Based on Covid-19, Enterprise Valuation Analysis—A Case Study of Pfizer Inc.

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***Abstract*—Value investing, a common investment strategy introduced by Benjamin Graham, is used by lots of famous investors such as Warren Buffett, Seth Klarman, and Christopher Browne. Under the Covid-19 pandemic, this paper aims to determine if Pfizer, one of the world's premier biopharmaceutical companies, is worth buying for value investors by investigating its fundamentals and valuation under this global crisis. Data for the past five years from Bloomberg was used to analyse its fundamental performance by comparing it to its peer group. Multiples valuation is used to determine whether it is undervalued or overvalued. The result shows that Pfizer is a quality stock that is undervalued.**

***Index Terms*—Pfizer, covid-19, multiples valuation, financial analysis.**

I. Introduction

With the rapid development of vaccine for Covid-19, substantial progress can be seen in reducing fatalities and cases in the past few months. The US economy has achieved a pre-pandemic level under a basket of supportive fiscal and monetary policies [1]. Although the fast-spreading contagious Delta variant and the threat of a new variant could potentially mean a resurgent pandemic and more uncertainty, the global GDP is expected to grow 5.9% in 2021 and 4.9% in 2022 [2]. The economy should continue to recover at a slower pace, and the pandemic should have much less of an impact compared to the last two years as the market has adapted to operate under a pandemic environment [3]. After years of outstanding performance of growth stocks, most notably during the pandemic last year, value stocks have begun to rebound, the shift from growth to value is expected to continue. The global recovery has significantly boosted the performance in some cyclical industries such as airline and hospitality [4]. On the other hand, some healthcare related industries benefit from this crisis such as the pharmaceutical industry. It is no doubt that the main Covid-19 crisis beneficiaries of pharmaceutical sector are vaccine manufacturers. However, other sub-sectors such as medical-product manufacturers, over-the-counter drugs, and diagnostics are also benefited from the pandemic to combat the virus [5].

The global pharmaceutical industry's sales reached approximately $1.16 trillion USD in 2020. The United States, the largest pharmaceutical market, account for over $530 billion USD in 2020 [6]. With the increase in aging population, rising healthcare awareness triggered by Covid-19 and emerging markets' growing prosperity, the pharmaceutical industry is expected to grow robustly underpinned by these factors [5].

Graham and Dodd first introduced a value investing strategy in 1928 at Columbia Business School, such method has been one of the most common approaches for stock selection since then [7]. According to Bank of America, value investing has produced a return of 1,344,600% since 1926 [8]. The philosophy behind value investing is to long stocks at a price that is discounted compared to its intrinsic value. Margin of safety, an investment principle of purchasing securities when its market price is lower than its intrinsic value at a significant discount. It can provide opportunities for high return when the stock is re-evaluated by the market and increase its value to a fair price. It provides minimised downside risk at the same time when business falters. The central idea of Graham's strategy is the safety net created by buying a security that costs much less than its fundamental value [9].

The paper will be divided into 3 parts. The first part is data and methodology. It begins with an explanation of the method of data collection and analysis. In this part, the industry and company's financial data will be consolidated. Also, valuation model, multiple valuation of Pfizer will be presented. It is then followed by the result and discussion part, where data from the previous session will be analysed and discussed. Finally, the report concluded by exanimating whether Pfizer is a good choice for investors who adopt the value investing approach.

II. Data and Methodology

With the purpose of gaining an understanding of Pfizer from different dimensions, a holistic approach is used to produce a comprehensive evaluation. Pfizer's background information, business strategies, and financial performance will be used to assess the 'quality' of the stock. Financial analysis will be produced based on two categories of the financial ratio: profitability ratios and liquidity ratios. In which, gross profit margin, operating profit margin, EBITDA margin, and Return on equity (ROE) are chosen for profitability ratios. These financial metrics react how the company's ability to earn profits and value for shareholders. As a result, investors will prefer higher profitability ratios.

For liquidity ratios, Current Ratio, Net Debt/ Equity, and Common Equity/ Total Assets are used, it shows the company's ability to cover short-term cash flows and liabilities without raising extra capital.

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TABLE I: PROFITABILITY RATIOS OF PFIZER AND INDUSTRY

Profitability Ratios	2016	2017	2018	2019	2020
Gross profit Margin	76.66%	78.63%	79.03%	79.96%	79.26% (70.90%)
Operating profit margin	22.73%	26.11%	26.10%	35.95%	19.49% (17.20%)
EBITDA margin	33.63%	38.04%	38.00%	50.94%	31.82% (27.60%)
Return on equity (ROE)	11.61%	32.58%	16.56%	25.72%	15.22% (24.60%)

TABLE II: LIQUIDITY RATIOS OF PFIZER AND INDUSTRY

Liquidity Ratios	2016	2017	2018	2019	2020
Current Ratio	1.25%	1.35%	1.57%	0.88%	1.35% (1.20%)
Net Debt/Equity	40.30%	32.80%	35.9%	69.00%	45.80% (72.9%)
Common Equity/ Total Assets	34.68%	41.49%	39.76%	37.67%	41.00%

Also, the yearly revenue growth rate will be discussed as it is also a key indicator to assess the company's long-term trend. Specifically, the positive growth rate of revenue shows the firm's sustainability and operational capabilities. And due to the continued spread of the Covid-19, revenue surged in the first and second quarter of 2021. Furthermore, Pfizer announced that the firm has signed a deal with Biovac Institute to manufacture and distribute Covid-19 vaccine doses within Africa recently [10]. It will be another big market and further improve Pfizer's revenue.

TABLE III: ONE YEAR REVENUE GROWTH IN LAST 5 YEARS

One Year Growth Rate	2016	2017	2018	2019	2020
Revenue ($ millions)	52824	52546	53647	41172	41908
Revenue (chg. %)	8.13%	-0.53%	2.10%	-23.25%	1.79%

TABLE IV: REVENUE GROWTH IN LAST THREE QUARTERS

	2020 Q4	2021 Q1	2021 Q2
Revenue ($ millions)	11684	14582	18977
Revenue (chg. %)	11.82%	44.62%	92.39%

Besides, a comparison between 2020 and estimated 2021 P/E ratios will be done to determine the change of current stock price relative to earnings per share (EPS). According to most of analyst's estimates from Bloomberg, Pfizer has a much lower P/E ratio in 2021, because there's still some uncertainty about the Covid-19 crisis, therefore, it should be considered whether the Covid-19 vaccines will be needed on an annual basis or not [10].

TABLE V: PFIZER'S 2020 AND 2021 (ESTIMATE) P/E RATIOS

	2020	2021 (Estimate)
P/E	20.69X	10.74X
EPS	1.78X	4.09X

Valuation will be used to determine the value of Pfizer's stock. It is clear that companies in the same industry face similar challenges and opportunities. There is no denying that firms should have similar values with similar attributes. As a result, multiples valuation needs to be considered. It is crucial to identify the comparable firms from the same industry with similar size, leverage, and return on invested capital to match the similar financial risk. Thus, based on these key factors, the most suitable company has been selected and these could improve the accuracy of the valuation. A total of four firms are selected in Table VI based on the aforementioned criteria: Johnson & Johnson, Merck & Co Inc, Eli Lilly & Co, and AbbVie Inc. Adjusted revenue, EBITDA, number of employees, totalT debt/total asset, and return on invested capital (ROIC) are selected as indicators to compare against different pharmaceutical firms.

TABLE VI: COMPARABLE FIRMS

	Pfizer Inc	Johnson & Johnson	Merck & Co Inc	Eli Lilly & Co	AbbVie Inc
Adj revenue ($ millions)	57374	82584	47994	24539	45804
EBITDA	17742	31776	17532	8173	23102
Number of Employees	78500	136400	72000	34960	48000
Total Debt/ Total Asset	26.8	20.2	36.5	35.6	57.8%
ROIC	6.58%	18.13%	10.66%	25.56%	13.46%

III. RESULTS AND DISCUSSION

A. Company Background

Pfizer offers medicines, medical devices, vaccines, and consumer healthcare products for oncology, inflammation, cardiovascular, and other therapeutic areas. Pfizer's global portfolio includes medicines and vaccines. It operates three business segments: Pfizer Biopharmaceuticals Group, Upjohn, and Consumer HealthCare prior to the separation of the Upjohn Business. But now, Pfizer operates as a single operating segment engaged in the discovery, development, manufacturing, marketing, sales, and distribution of biopharmaceutical products worldwide. As for its geographic reach, the US is Pfizer's single largest market, accounting for over 50% of revenue. Its other segments are emerging markets, Latin America, Eastern Europe, nearly 20% of revenue, and developed rest of the world some 10% of revenue. In all, the company sells products in more than 125 countries. Pfizer focuses on the innovative drug business and strives to make Pfizer a global leader in innovative drugs [11].

B. Business Strategies

Since Albert Bourla formally took over Ian Read as Pfizer's new CEO in January 2019, he has begun a large-scale reform of the organizational structure. The core reform idea is to focus on the innovative drug business and strive to make Pfizer a global leader in innovative drugs. In July 2019, Pfizer announced the divestiture of Upjohn (brand-name drugs and mature drugs with expired patents) and merged with generic drug giant Mylan into a new generic drug company Viatris. Pfizer's biopharmaceutical business became the company's core business unit after it divested Upjohn, shifting its focus from common chronic disease drugs to medicine for tumor and some orphan drugs [12].

After reforms, Pfizer's innovative drug research and development efficiency has been significantly improved. From Table VII, the success rate of phase II clinical product development reached 52%, and the third phase reached 85%, far exceeding the industry level and a qualitative improvement over Pfizer in 2015. It shows that the end-to-end clinical success rate through 2020 is more than 2.5X the 2019 industry benchmark [13].

TABLE VII: 5-YEAR CLINICAL TRIAL SUCCESS RATE IMPROVEMENT

Clinical Trial Success Rates (new molecular entities only)	Phase 1 (3-year avg.)	Phase 2 (5-year avg.)	Phase 3/Reg. (5-year avg.)	End-to-End Success Rate
Pfizer (through 2020)	48%	52%	85%	21%
Industry (through 2019)	40%	29%	72%	8%
Pfizer (through 2015)	48%	15%	70%	5%

With its strong R&D and cooperative development capabilities, Pfizer’s top 10 sales of drugs are very different from 10 years ago and 10 years later. Except for the pneumonia vaccine Prevnar 13, none of them are the same. The main products have changed from common chronic diseases to tumors and rare sickness etc. Moreover, FY 2020 revenues grew 8% operationally, excluding the impact of consumer and BNT162b2 (Covid-19 vaccines) [10]. It means that Pfizer's transformation and reform have achieved great success.

In 2020, the company's top three drugs sold are: Prevenar-13, sales increased to 5.85 billion U.S. dollars; breast cancer targeted drug Ibrance increased to 4.96 billion U.S. dollars; and anticoagulant Eliquis revenue was 4.22 billion U.S. dollars, a year-on-year increase of 26%. The sales of Covid-19 vaccine in 2020 are only 154 million U.S. dollars. However, under the continuous cover of the Covid-19 pandemic, the estimated sales in 2021 will soar to 35.84 billion U.S. dollars [13].

C. Rise of New Coronavirus Strains

Under the Covid-19 pandemic, the RNA virus is expected to mutate over time. With that in mind, this guarantees the continuity of large vaccine orders considering the fact that vaccines protection drops over time. According to research, it is suggested that Pfizer jab effectiveness after the second dose dropped from 96.2% after one week to two months to 84% after four to six months with an average of declining 6% every two months [14]. With ongoing development on new coronavirus strains, getting booster doses of vaccines is an inevitable trend, many countries such as UK, Germany, USA, France, etc. have already begun administering third booster shots [15]. As a result, the large demand for vaccines from governments will continue in foreseeable future. For instance, the U.S. government placed an order for 200 million doses of the Pfizer-BioNTech vaccine in 2020 and another 100 million doses in February of this year. In total, Pfizer and BioNTech have sold 1 billion doses to the U.S. government [16].

D. Most Common Covid-19 Vaccines with the Highest Protection

From Statista’s statistics in Table VIII, Pfizer is the most popular Covid-19 vaccine with 61 countries using its vaccine, followed by Oxford/AstraZeneca with 41 countries and Moderna with 27 countries. Moreover, Fig. 1 shows that the Pfizer vaccine is one of the vaccines that have the highest efficacy at around 95%, while AstraZeneca and Janssen’s products were found to have lower efficacy with around 60% to 70% [17]. According to Israel’s biggest healthcare provider - Clalit Institute for Research, 2 doses of Pfizer’s vaccine reduced severe covid-19 by 92%, hospitalisation by 87%, and symptomatic cases by 94% [18].

TABLE VIII: MOST WIDELY USED COVID-19 VACCINES

	No. of countries (as of Feb 16,2021)	Widely used countries
Pfizer BioNTech	61	United States/ Germany
Oxford-AstraZeneca	41	United Kingdom/ Sweden
Moderna	27	United States
Sinopharm - Beijing	10	China
Gamaleya (Sputnik)	9	Russia
Sinovac	6	China
Sinopharm - Wuhan	2	China
Bharat Biotech (Covaxin)	1	India

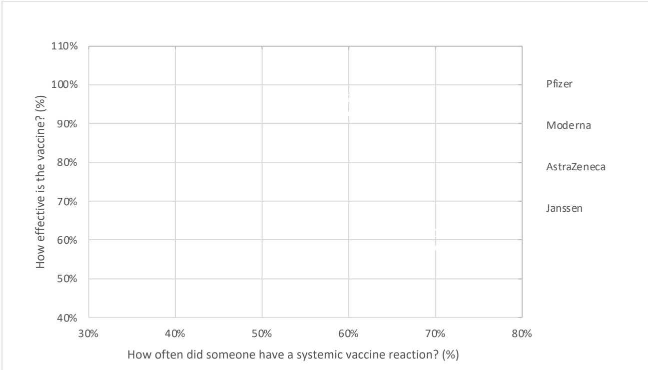

Fig. 1. Effectiveness of vaccines.

E. Financial Analysis

Firstly, in the past 5 years, Pfizer has had a relatively good performance in profitability. In specific, gross profit margin has shown a generally growing trend and has always surpassed the industry average. From Table I, it shows that gross profit margin increased from 76.66% in 2016 to 79.26% in 2020. Moreover, both operating profit margin and EBITDA margin outperformed the industry. However, return on equity (ROE) is underperformed by 7% when compared to the industry.

Secondly, Pfizer's transformation has achieved remarkable results. After the divestiture of the consumer business and the expired patent drug, Upjohn Business, the big brother of the pharmaceutical industry, which focuses on science and innovation, increased 7% in global revenue from the pharmaceutical business in 2020 when the Covid-19 is raging (excluding the divestiture in 2019 Consumer business of $2.08 billion), reaching $41.9 billion, which is a remarkable achievement.

From Table III, its revenue has been fluctuating for the past five years. From Table IV, Pfizer has shown a continued rising trend in revenue for the past few quarters. As shown in Fig. 2, it increased by over 60% from $11684 million in 2020 Q4 to $18977 million in 2021 Q2. This indicates a healthy state of sustainable development. The sharp rises in revenue in the first and second quarters of 2021 were boosted by the never-ending global epidemic. With the daily new Covid-19 cases continued to fluctuate, strict travel restrictions related to vaccination requirement has been set by different countries’ government with the purpose of lowering infection fatality rate and speeding up the process of returning to full normalization. Thus, the demand for vaccines has skyrocketed since the launch of vaccines.

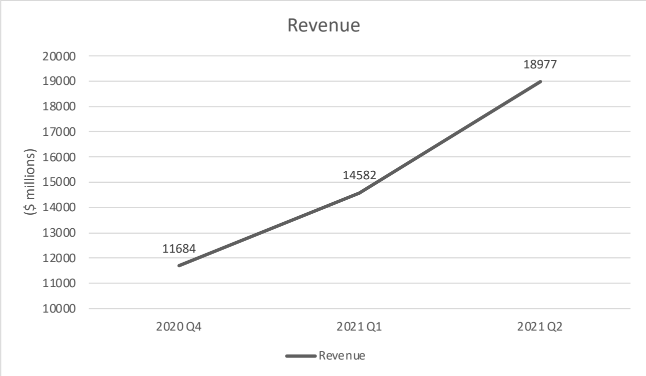

Fig. 2. Revenue in last three quarters.

Thirdly, as for liquidity ratios. Specifically, the current ratio maintains a relatively stable level and exceeds the industry average level. Furthermore, from Table II, in 2020, Pfizer's net debt to equity ratio is 45.80%, which is far below the industry. It means that Pfizer's long-term financial status is great. According to Table IX, Pfizer's operating cash flow was $4538 million in 2021 Q1, and for Q2 2021, its cash from operating activities achieved $11299 million, which is more than 2.4X the first quarter in 2021. Thus, it shows that Pfizer's annualized cash flow will reach $18000 million. As a result, it gives a strong belief that Pfizer's cash flows will remain robust in the next few years.

TABLE IX: PFIZER'S OPERATING CASH FLOW IN LAST TWO QUARTERS

	2021 Q1	2021 Q2
Cash from operating activities ($ millions)	4538	11299

In general, Pfizer shows great financial performance. From Table V, its P/E ratio is expected to decline around 50% from 20.69X in 2020 to 10.74X in 2021 which may signal the share price does not reflect the true value accurately. In particular, its EPS increase over 300% from 1.78X in 2020 to 4.09X, this indicates that there is a huge increase in money made for each stock. With that in mind, Pfizer is potentially being undervalued.

F. Valuation

Specifically, price-to-earnings (P/E) ratios are the most common multiple. P/E ratios are constated by the company's stock price and its earnings per share. They show the amount that investors are willing to pay for one dollar of company earnings. The P/E ratio could reflect whether the stock price is overvalued or undervalued. Generally, high a P/E ratio usually means the firm's stock is overvalued or investors have high expectations on this firm's future. It is essential to obtain the forward-looking P/E ratios of all comparable firms.

TABLE X: COMPARABLE FIRMS' 2021 P/E RATIOS ESTIMATE (2021 ESTIMATE)

	Pfizer Inc	Johnson & Johnson	Merck & Co Inc	Eli Lilly & Co	AbbVie Inc	Industry	median*
P/E	10.74X	17.04X	12.86X	29.16X	8.56X	26.30X	14.95X

*median of the comparable firms

As shown in Table X, Pfizer's P/E ratio is much lower than the industry average, and still in a lower position. It means that Pfizer is undervalued. Furthermore, it also could calculate the intrinsic value of Pfizer by using the comparable firms' P/E ratios. Specifically, the estimated stock price of Pfizer is obtained by equation (1).

$$P = EPS_{2021\ estimate} \times P/E_{\text{median of the comparable firms}} \quad (1)$$

As a result, the estimated stock price of Pfizer is $61.15, which is higher than the current market price ($43.89). It means that the stock of Pfizer appears to be undervalued.

In order to make the valuation more accurate, the EV/EBITDA ratio is also needed to compute and will give another perspective to evaluate the value of the company's stock. EV/EBITDA ratio relates the company's enterprise value to its earnings before interest, taxes, depreciation, and amortization. It is not affected by the company's creditor's rights structure, tax situation, and accounting standards, and is the closest profit indicator to the company's real profitability. Therefore, it makes listed companies in different countries and markets more comparable. In addition, this method is not affected by the difference in capital structure, even the company changes the capital structure, the valuation will not be affected. Thus, it is useful for comparing the valuations of different firms.

TABLE XI: 2021 EV/EBITDA ESTIMATE

	Pfizer Inc	Johnson & Johnson	Merck & Co Inc	Eli Lilly & Co	AbbVie Inc	median *
EV/EBITDA	9.28X	13.43X	10.51X	26.06X	8.8X	11.97X

*median of the comparable firms

According to Table XI, the estimate of the EV/EBITDA ratio of Pfizer is 9.28X, which is lower than the median of the comparable firms (11.97X). It means that Pfizer's stock is undervalued.

To sum up, based on multiples valuation, the value of Pfizer's stock looks underpriced.

IV. CONCLUSION

In conclusion, Pfizer is worth investing in for investors who adopt value investing approach based on 5 aspects: industry trend, business strategy, financial performance, valuation, and the epidemic. Pfizer should be able to gain benefit in the future with the support of industry growth led by serval favorable factors. The company is expected to grow further with its strong focus on innovative drug research and development, along with its transformation plan which makes it stand out from the crowd. Besides, the rise of new coronavirus strains will sustain the demand for Covid-19 vaccines due to the possibility for third-dose booster shots and more countries will approve the emergence use of Pfizer's vaccine for the population below 18. Pfizer, as the most popular Covid-19 vaccine used by most countries, the sustained demand will benefit their growth of revenue. And Pfizer's strong cash flow will also further invest in the drug pipeline, thus forming a good ecological cycle system.

From the other perspective, Pfizer's EPS is expected to increase sharply, which is very attractive. Besides, Pfizer's beta is 0.74, which is a defensive stock. Thus, it will be a great target stock in the market, which is trading near all-time highs. As a result, with positive financial performance and effective business strategies, this is a good quality undervalued stock with a great future prospect.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Zhenpeng Liu conducted the research, analyzed the data, and wrote the paper.

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