THE UNIVERSITY OF TULSA
Collins College of Business

STUDENT INVESTMENT FUND
THE UNIVERSITY OF TULSA

Student Research

Sector Allocation and Security Report

{Dominic Lupo}

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Executive Summary

Cardinal Health (CAH) is a Health Care sector security and is a member of the Health Care Equipment & Services subsector. Based on a holistic viewpoint concerning the fundamentals of the firm's financials, qualitative and macroeconomic considerations affecting the company, sector analysis of Health Care and the Health Care Equipment & Services subsector, and various cash flow, dividend, and enterprise valuation models, I would recommend placing Cardinal Health (CAH) on the Student Investment Fund's watchlist but to refrain from purchasing the security a this time. Qualifying arguments for this perspective are outlined below:

Sector Analysis:

Cardinal Health (CAH) was chosen due in part because of the strong investment opportunity the Health Care sector presents. Namely, due to the many securities within the Health Care sector that are price depressed relative to their potential earnings and future performance. Of the screener results into the following experiential, three of the four securities that had attractive financials but low valuations were constituents of the health care sector. Moreover, Health Care performance has outperformed that of the broad market in the past decade while offering protection from broad market drawdowns due to the relatively stable and persistent nature of Health Care and demand for such products irrespective of current economic conditions. In essence, Health Care stock stocks have broadly outperformed that of the overall market while offering less risk and therefore constitute a greater Sharpe efficient sector investment opportunity than most other sectors. The overall sector dynamics of the Health Care sector, such as threat of new entrants, threat of substitutes, supplier power, buyer power, and competitiveness could be classified on a sector basis as moderate, high, high, moderate, and low. Concerning Cardinal Health's (CAH) strengths relative to that of the entire Health Care Sector, the firm's strengths regarding factors of threat of entrants was found to be moderate, threat of substitutes was high, supplier power was moderate, and buyer power was low. Though Cardinal Health (CAH) scored better than the overall Health Care sector in most qualitative factors, the nature of the sector it resides in and the intensity of its competitors in the Health Care sector concerning all five factors, constitutes substantial sector risk that cannot be avoided. Consequently, this points to a Hold recommendation for the security and the argument for placing Cardinal Health (CAH) on the watch list for the Student Investment Fund despite the sector's strong outperformance relative to that of the underlying market.

Stock Selection Screening:

Cardinal Health has a variety of compelling growth and valuation factors in the firm's favor relative to its competitors and other screened stocks. For instance, Cardinal Health has the highest free-cash-flow growth of the screened stocks at (421.84%) indicating rapid profitability growth that will translate to increasing free cash flow per share yields. The Healthcare company currently has a P/E ratio of 11.74 well below the Healthcare sector of 28.59 and also trades below its five-year P/E average of 12.2. This means there is a potential 143.53% upside for Cardinal Health should its price-to-earnings ratio revert to the Health care sector and indicates the security is very attractively priced in today's overvalued market. The firm also has a Debt-to-Asset ratio of 15.11%, well below the five-year market average of 63.5% meaning the company's growth is being fueled without leverage and is organically being generated rather than through debt issuances. Lastly, the firm generated 2.03 Billion in free cash flow last year despite trading at a market cap of only 15.14 Billion. This means the firm is trading at roughly 7.45x free cash flow. This indicates Cardinal Health is trading at a price-to-free cash flow well below the Healthcare sector average of 14.22 as well as the market average of 13.88 constituting a 90.88% potential price upside should Cardinal Health's price-to-free cash flow revert back to its current sector average. However, the nature of potentially higher expected investment returns is also higher levels of risk and Cardinal Health (CAH) as an investment opportunity is no exception to this universal rule. As the firm stands now, its volatility and the riskiness of the asset, demonstrated by its past performance and low valuation despite its potential future performance, constitutes far too much risk for the fund to open a small position in the firm (no less than 1% of assets under management or $78.000) let alone a bigger position in line with our portfolio's average weighting size for securities. Once the riskiness of the security declines as uncertainty regarding Cardinal Health's (CAH) future performance becomes clearer, the firm could and should be considered for investment, but as of now Cardinal Health (CAH) should be listed as no more than a watch list position.

Fundamental Financials Analysis:

Cardinal Health's (CAH) income statement shows stable revenue growth led by gleaning higher margins through deferments and rising efficiency via increasing turnover rates. Net income kept pace as expenses grew. Concerning the balance sheet, Cardinal Health (CAH) shows stable asset growth led by generating more cash through operations and deferring Property Plant and Equipment ("PPE") chargers to further build up a strong cash position. Cardinal Health's (CAH) liabilities shrank as long term debt and current liabilities decreased due in part to deleveraging. Moving to the cash flow statement, Cardinal Health (CAH) shows stable operating cash flow growth led by liquidating working capital. The company's cash flow from investing held steady with changes in PP&E. Cash flow from financing activity dropped from deleveraging. Like the previous points of analysis, Cardinal Health's (CAH) financials seem to be promising but uncertain. The firm has many positives and negatives to its capital allocation that adds to the riskiness and uncertainty of the position further emphasizing the need to reevaluate the security once more information about its future direction and strategy are clear.

Fundamental Valuation Analysis:

The investment thesis and resulting investment decision regarding Cardinal Health (CAH) is one that can best be described as inconclusive. The firm has great financial potential and is at an attractive valuation relative to its peers but the high level of leverage within the firm's capital structure and the current deleveraging of assets indicates the company may be pessimistic of its past investment opportunities and may be recharting a new strategic plan. The Dividend Discount and Multistage Dividend Model returned valuations that pointed to the firm being overvalued while estimates from Enterprise Value, Free Cash Flow to Equity Holders, and Free Cash Flow to the Firm models pointed to the security being undervalued. Equally weighting all models pointed to Cardinal Health being slightly undervalued. However, the real valuation for Cardinal Health is likely higher as the Dividend Discount Model and Multistage Dividend Models would likely not be weighted as importantly (as highly) to that of the other three, indicating the slightly undervalued assessment drawn from all five models has a built-in margin of safety. Hence, the potential return from investing in Cardinal Health (CAH) is high, but so is the risk of the investment. So much so that the riskiness of Cardinal Health (CAH) is in excess of the Student Investment Fund's risk tolerances. Therefore, I would recommend a Hold decision on the company and placing it on the Student Investment fund's watch list until more concrete information about the company's direction is available and the riskiness of the security declines.

Fundamental Qualitative Analysis:

The average model price target indicates the firm is currently underpriced from its fair value, and includes a margin of safety for potential upside driven by market multiples moving upward in line with competitors or its acceleration of share repurchases reinforcing the inconclusive nature of the analysis on the firm. Despite its underpriced nature, which has been clear in the prior stages of the security analysis, the firm still constitutes too great of a risk for investment. The riskiness of the investment increases when taking into account its many competitors most of which hold some distribution, profitability, and research and development advantages over Cardinal Health such as QK Healthcare Inc. China Medicine Corp., and Costco Wholesale Corp. Therefore, I would recommend a Hold decision on the company until more concrete information about the company's direction is available and the riskiness of the security declines.

Sector Analysis

This section of the report presents my sector weighting analysis. I base my recommendation on both quantitative and qualitative factors. For this section, I use the S&P sector ETFs as proxies for sector investments. As supported below, I make the following sector weighting recommendations. The table presents individual sector weightings highlights whether these under, over or market weight the S&P 500.

S&P Sector	EFT Ticker	Percentage Allocation	Under/overweight Benchmark
Communication Services	XLC US Equity	**13.80%**	**2.30**
Consumer Discretionary	XLY US Equity	**9.52%**	**-2.38**
Consumer Staples	XLP US Equity	**4.64%**	**-1.16**
Energy	XLE US Equity	**2.88%**	**0.48**
Financials	XLF US Equity	**13.44%**	**2.24**
Health Care	XLV US Equity	**16.08%**	**2.68**
Industrials	XLI US Equity	**9.84%**	**1.64**
Information Technology	XLK US Equity	**22.32%**	**-5.58**
Materials	XLB US Equity	**3.12%**	**0.52**
Real Estate	XLRE US Equity	**2.28%**	**-0.32**
Utilities	XLU US Equity	**2.08%**	**-0.42**

Efficient Frontier

My initial quantitative tool was to determine which sectors lie on the efficient frontier. Ideally, I seek to keep a heavy allocation in sectors that historically produce the highest return for the lowest level of risk. The following three charts show the distribution of each sector ETF along the efficient frontier.

Note the following sectors have historically been along the efficient frontier for 1, 3 and 5 year holding periods. Longstanding efficient frontier sectors over the three and five-year periods included communication services, consumer staples, healthcare, and information technology. Consumer discretionary was an efficient frontier sector during the five-year period as well, but not during the three-year period. It seems that an overriding trend for all the sectors that were situated on the efficient frontier for the five-year period as well as the three-year period is their high growth potential and non-cyclical nature

However, the most recent best performers for the one-year time period included more sectors that are traditionally less growth-centric and more cyclical. This is in part due to the lower time frame used (only one-year as opposed to three or five) which can capture more volatile price action of sectors. Such sectors that were located on the efficient frontier during the one-year period but not the three or five-year period included energy, industrials, and materials for example. Though these sectors will likely revert back to their means in larger time periods. in the short term they can substantially outperform more traditional efficient frontier sectors, especially when such shorter time periods capture only the beginning of a cyclical run-up for such sectors which is often driven by supply and demand forces.}

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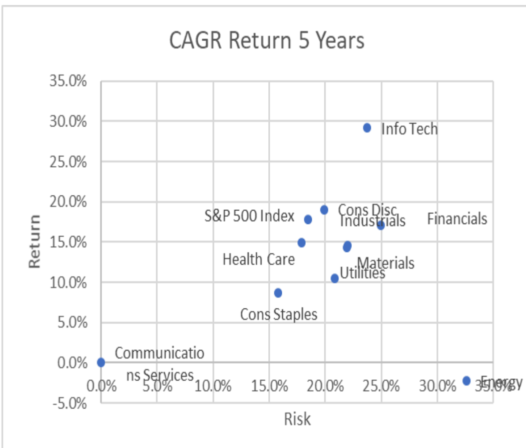

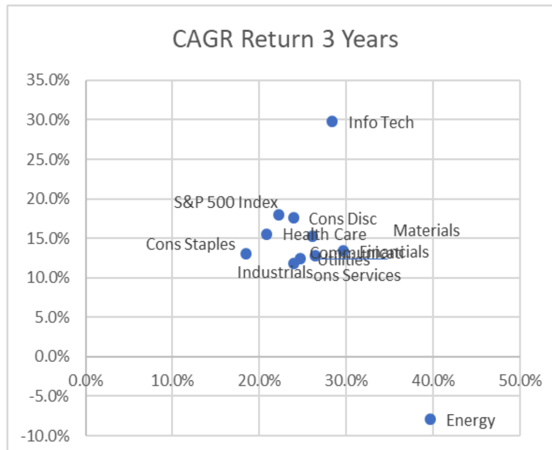

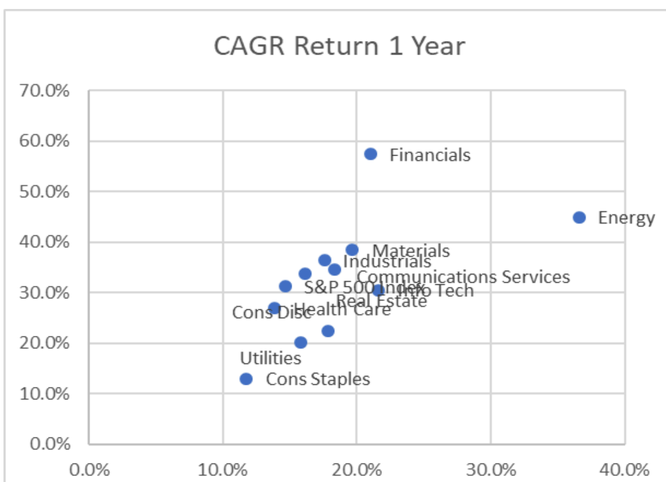

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Optimizing the Portfolio

Benchmark Allocation; Using the sector allocation held by the S&P 500 benchmark as of 09/03/2021, I determined the return and standard deviation of returns for each sector and the portfolio for a 1, 3 and 5 year holding period ending in 08/31/2021. The following table presents this, along with the results of the S&P 500. Note that I assumed these allocation were held constant over the reporting periods.

Summary Table							
Sector	Stdev of returns 5 years	CAGR Return 5 Years	Stdev of returns 3 years	CAGR Return 3 Years	Stdev of returns 1 year	CAGR Return 1 Year	Portfolio Allocation 5 yr
Communications Services					18.3%	34.6%	11.5%
Cons Disc	19.9%	19.1%	23.9%	17.6%	17.8%	22.5%	11.9%
Cons Staples	15.8%	8.7%	18.5%	13.1%	11.7%	13.0%	5.8%
Energy	32.6%	-2.3%	39.7%	-7.9%	36.6%	44.9%	2.4%
Financials	25.0%	17.1%	29.7%	13.4%	21.1%	57.4%	11.2%
Health Care	17.9%	15.0%	20.8%	15.6%	13.8%	26.9%	13.4%
Industrials	22.0%	14.5%	26.4%	12.8%	17.6%	36.4%	8.2%
Info Tech	23.7%	29.2%	28.4%	29.7%	21.6%	30.5%	27.9%
Materials	21.9%	14.3%	26.1%	15.3%	19.7%	38.5%	2.6%
Utilities	20.8%	10.5%	24.7%	12.4%	15.8%	20.1%	2.5%
Real Estate			22.3%	17.9%	14.6%	31.2%	2.6%
Portfolio	16.6%	16.6%	20.1%	16.3%	14.7%	31.5%	
Risk Free Rate of Return							1.31%
Sharpe Ratio		0.920		0.747		2.057	
S&P 500 Index	18.5%	17.9%	22.3%	17.9%	14.6%	31.2%	
Index Sharpe Ratio		0.897		0.747		2.042	

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Optimal Allocation, bounded; I next performed an optimization exercise to maximize my portfolio's return relative to its risk. For this optimization, I constrained the optimization to: (i) preclude short positions and (ii) deviate from the benchmark allocation by no more than 20%. From this, I was able to improve my portfolio's optimal return by 6.50% with standard deviation of return increasing by only 1.37%, thereby improving the Sharpe ratio. I present these results below:

Summary Table

Sector	Stdev of returns 5 years	CAGR Return 5 Years	Stdev of returns 3 years	CAGR Return 3 Years	Stdev of returns 1 year	CAGR Return 1 Year	Portfolio Allocation 5 yr	Portfolio Allocation 3 yr	Portfolio Allocation 1 yr
Communications Services					18.3%	34.6%	11.22%	9.20%	13.80%
Cons Disc	19.9%	19.1%	23.9%	17.6%	17.8%	22.5%	14.28%	10.68%	9.52%
Cons Staples	15.8%	8.7%	18.5%	13.1%	11.7%	13.0%	4.64%	6.96%	4.64%
Energy	32.6%	-2.3%	39.7%	-7.9%	36.6%	44.9%	1.92%	1.92%	2.88%
Financials	25.0%	17.1%	29.7%	13.4%	21.1%	57.4%	8.96%	8.96%	13.44%
Health Care	17.9%	15.0%	20.8%	15.6%	13.8%	26.9%	12.30%	16.08%	16.08%
Industrials	22.0%	14.5%	26.4%	12.8%	17.6%	36.4%	6.56%	6.56%	9.84%
Info Tech	23.7%	29.2%	28.4%	29.7%	21.6%	30.5%	33.48%	33.48%	22.32%
Materials	21.9%	14.3%	26.1%	15.3%	19.7%	38.5%	2.08%	2.08%	3.12%
Utilities	20.8%	10.5%	24.7%	12.4%	15.8%	20.1%	2.00%	2.00%	2.28%
Real Estate			22.3%	17.9%	16.1%	33.7%	2.56%	2.08%	2.08%
Portfolio	16.9%	17.7%	20.9%	17.7%	14.4%	32.9%			
Risk Free Rate of Return							1.31%		
Sharpe Ratio		0.9675039		0.785341596		2.187638579			
S&P 500 Index	18.5%	17.9%	22.3%	17.9%	14.6%	31.2%	0.00%	0.00%	0.00%
Index Sharpe Ratio		0.8967643		0.746541999		2.041990552			

Optimal allocation, unbounded; My final quantitative approach was to relax the constraint on sector concentration. This led to the following. Note that After relaxing the diversity constraint further from 20% Sharpe ratios increased in number for the one, three, and five-year periods. This translated to a 26.43% increase in Sharpe ratios that came at the expense of greater standard deviation increases brought on by concentrating the portfolio's weights solely into three of the eleven sectors. Thus, there is an issue in following the solver relaxed solution as widening the diversity constraint, even though it leads to higher Sharpe ratios, still, drastically increases the standard deviation or risk of the portfolio as the expected return increases. Based on the unconstrained optimization achieved above, I would recommend departing from the weightings offered by the solver during the one-year period with the diversity constraint relaxed in favor of the 20% diversity constraint. I would recommend the same for the three and five-year periods to adequately mitigate volatility. On a purely mathematical outlook we would retain the current diversity constraint relaxed weightings for those time periods but such a decision, Sharpe maximizing as it may be, could lead to extremely volatile fluctuations in the portfolio well above our risk tolerances. Hence, I would again recommend utilizing the 20% diversity constraint solver results over that of the unconstrained solver results.

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Summary Table

Sector	Stdev of returns 5 years	CAGR Return 5 Years	Stdev of returns 3 years	CAGR Return 3 Years	Stdev of returns 1 year	CAGR Return 1 Year	Portfolio Allocation 5 yr	Portfolio Allocation 3 yr	Portfolio Allocation 1 yr
Communications Services					18.3%	34.6%	0.00%	0.00%	22.57%
Cons Disc	19.9%	19.1%	23.9%	17.6%	17.8%	22.5%	0.00%	0.00%	0.00%
Cons Staples	15.8%	8.7%	18.5%	13.1%	11.7%	13.0%	0.00%	0.00%	0.00%
Energy	32.6%	-2.3%	39.7%	-7.9%	36.6%	44.9%	0.00%	0.00%	0.00%
Financials	25.0%	17.1%	29.7%	13.4%	21.1%	57.4%	0.00%	0.00%	56.96%
Health Care	17.9%	15.0%	20.8%	15.6%	13.8%	26.9%	0.00%	0.00%	20.47%
Industrials	22.0%	14.5%	26.4%	12.8%	17.6%	36.4%	0.00%	0.00%	0.00%
Info Tech	23.7%	29.2%	28.4%	29.7%	21.6%	30.5%	100.00%	100.00%	0.00%
Materials	21.9%	14.3%	26.1%	15.3%	19.7%	38.5%	0.00%	0.00%	0.00%
Utilities	20.8%	10.5%	24.7%	12.4%	15.8%	20.1%	0.00%	0.00%	0.00%
Real Estate			22.3%	17.9%	16.1%	33.7%	0.00%	0.00%	0.00%
Portfolio	23.7%	29.2%	28.4%	29.7%	15.7%	46.0%			
Risk Free Rate of Return							1.31%		
Sharpe Ratio		1.1744417		1.00172844		2.851649998			
S&P 500 Index	18.5%	17.9%	22.3%	17.9%	14.6%	31.2%	0.00%	0.00%	0.00%
Index Sharpe Ratio		0.8967643		0.746541999		2.041990552			

Qualitative Assessment

I conclude my sector analysis with a qualitative assessment of the sector. From that above analysis, I want to emphasize the Energy sector based on historical performance. To move from there to selecting an individual stock, I need to identify subsectors. Here are the top three subsectors in the Energy sector with some relevant metrics for each. {Bloomberg L.P. GICS Energy Sector Data. Bloomberg terminal, 07 September 2021.}

	Name	Market Cap (US$ billions)	Price/Earnings	Subsector Revenue (US$ billions)	1 YR Growth
SECTOR:	Energy	9.76 Trillion	22.68	5.88 Trillion	-31.68 %

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Top 3 SUBSECTORS	Oil & Gas	7.19 Trillion	18.46	5.52 Trillion	-33.37 %
	Oil & Gas Services & Equipment	572.42 Billion	184.03	366.21 Billion	-11.01
	Renewable Energy	2.71 Trillion	64.2	361.19 Billion	11.33%

From this, I selected the Renewable Energy subsector. This sub sector relies in organic growth for it long term growth. It is at the start-up stage of the industry life cycle. This subsector has solid growth potential, has tremendous government support, and a strong tail-wind due to decreasing usage of oil and natural gas sources of energy.

There are three topics that most affect this industry as summarized below:

Topic	**Impact**
Regulation	Increased regulation on the part of governments concerning energy consumption and emissions control could be a further catalyst to accelerate the shift from more traditional forms of energy to renewables. Such impacts would have further positive effects on renewable energy stocks and ETFs and corresponding negative effects on traditional upstream and downstream oil and natural gas producers. Slower government regulations or a more conservative government could have a negative effect on renewable energy prices and multiples as the market may already have priced in certain expectations concerning renewable energy. Failure on government's parts to deliver on further regulations could see renewables depreciate.
Material Shortages	Silicon is one of the most important components of solar arrays. Due in part to the pandemic as well as demand in general outpacing the current supply and ability of miners to extract silicon shortages for solar arrays. The same is true of lithium, a major component of battery cells that currently has a greater market demand than supply is able to meet. Positive improvements regarding lithium and silicon production and availability could see renewable energy stocks and sectors outperform. However, if these issues are not rectified by the time the market expects them to, there is serious downside risk due to certain expectations and timelines for when the issue is fixed not being met.
Oil and Natural Gas Price Action	Renewable energy is in direct competition with that of natural gas and oil. High oil and natural gas prices would be a beneficial force for renewable energy's development and would foster appreciation in the sectors price and multiple. Weak prices on the part of commodities could offer better opportunities to consumers who would more readily consume cheaper, more infrastructurally feasible sources of energy.

Following are three events most impactful to the industry's growth.

Event	Impact
Growth in Consumer Affluence	The largest group of consumers of renewable energy products are primarily more affluent residents of western countries. Wage growth and increased education of consumers of other nations would have a positive impact on demand for renewable energy and bring about heightened growth in the industry.
Expanding Renewable Infrastructure	To transport and utilize renewable energy, like any form of energy creation, requires extensive and costly construction and infrastructural requirement some nations simply are not equipped to foster. Reduced construction prices and growing infrastructure will help further spur the world's shift to clean energy. Inroads in these areas would heighten the already occurring transition.
Increased Regulations	As the climate issue continues to occupy the political conversation across the world, increased regulations and incentives for renewable energy as a part of the climate question solution would have a massive impact on growth in the sector. So much so that the market has begun to price such talks into the price and intrinsic value of renewables. Continued talks and incentives for renewable energy would spur heightened growth in the sector.

Competitive Analysis

	Sector
Threat of Entrants	High
Threat of Substitutes	Moderate
Supplier Power	High
Buyer Power	High
Competitive Rivalry Within Industry	High

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Individual Stock Selection Screening approach

Screening Criteria selected

I used the Bloomberg screening application, EQS to determine which stock within the overall market to follow. These are the metrics I selected and why:

Metric	Growth/ Value	Technical/ Fundamenta l	Why selected
P_/E 5 Yr Avg LF	Value	Technical	I utilized the five-year Price to Earnings metric to compare a relative average P/E ratio for the stock over the long-term with that of its current P/E ratio to determine if the stock is valued above or below its traditional mean average. In the event it is valued below its mean average, a mean reversion would constitute a sizable upside for the position while a valuation above the longstanding five-year P/E ratio average could indicate the security is richly valued relative to the past. For this screener I capped the P/E ratio value for screened stocks to be no greater than 20.
FCF/Sh Gr LF	Growth	Fundamenta l	Free Cash Flow per Share growth is a value that communicates the magnitude for which a stock's free cash flow (operating cash flow less: capital expenditures) is growing on a per-share basis. Free cash flow represents the tangible net income of a business and indicates the extent to which a company's operations are profitable. High growth in this area indicates an accelerating business with impressive growth potential. Low growth however indicates slow or no growth in a company's business even if the company's earnings are substantial. Therefore, I used

			the metric to attain an impression of the relative profitability growth of each firm. One important caveat with this metric is that low free-cash-flow growth is not always a bad thing, particularly when the company in question is plowing its free-cash-flow into valuable and intelligent capital expenditure investments that will grow the business further in the future. Hence, free cash flow per share is a valuable but sometimes deceptive figure as companies with strong profits can have low cash flow growth and companies in the development stage can have low free cash flow growth when they instead use the cash to reinvest. These are considerations I account for in my analysis.
Debt/Assets LF	Value	Fundamental	Debt to Assets is an important balance sheet metric that indicates the degree of leverage, which adds risk, a company has taken on. A high Debt/Assets ratio indicates a large amount of debt has been used to finance the operations of the business and/or develop the different divisions or offerings of the company. Likewise, a lower ratio indicates the company's assets are primarily funded through non-debt instruments and indicate a lower degree of leverage for the firm. Hence, I included this metric to garner a strong understanding of the financial strength and relative leverage of the companies being screened for to ensure they represent risk-appropriate investment opportunities. For this screener I constrained results to only reflect investment opportunities with a Debt/Assets ratio of 20% or less again emphasizing value opportunities over that of growth-centric results.

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Beta: M-1	Value	Technical	Beta is a measure of the volatility of an underlying asset. Securities with a Beta less than the market average of 1 are considered more stable and have lower standard deviations, (and usually lower expected returns), and vice versa. Consequently, I used the measure to determine the volatility and riskiness of the selected stocks to ensure they are well within the funds, (and my own) risk tolerances and therefore constitute responsible investment opportunities. For my Beta constraint I capped all screened results to have a Beta no greater than 1.25 disqualifying all results above that metric.
P/E	Value	Technical	I used Price-to-Earnings, (this time the present P/E ratio) of the firms to understand where the selected firm's current valuations are presently relative to their past five-year average. This was done once again to determine if the screened stocks are over or undervalued relative to their past multiples. As was the case for the Beta metric, I once again used a cap of 20 on all screened stocks disqualifying any current richly valued stock options from the results.
Percentile Rank (T12M FCF)	Growth	Fundamenta l	This last measure, (The Percentile Rank of Free Cash Flow) ranks the top 15 percentile of companies in terms of their generated cash flow. This helps to exclude smaller firms, that due to their smaller operations and smaller top-line revenues, generate smaller free-cash flows as the fund has a constraint on the size of the firms that can be traded. Moreover, it helps to select only the top firms in terms of their free-cash-flow generation to ensure only the highest profitability companies (in terms of the dollars generated) are selected. Higher

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			percentile ranks for this metric indicate larger free-cash-flows of businesses relative to their peers.

Screener Results

The following table presents the results of my screener.

Ticker	Short Name	Market Cap	P/E 5Yr Avg LF	FCF/Sh Gr LF	Debt/Assets LF	Beta:M-1	GICS Sector	P/E	FCF T12M	Percentile Rank(T12M FCF)
	Investable Universe (10)	1.34	21.93%	19.87B	21.66%	39.74%	16.66%	11.9		
CB US Equity	CHUBB LTD	79.53B	19.12	58.47%	7.98%	0.73	Financials	16.24	11.31B	100
CAH US Equity	CARDINAL HEALTH	15.14B	12.2	421.84%	15.11%	1.11	Health Care	11.74	2.03B	87
PFG US Equity	PRINCIPAL FINL	17.48B	10.02	128.80%	1.44%	1.2	Financials	11.9	2.72B	96
FNF US Equity	FIDELITY NATIONA	13.23B	8.25	97.78%	4.88%	0.84	Financials	8.48	2.48B	92

{Bloomberg L.P. EQS Screener Data Screenshot. Bloomberg terminal, 15 September 2021.}

Here is how these screener results plot on the efficient frontier:

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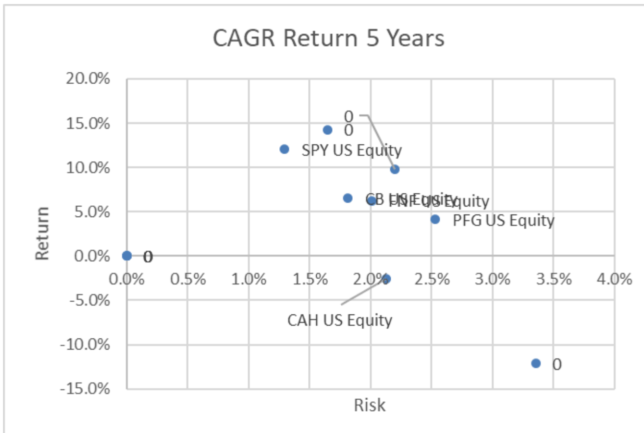

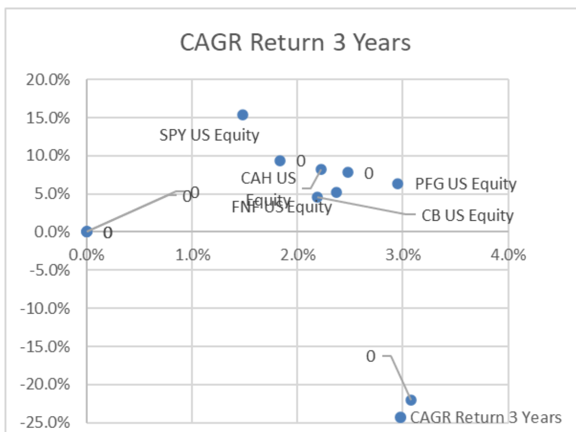

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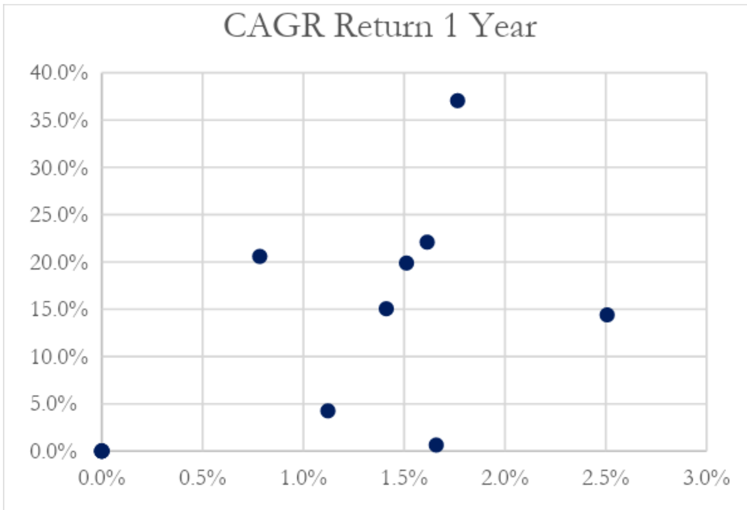

Stock selected

Based on this, I selected Cardinal Health (CAH) despite the firm falling below the efficient frontier on the one, three, and five year charts because:

i. Cardinal Health has the highest free-cash-flow growth of the screened stocks at (421.84%) indicating rapid profitability growth that will translate to increasing free cash flow per share yields.
ii. The Healthcare company currently has a P/E ratio of 11.74 well below the Healthcare sector of 28.59 and also trades below its five-year P/E average of 12.2. This means there is a potential 143.53% upside for Cardinal Health should its price-to-earnings ratio revert to the Health care sector and indicates the security is very attractively priced in today's overvalued market.
iii. The firm also has a Debt-to-Asset ratio of 15.11% well below the five-year market average of 63.5% meaning the company's growth is being fueled without leverage and is organically being generated rather than through debt issuances.
iv. Lastly, the firm generated 2.03 Billion in free cash flow last year despite trading at a market cap of only 15.14 Billion. This means the firm is trading at roughly 7.45x free

cash flow. This indicates Cardinal Health is trading at a price-to-free cash flow well below the Healthcare sector average of 14.22 as well as the market average of 13.88 constituting a 90.88% potential price upside should Cardinal Health's price-to-free cash flow revert back to its current sector average.

Fundamental Analysis: Financials

This first fundamental analysis section evaluates the financial performance of Cardinal Health (CAH). I assess results presented on three financial statements, the Income statement, balance sheet and statement of cash flows. I conclude with observations on financial ratios that cross these statements.

Income Statement

Cardinal Health (CAH) shows stable revenue growth led by gleaning higher margins through deferments and rising efficiency via increasing turnover rates. Net income kept pace as expenses grew.

The workbook provided with this paper presents the Income statement line items for Cardinal Health (CAH) over the past three years. Summary of key points follow.

1. Trend in revenue growth in recent years relative to the previous years?	Quarterly revenue has slightly grown over the past few quarters. Primarily due to Covid-19, Cardinal Health (CAH) saw revenue decline but despite that initial decline quarterly revenue is presently still slightly above its average revenue over the past eleven quarters.
2. Revenue growth relative to growth in cost of goods sold and implications	Revenue growth has grown in tandem with the cost of goods sold roughly at the same pace over the last eleven quarters. Growth appears to be consistent between the two metrics and highly correlated.

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3. Level and trend in operating leverage based on Cost of Goods Sold relative to operating expenses	Operating expenses currently are far lower than the cost of goods sold, a trend that has endured throughout the period. However, it appears that operating expenses are remaining relatively stable while the cost of goods sold is rising slowly. This indicates variable costs are far higher than fixed costs indicating low operating leverage.
4. Largest components of operating expenses, fastest growing component in recent past and implications	Once again, the low operating expenses being far lower than the cost of goods sold correlates to the company having variable costs that are far higher than fixed costs indicating low operating leverage. Operating expenses seem to be primarily driven by Cardinal Health's (CAH) Selling, General & Admin Exp. Which made up 79.5% of all operating expenses during the period when outliers are adjusted for and 86.0% of the most recent period's operating expenses. This indicates that Selling, General & Admin Exp. constitute a vast and growing majority of Cardinal Health's (CAH) operating expenses.
5. Income/expense components below the operating income line that materially impact operating income?	Selling General and Admin Exp., Depreciation and Amortization, and Other Operating Expense/(Income) constitute the operating expenses of the company. Noticeably, the factor that makes the most materially change to operating income, Research, and Development remain throughout the period. Depreciation and Amortization have increased indicating a larger company footprint and more extensive facilities or a major investment in property, plant, and equipment was made that is now being depreciated. Other Operating Expenses/(Income) have steadily decreased during the period.

Balance Sheet

Cardinal Health (CAH) shows stable asset growth led by generating more cash through operations and deferring Property Plant and Equipment ("PPE") chargers to further build up a strong cash position. Cardinal Health's (CAH) liabilities shrank as long term debt and current liabilities decreased due in part to deleveraging. During the period Capital held steady.

The workbook provided with this paper presents balance sheet line items for Cardinal Health (CAH) over the past three years. Summary of key points follow.

6. Growth trend in current vs non-current assets	Current assets appear to be growing at a faster pace than that of long-term assets (total assets) although the pace of growth is relatively similar. This means the company is increasing its liquidity and may be an indicator of internal outlooks on performance being more short-term as opposed to longer-term.
7. Growth trend within current assets,	Cash and notes receivable appear to be growing the fastest of all the current assets, which as a group appear to be growing at a faster rate than that of production components within the balance sheet. The company's growth potential may be reduced due to the build-up of cash and lack of investment in the company (lack of research and development expenditures).
8. Accumulated depreciation relative to gross property plant and equipment and implications about future depreciation expense?	It has not. Accumulated depreciation has grown at a slower rate than that of gross property plant and equipment. This may mean that the company is not accounting for enough depreciation expense on its balance sheet presently. This may be a deferral of the expense into the future.
9. Growth trend within non-current assets	Other long-term assets and intangible assets have seen the greatest change over time, far greater than that of net property plant and equipment or goodwill. Property plant and equipment has slightly increased but not by the same extent. Intangibles decreasing is

	a cautionary sign as it may indicate a write-off of an unsuccessful operation or investment.
10. Capital structure.	Debt appears to be the main component of the company's capital structure as total liabilities are far greater than that of equity. Total liabilities have increased dramatically while at the same time equity has fallen substantially indicating a massive level of leverage that has consistently increased over the period. This could be a good circumstance if these investments turn out to be intangible improvements to the company but undoubtedly raises the riskiness of the company perhaps past most investor's risk tolerance thresholds.

Cash Flow Statement

Cardinal Health (CAH) shows stable operating cash flow growth led by liquidating working capital. The company's cash flow from investing held steady with changes in PP&E. Cash flow from financing activity dropped from deleveraging.

The workbook provided with this paper presents cash flow statement line items for Cardinal Health (CAH) over the past three years. Summary of key points follow.

11. Trend in cash flow from operations, and which line item drive that trend?	Cash flow from operations has doubled during the period driven mainly by other non-cash adj. while every other metric during the period has decreased or only increased slightly. This indicates that the company is becoming more liquid in the generation of cash but is not moving into investments, this means there is likely a negative internal view regarding the company's investments.
12. Trend in cash flow from investing? What does that suggest about the company's growth potential?	Cash from investing is largely flat throughout the period. Notably there is one exception to this trend during 6/2020 during which an $878 million “other investing activities” entry occurred in the cash flow

	statement. This positive amount was likely due to a large sale of investment securities. This specific case as well as the cash flow from investing trend throughout the period as a whole suggests a pessimistic outlook on the company's growth potential as the aforementioned liquidation of assets is undoubtedly increasing liquidity, it represents an increasingly less-optimistic outlook on the firm's investments.
13. Trend in cash flow from financing	Cash from financing has roughly increased by 6 times its initial amount during the period and has grown negatively. With the majority of the financing stemming from cash being funneled into total debt issued/repaid, Cardinal Health (CAH) is a net spender on financing. This means the firm has been issuing less debt and buying back shares and debt via their cash, in essence, de-leveraging.
14. Debt Issuance	In this case, the company is not issuing debt but instead buying it back aggressively. This indicates the firm is de-leveraging at a fast rate and using its cash to repurchase ownership of the firm and decrease its debt reliance.
15. Dividend growth potential	The company does in fact pay dividends and primarily funds them through the usage of operating cash flow instead of debt or equity issuance. This is a positive sign as it indicates the dividend can be adequately paid via cash flows as opposed to if the dividend was funded through debt or equity issuances which cannot be sustained into perpetuity. Hence, the dividend growth potential of Cardinal Health (CAH) is strong.

Ratio Analysis

The following table highlights trends in key financial ratios for Cardinal Health (CAH) and points to sources of value and concern.

Student Research: {Dominic Lupo}

The workbook provided with this paper presents a comprehensive set of ratios for Cardinal Health (CAH) over the past three years.

19. Trend in profitability?	Return on assets has increased substantially while return on equity has also grown in large orders of magnitude during the period, therefore, indicating a higher level of profitability for the company.
20. Margin trend	The free cash flow margin is the fastest increasing margin however all other margins are decreasing which indicates the company is suffering from decreasing revenues or is increasing its costs which cannot continue into perpetuity calling into question the sustainability of Cardinal Health's (CAH) improving margins.
21. Efficiency	Total and fixed asset turnover has increased slightly during the period which indicates low growth while revenue has increased at a slightly faster rate. This is preferential as the increase of revenue and faster turnover rates reduces risks and represents improving efficiency for the firm.
22. Liquidity	Cardinal Health's (CAH) current and quick ratios are relatively the same indicating a relatively similar long-term liquidity trend for the company over the period.
23. Financial leverage	The firm has increased total assets/total equity which has increased by roughly increased by 4x times relative to its initial first-period amount indicating a heightened level of leverage and that the growth potential for Cardinal Health (CAH) is rising.
24. Dupont ratio assessment	Again, total assets/total equity seems to be the driver in the increase of the Dupont ratio which indicates higher financial leverage coinciding with Cardinal Health's (CAH) high return on equity over the period. Net income margin for the firm has steadily declined during the period representing a decreasing level of

	profitability for the company and lowering the Dupont ratio.

Fundamental Analysis: Valuation

This fundamental analysis section applies five valuation models to Cardinal Health (CAH). The valuation workbook provided with this paper presents the key assumptions used in each model. The following table presents the based and stressed values for the company's stock price for each model. It suggests the company is slightly undervalued.

{screen shot from experiential 4}

Sensitivity Multiple Variables		**Current Market Price**		$ 51.59		
	Beta	*0.74*	*0.83*	*0.92*	*1.01*	*1.11*
	Ke	*5.97%*	*6.34%*	*6.75%*	*7.16%*	*7.61%*
	Steady Growth Rate					
Discounted Dividend Model	*0.00%*	$ 32.53	$ 30.65	$ 28.80	$ 27.16	$ 25.55
	2.00%	$ 48.91	$ 44.77	$ 40.93	$ 37.69	$ 34.67
	4.00%	$ 98.46	$ 83.02	$ 70.70	$ 61.56	$ 53.90
Multistage Dividend	*0.00%*	$ 10.62	$ 9.99	$ 9.37	$ 8.82	$ 8.29
	2.00%	$ 14.71	$ 13.46	$ 12.30	$ 11.32	$ 10.40
	4.00%	$ 27.11	$ 22.87	$ 19.48	$ 16.97	$ 14.86
FCF to equity holders	*-1.00%*	$ 60.95	$ 57.80	$ 54.66	$ 51.83	$ 49.03
	1.00%	$ 79.03	$ 73.52	$ 68.23	$ 63.64	$ 59.25
	3.00%	$ 121.43	$ 108.07	$ 96.29	$ 86.83	$ 78.35
FCF to Firm	*-1.00%*	$ 40.20	$ 37.31	$ 34.38	$ 31.71	$ 29.04
	1.00%	$ 70.53	$ 63.98	$ 57.69	$ 52.23	$ 47.00
	3.00%	$ 191.77	$ 158.14	$ 131.26	$ 111.30	$ 94.54

Valuation Results

1. Comment on proximity of your four calculated values to the Market Price:
   a) Are your calculated prices close?
   B) What assumptions keep your calculated prices from matching the market price?

i. Discount Dividend Model - The Discount Dividend Model for Cardinal Health (CAH) appears overvalued for all steady growth rates (0.00%, 2.00%, 4.00%) with the exception of six positive returns in the 4.00% steady state growth rate group. Like the Multistage model, the current price of $51.59 remains relatively close to distant from the calculated values returned from the Discounted Dividend Model. This time however, the volatility or spread of returns was much greater than that of the Multistage model. More specifically, the highest value returned was $98.46 when Ke = 5.97% and with a beta of 0.74 representing a 90.9% price increase from the stock's current price. This highest value was far further from the current price of the stock than that of the highest value returned from the Multistage model. The lowest value returned was $32.53 when Ke = 5.97% and with a beta of 0.74 representing a -36.9% price decrease from the stock's current price. Hence, though the calculated prices from the Discount Dividend were closer to the current price than that of the Multistage model, both the highest and lowest calculated prices from the Discount Dividend Model remain distant from the current stock price. The assumptions that prevent the calculated prices form matching that of current price are the steady growth rates and the cost of equity. In essence, raising the steady state growth rate and lowering the cost of equity percentage would cause the calculated prices to move upward and closer to that of the current price. Such constraint decreases would provide a margin of safety for the model. However, this would also cause the values that were initially above the current stock price to move upward further and away from the current stock price. Hence, these constraints prevent the calculated prices from reaching that of the current price as less conservative constraints are necessary for the calculated prices to reach that of the current stock price but in doing so, calculated values already above the current stock price would move even further away from it.

ii. Multi Stage Dividend Model - The multistage dividend model for Cardinal Health (CAH) also appears overvalued for all steady growth rates (0.00%, 2.00%, 4.00%). The current price of $51.59 remains very distant from even the next closest value returned by the Multistage dividend model of $27.11 when Ke = 5.97% and with a beta of 0.74 representing a 47.5% price decrease from the stock's current price. The assumptions that prevent the calculated prices from reaching that of the current price are the steady growth rates and the cost of equity. In essence, raising the steady state growth rate and lowering the cost of equity percentage would cause the calculated prices to move closer to that of the current price. However, such raises would be inaccurate as the steady state growth rate could only conceivable be raised to at most 5% from 4% and the cost of equity being lowered further would began to depart form the realty of the stock and its conceivable cost of equity. Hence, these constraints prevent the calculated prices from reaching that of the current price, but any further alteration of them would depart form the reality of the stock and would be cause the model and its corresponding calculated values to be Illegitimated.

iii. FCFE model - The free cash flow to equity holders model for Cardinal Health (CAH) indicated the firm is undervalued for all steady growth rates (-1.00%, 1.00%, 3.00%) with the exception of two flat returns. The current price of $51.59 remains relatively close to distant from the calculated values returned form the FCFE model. The highest value returned was $121.43 when Ke = 5.97% and with a beta of 0.74 representing a 135.4% price increase from the stock's current price. The lowest value returned was $49.03 when Ke = 7.61% and with a beta of 1.11 representing a 5.0% price decrease from the stock's current price. The assumptions that prevent the calculated prices form matching that of current price are the steady growth rates, the cost of equity, and the free cash flow per share. In essence, lowering the steady state growth rate and raising the cost of equity percentage would cause the calculated prices to move downward and closer to that of the current price. Additionally, the free cash flow/share assumption I used was a value of 0.82 as opposed to the Bloomberg given value of 0.54. Lowering the free cash flow per share assumption would reduce the calculated values for the model moving them downward and closer to the current share price which is presently beneath all but one of the calculated FCFE values. Such constraint decreases would provide a margin of safety for the model. Hence, the constraints as they exist currently prevent the calculated prices from reaching that of the current price as greater conservative constraints are necessary for the calculated prices to decrease to that of the current stock price.

iv. FCF Model - The free cash flow to firm model for Cardinal Health (CAH) also pointed to the firm being undervalued for all steady growth rates (-1.00%, 1.00%, 3.00%) with the exception of six negative returns and one flat returns. Like in the FCFE model, the current price of $51.59 remains relatively close to distant from the calculated values returned from the FCF model. This time however, the volatility or spread of returns was much greater. More specifically, the highest value returned was $191.77 when Ke = 5.97% and with a beta of 0.74 representing a 271.7% price increase from the stock's current price. This highest value was far further from the current price of the stock than that of the highest value returned from the FCFE model. The lowest value returned was $40.20

when Ke = 5.97% and with a beta of 0.74 representing a -31.4% price decrease from the stock's current price. The assumptions that prevent the calculated prices form matching that of current price are once again the steady growth rate, the cost of equity, and the free cash flow per share. More specifically, lowering the steady state growth rate and raising the cost of equity percentage would cause the calculated prices to move downward and closer to that of the current price. In addition, lowering the free cash flow per share assumption from 0.82 to a value closer to the Bloomberg suggested value of 0.54 would reduce the calculated values for the model moving them downward and closer to the current share price which is presently beneath all but six of the fifteen calculated FCF values. Such constraint decreases would provide a margin of safety for the model. However, this would also cause the values that were initially below the current stock price to move downward further and away from the current stock price. Hence, these constraints prevent the calculated prices from reaching that of the current price as greater conservative constraints are necessary for the calculated prices to reach that of the current stock price but in doing so, calculated values already below the current stock price would move even further away from it.

v. Enterprise Value – The calculated enterprise value of the firm was 17,947 with an enterprise per share value of $63.25. This represents a premium of 22.6% from the current stock price of $51.49. As enterprise value is not a function of Ke or g an assumptions table is not available for review. However, since the enterprise value of the firm appears to be at discount, the total value of Cardinal Health (CAH) appears to be undervalued relative to its fair enterprise value.

2. Comment on assumption changes
A) did you change any of the light blue shaded assumptions?
B) if so, what caused you to do so?

Yes, I changed the Years 1 - 5 annual growth rate values to more accurately reflect the Cardinal Health stock and the Healthcare industry it is a part of. More specifically, I lowered the values from 10%, 9%, 8%, 7%, and 6% to 8%, 7%, 6%, 5% and 4% respectively. These more conservative values more accurately reflect the growth rate for the Health care industry and the Cardinal Health (CAH) brand thereby yielding a more accurate fair value price target for each of the five models calculated for.

3. Model Difference with Bloomberg; does the calculated WACC in Col E of experiential

4 match what Bloomberg shows in Col D?

A) If not, which is correct and why?

No, it does not. Bloomberg returned a 5.75% WACC while the calculated WACC for the model was 4.85% or a -15.7% decrease from the Bloomberg returned value. The value that is most correct is the WACC sourced from the model in column E as this value incorporates the more conservative, and realistic, growth rates used for Years 1 through 5 in the model (8%, 7%, 6%, 5% and 4%) to that of Bloomberg's default percentages (10%, 9%, 8%, 7%, and 6%).

4. Comment on Sensitivity Results;
A) Over what range of Ke, g and Beta do your calculated prices exceed the market price?
B) Are these levels of Ke, g and Beta reasonable?

For the FCFE model, all ranges of Ke, g and Beta exceeded the market price save for one calculated value that is located in the -1.00% g, 7.61% Ke and 1.11 Beta cell. As for the Multistage Dividend Model, all the calculated values throughout the Ke, g, and Beta range returned values below that of the market price with none exceeding it. Turning to the Discounted Dividend Model, only the calculated values with a g of 4.00% or greater, regardless of the Ke and Beta values, exceeded the current stock price. All values below the 4.00% g did not. As for the FCF model, all values with a g of 1.00% or greater returned a stock price higher than that of the current price expect for for one calculated value that is located in the 1.00% g, 7.61% Ke and 1.11 Beta cell. All other calculated values below the 1.00% g range returned prices below the current stock price. These levels of g, Ke and Beta are in fact reasonable as they reflect the modified reality matching assumptions to the steady sate growth rate that were inputted to the model in the previous question.

Fundamental Analysis: Qualitative Assessment

This final section of the report offers a qualitative assessment of Cardinal Health (CAH). Much of this information come from Mergent Online ® provided by FTSE Russell.

Student Research: {Dominic Lupo}

Business Summary

Topic	Summary Points
Main Product line(s) description	Cardinal Health (CAH) is a healthcare products and services company providing customized solutions for hospitals, healthcare systems, pharmacies, ambulatory surgery centers, physician offices, clinical laboratories and patients in the home. Cardinal Health (CAH) manages its business in two segments: Pharmaceutical and Medical. Cardinal Health (CAH)'s Pharmaceutical segment distributes branded and generic pharmaceutical, specialty pharmaceutical and over-the-counter healthcare and consumer products in the U.S. Cardinal Health (CAH) branded medical, surgical and laboratory products, which are sold in the U.S., Canada, Europe, Asia and other markets.
Recent news relevant for valuation	***02/02/2018*** On Feb. 1, 2018, Co. sold its Cardinal Health China business, which included Co.'s pharmaceutical and medical products distribution business in China, but not included Co.'s remaining businesses in China, including Cordis, its recently acquired Patient Recovery business, its medical sourcing team or other functions, to Shanghai Pharmaceuticals Holding Co., Ltd. for $1,200,000,000; the net proceeds was approximately $800,000,000 after adjusting for third party indebtedness, withholding taxes, and other transaction expenses and adjustments. ***11/16/2017*** On Nov. 14, 2017, Co. announced that it has signed a definitive agreement to sell its Cardinal Health China business to Shanghai Pharmaceuticals Holding Co., Ltd. for $1,200,000,000. The transaction is expected to close by the end of Co.'s fiscal year, subject to closing conditions and regulatory clearances. ***04/19/2017*** On Apr. 18, 2017, Co. announced that it has entered into a definitive agreement to acquire Medtronic Plc. Patient Care, Deep Vein Thrombosis and Nutritional Insufficiency businesses, encompassing 23 product categories across multiple market settings, including numerous industry-leading brands, such as Curity, Kendall, Dover, Argyle and Kangaroo, which are used in nearly every U.S. hospital, for $6,100,000,000 in cash. The acquisition is expected to be financed with a combination of $4,500,000,000 in new senior unsecured notes and existing cash. The transaction is expected to close in the first quarter of Co.'s fiscal year 2018, subject to customary closing conditions, including regulatory clearances.

Student Research: {Dominic Lupo}

History

Where and how it started	Cardinal Health (CAH) was formed in Ohio in 1979 and was later incorporated in Ohio in July 1982 as Cardinal Distribution, Inc. Its present name was adopted in Feb. 1994.
3-5 seminal events that lead to growth and structure today	1 Acquisition: (02/02/2018) Cardinal Health (CAH) sold its Cardinal Health China business, which included Co.'s pharmaceutical and medical products distribution business in China, but not included Co.'s remaining businesses in China, including Cordis, its recently acquired Patient Recovery business, its medical sourcing team or other functions, to Shanghai Pharmaceuticals Holding Co., Ltd. for $1,200,000,000; the net proceeds was approximately $800,000,000 after adjusting for third party indebtedness, withholding taxes, and other transaction expenses and adjustments.
	2 Acquisition: (04/19/2017) Cardinal Health (CAH) announced that it has entered into a definitive agreement to acquire Medtronic Plc. Patient Care, Deep Vein Thrombosis and Nutritional Insufficiency businesses, encompassing 23 product categories across multiple market settings, including numerous industry-leading brands, such as Curity, Kendall, Dover, Argyle and Kangaroo, which are used in nearly every U.S. hospital, for $6,100,000,000 in cash. The acquisition is expected to be financed with a combination of $4,500,000,000 in new senior unsecured notes and existing cash. The transaction is expected to close in the first quarter of Co.'s fiscal year 2018, subject to customary closing conditions, including regulatory clearances.
	3 Acquisition: (05/19/2004) Cardinal Health (CAH) signed a definitive agreement to acquire ALARIS Medical Systems, Inc. (ALARIS) in a transaction valued at approx. $2,000,000,000, including the assumption of outstanding debt. Under the agreement, Co. has agreed to make a cash tender offer to acquire all of the outstanding shares of ALARIS common stock at a price of $22.35 per share. The agreement provides for Co. to acquire ALARIS in a two-step transaction under which a cash tender offer will be made for all outstanding shares of ALARIS common stock at a price of $22.35 per share. The tender offer will be followed by a merger in which the holders of the remaining outstanding shares of ALARIS common stock will also receive $22.35 per share in cash, without interest. The tender offer will be conditioned upon a majority of the outstanding shares of ALARIS common stock being tendered into the offer by holders other than the majority shareholder and ALARIS directors or officers. The transaction will also be subject to regulatory clearance and other customary conditions. Upon completion of the merger, ALARIS will become a wholly owned subsidiary of Co. The agreement has been approved by both

	companies' boards of directors. The transaction is expected to be completed in Co.'s fourth quarter of fiscal year 2004, ending June 30, 2004.
	4 Acquisition: (12/16/2003) Cardinal Health (CAH) received clearance from the European Commission for its pending acquisition of The Intercare Group PLC. With this clearance, Co. is able to complete its acquisition of the Intercare Group. To date, over 90% of the outstanding Intercare Group shares have been tendered into Co.'s recommended cash offer. Co. expects to complete its purchase of these tendered shares by the end of Dec. and to acquire the remaining Intercare Group shares in the first quarter of 2004. As announced on Oct. 29, the transaction values the company at about US$530,000,000, including assumption of Intercare debt (based upon outstanding indebtedness at June 30, 2003). Co. initiated its offer following the approval of the proposed acquisition by both companies' boards of directors.
	5 Acquisition: (06/14/2002) Cardinal Health (CAH) and Syncor International Corp. (Syncor) announced a definitive agreement allowing Co. to acquire Syncor for approx. $1,100,000,000. The acquisition of Syncor is a stock-for-stock deal in which Syncor will become a subsidiary of Co. Terms of the definitive agreement call for Syncor shareholders to receive .52 Co. common shares on a fully diluted basis. The transaction is intended to be tax- free to the holders of Syncor common stock. Co. will also assume Syncor's debt, which, net of cash, totaled $202,000,000 as of Mar. 31, 2002. The acquisition is expected to be completed by the end of 2002, subject to regulatory clearance, approval by Syncor shareholders, and other customary conditions.

Business

NAICS Code and GICS Sector	**424210 - Drugs and Druggists' Sundries Merchant Wholesalers**

Reportable Segments

	Revenues			Operating Income		
Report Date	06/30/2021	06/30/2020	06/30/2019	06/30/2021	06/30/2020	06/30/2019
Currency	USD	USD	USD	USD	USD	USD
Scale	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands
Pharmaceutical	145,796,000	137,495,000	129,917,000	1,684,000	1,753,000	1,834,000
Medical	16,687,000	15,444,000	15,633,000	577,000	663,000	576,000
Total	**162,483,000**	**152,939,000**	**145,550,000**	**2,261,000**	**2,416,000**	**2,410,000**

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Competitors

Competitor Name	Aspects that gives Cardinal Health (CAH) advantage over these
QK Healthcare, Inc.	QK Healthcare Inc. has a net income $36,707,000 compared to that of Cardinal Health's (CAH) net income of $611,000,000 indicating that the firm has a far greater level of cash flow to be used in their businesses to create greater cash flows or invest in new research to outpace competitors.
China Medicine Corp.	China Medicine Corp. has a small staff of 281 employees compared to that of Cardinal Health's (CAH) 47,300 indicating Cardinal has a larger scope of business and can more readily compete with its rivals and reposition with industry trends than its smaller competitor.
Costco Wholesale Corp.	Costco Wholesale Corp. has a P/E ratio of 42.232 while Cardinal Health (CAH) has a current P/E ratio of 23.779, or less than half of that number indicating that relative to the largest competitor of all of Cardinal Health's (CAH) direct competitors, the firm is robustly fairly priced.
AmerisourceBergen Corp.	Amerisource Bergen Corp. has a negative EBITDA of (4,865,204,000) while Cardinal Health (CAH) had an EBITDA of 880,000,000 amounting to the third highest EBITDA of all its direct competitors.
ScripsAmerica Inc.	ScripsAmerica Inc. has more liabilities than assets by a assets to liabilities ratio of 0.719 while Cardinal Health (CAH) has a relatively even ratio of assets to liabilities 1.042 indicating a higher level of liquidity and creditworthiness for the firm than that of ScripsAmerica Inc.

Student Research: {Dominic Lupo}

Competitive Analysis

The following table describes Cardinal Health's (CAH) competitive position relative to its sector using the Porter Five Forces approach.

	{Cardinal Health CAH}	Sector	{Cardinal Health CAH} advantage
Threat of Entrants	Moderate	Moderate	Cardinal Health (CAH) has an equivalent threat of new entrants to its line of business to that of the Healthcare sector as a whole. However, Cardinal Health (CAH) has an established moat and a robust brand that allows it to dispel and eliminate newcomers more readily than other firms within Healthcare. Cardinal Health's (CAH) large size itself also serves as a barrier to new entrants competing directly with them.
Threat of Substitutes	High	High	Both the surrounding Healthcare sector and Cardinal Health have roughly equivalent substitute

			threat levels. Yet, Cardinal Health, due to its larger size holds a greater ability to compete with substitutes or become substitutes to another firm themselves via their large cash position and high cash flow business.
Supplier Power	Moderate	High	Cardinal Health has a slightly more preferential supplier power environment than that of Healthcare as a whole due to many of its supplier contracts being longer term and therefore more consistent as opposed to the entire healthcare sector which may incorporate newer firms or firms that are pivoting into new areas that cannot negotiate as preferential treatment to that of Cardinal Health's (CAH) supplier agreements.

Buyer Power	Low	Moderate	Cardinal Health (CAH) has a lower level of buyer power to that of the Healthcare sector as a whole. This is due to the firm having a long established line of products that have garnered reliable and strong followings. Consequently, its customers are less prone to demand lower prices than customers of more easily substituted firms or newer firms in the Healthcare sector.
Competitive Rivalry Within Industry	High	High	Cardinal Health, like the Healthcare sectors as a whole has fierce competition from new entrants as well as established players than can offer substitute products. Cardinal Health, due to its larger size and more expansive supply of resources and capital, is burdened by competition less than some of its

peers, but nonetheless still experiences a highly competitive environment.