of the dividends. The company has been consistently increasing their dividend prices since 2009 and it is likely that their investors are those who prefer to receive dividends.

Signaling Effect

Companies use the announcement of an increase in dividend payouts to indicate good financial health and positive future prospects for the company.

JNJ: The dividend policy appropriately signals the maturity of the company with strong future cash flows. The fact that the company has paid dividends since 1972 sends the message that JNJ is a stable institution.

MRNA: The company is a growth company that has only been publicly traded for since 2018. For this reason, management has no paid out dividends and instead reinvest cash in projects. The company is currently growing their product pipeline.

PFE: The dividend policy signals a mature company with stable cash flows. The company signals that it balances growth projects with payouts to investors.

Methods For Returning Cash to Shareholders

JNJ and PFE are both mature companies with a stable cash flows and investors who expect dividends. The company should continue paying dividends.

MRNA is a growth company with a somewhat uncertain future. The company should not set expectations to pay dividends moving forward. If MRNA has excess cash that the company would like to pay out to shareholders, then the company should do a buyback.

IX. Framework For Analyzing Dividends

Average FCFE and Cash to Stockholders for the past 3 years

Averages	JNJ	MRNA	PFE
Net Income	$15,043	-$549	$12,381
FCFE	$10,467	-$1,419	$10,835
Dividends	$9,964	$0	$8,154
Stock Buybacks	$4,273	$0	$6,612
Cash to Stockholders	$14,237	$0	$14,765
Dividend Payout Ratio	66.30%	0.00%	69.36%
Cash Paid as % of FCFE	150.06%	0.00%	33.99%

The table below summarizes how much each firm has returned to its shareholders relative to how much they actually returned. The table also summarizes how each company performed on the return measures.

Summary	JNJ	MRNA	PFE
FCFE	$10,467	-$1,419	$10,835
Cash to Stockholders	$14,237	$0	$14,765
ROE	9.32%	1.46%	7.79%
Return on Stock	4.38%	258.39%	9.37%
Required Return	15.00%	14.73%	20.11%
ROE-Required Return	-5.68%	-13.27%	-12.32%
Actual-Required Return	-10.63%	243.66%	-10.75%

Dividend Comparison

	JNJ	MRNA	PFE
Dividend Payout	66.30%	0.00%	69.36%
Dividend Payout (industry)	60.86%	0.13%	0.13
FCFE	150.06%	0.00%	33.99%
FCFE (industry)	32.78%	-15.61%	-15.61%

JNJ, and MRNA have dividend payouts similar to that of their respective industries. PFE is an outlier having a significantly larger dividend payout and FCFE compared to the biotechnology industry.

JNJ: Because JNJ is below the company's optimal debt ratio, it makes sense that JNJ is paying out more than their FCFE. This could explain that they are using debt to fund equity to reach their optimal. JNJ has a deficit of FCFE and a reputation for taking on good projects. JNJ should reinvest more into good projects using debt to reach the company's optimal debt ratio.

MRNA: MRNA's optimal debt ratio is 0%. The company is a growth company and should reinvest its capital back to the firm. MRNA should not start paying dividends to its shareholders, and instead should retain their capital for growth. MRNA should continue using equity to fund their projects.

PFE: PFE is currently close to their optimal debt ratio, it makes sense that the company is accumulating cash as insurance. The company has a lot of promising projects and there is trust in management as a result of consistent dividend payments. The company should continue paying dividends to their shareholders.

Cash Relative to Assets

	JNJ	MRNA	PFE
Cash	$13,985	$2,624	$1,784
Cash/Total Assets	8.00%	35.76%	1.16%
FCFE vs Cash Return	FCFE < Cash Returned	FCFE = Cash Returned	FCFE < Cash Returned

Companies might want to give more cash to shareholders than store it in their cash flow to equity if they have excess cash reserves. Of the companies, MRNA has the largest cash reserve. if MRNA does not have any planned projects, it may be appropriate for them to return cash to stockholders through dividends or buybacks.

PFE has a relatively small cash to assets ratio yet continues to return more cash to shareholders than their FCFE. This could be because they have attracted investors who expect them to continue their policy of increasing dividends annually.

X. Valuation

Summary of Valuation Model

	JNJ	MRNA	PFE
Operating Margin	65.73%	-86.98%	17.17%
Sales/Capital Ratio	1.11	14.70	0.40
Terminal Growth Rate	2%	2%	2%
High Growth Rate	5%	25%	3.5%
COC Growth	8.90%	8.90%	10.30%
COC Stable	6.29%	6.29%	6.72%
ROIC Current	65.11%	-1278.23%	6.46%
ROIC Stable	6.29%	6.29%	6.72%

JNJ: JNJ has a long stable corporate history. The company continues to grow in spite of the COVID-19 pandemic. The company is quick to adapt to market trends such as a COVID-19 vaccine, but also continues to invest in projects similar to those they have taken in the past. This finding indicates a fairly stable sales/capital ratio over its history with volatility in 2020 because of R&D for the vaccine. Because pharmaceutical drugs, and medical technologies continue to be in demand in the pandemic, I assume that they will experience greater growth than the past, with an addition of the capital they will reap from selling vaccines.

MRNA: I expect MRNA to continue its high-growth phase due to the steady demand for COVID-19 vaccines. Expansion to other forms of vaccine could provide an opportunity for growth but has the risk of damaging the reputation of the company if unsuccessful. I assume that the company will continue its large revenue growth, but I would be wary about the risk of bankruptcy for MRNA.

PFE: PFE also has a long stable corporate history. The company didn't face much loss because of the pandemic. I put a higher growth rate for PFE compared to JNJ because Gorski mentioned that he believes that the vaccines should be sold for profit indicating that he isn't afraid of placing a premium on vaccine prices. I expect PFE to grow from the pandemic, PFE being both a biotechnology and pharmaceutical company should see steady demand in spite of the pandemic.

Summary of Valuation Findings

Valuation	Estimated Value/Share	Actual Price (6/21)	Recommendation
JNJ	$143.69	$164.84	Sell
MRNA	$233.11	$219.57	Buy
PFE	$23.15	$38.99	Sell

JNJ and PFE are overvalued; however, this is not an uncommon phenomena for health companies. Investors prefer health companies for their dividend yields. Health companies can generate a large amount of cash flow each year, which makes up for their slower growth rates. Investors of health companies also tend to think long-term. They believe that growth for these companies take years to happen. Drugs being inelastic products have pricing power

and are demand all-year round. Investors also believe that health companies have a high barrier to entry because drug development is expensive and risky. These factors explain why investors are more willing to buy health stocks.

MRNA on the other hand is a young company, there will be a lot of speculations on the growth of the company and its future. The stock is currently undervalued, and I expect the value to go up because of the demand for the company's vaccines.

Recommendations to Enhance Value

Valuation	Key Variable	Recommendations
JNJ	Compound Annual Growth Rate	JNJ can improve efficiency growth by taking on more leverage to reach their optimal debt ratio of 20%. Increasing the debt ratio by investing in new projects will decrease their cost of capital and provide more value to shareholders.
MRNA	Target EBIT in 10 Years	MRNA should increase cash flow from existing projects to generate a positive net income. The company needs to better manage its capital to prevent bankruptcy.
PFE	Target EBIT in 10 Years	PFE is in a difficult situation because they have investors who expect dividends, they are stuck paying out dividends even if its greater than their FCFE. If EBIT does not increase, they have to stop giving out dividends. This could turn to a feedback loop causing the firm value to crash. My recommendation would be to take on high return investments to increase capital. It would be ideal if the company could make their current operations more efficient and generate a larger profit because the company is already near its optimal debt ratio.