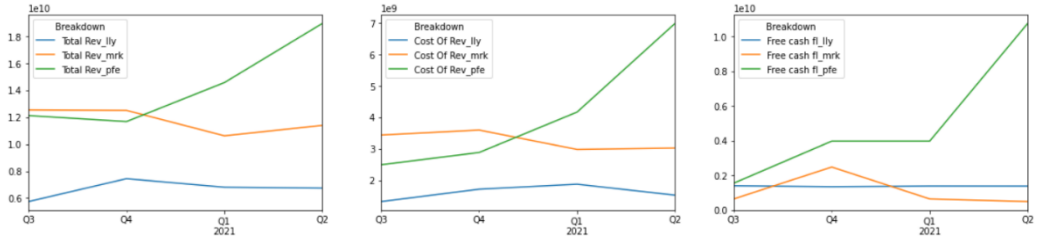
INVESTMENT IN A BIOPHARMACEUTICAL COMPANY

The pharmaceutical companies can be attractive for long-term investors, even if they may have a reputation of being risky since the final stages of a trial are crucial and may result in big gains or failure.[1]

The global pharmaceutical market is expected to grow from 1228$ billion in 2020 to 1250$ billion in 2021, with a CAGR of 1.8%.[2] In 2020 North America accounted for 49.0% of world pharmaceutical sales compared with 23.9% for Europe.[3] I focused on three American companies: Pfizer Inc., Eli Lilly and Co. and Merck & Co. Inc.[4]



	Graham Number	regularMarketPrice	epsTrailingTwelveMonths	bookValue	priceToBook
lly	32.614171	230.989	6.650	7.109	32.492474
mrk	25.485181	71.940	2.196	13.145	5.472803
pfe	25.675172	44.210	2.342	12.510	3.533973

The charts represent the Total Revenue, The Cost of Revenue and the Free Cash flow for the three companies. We see that Pfizer has a higher Total Revenue and higher Free Cash Flow for the past two quarters compared to the other two companies. The table reports the Graham number, the actual Stock Price, the Earning per Share over the past 12 months, the Book Value per share (most recent quarter - mrq) and the Price to Book ratio (mrq). All three companies have a Stock Price larger than the Graham number and, having a look at the Price to Earning Ratio, we see that Lilly has the highest value (34.5) while Pfizer has the lowest (18.7) among the three. So, in principle, all three companies could be overvalued. However, Pfizer's Stock Price is the one that is closer to the corresponding Graham number (44$ vs 26$). Pfizer has the greater Book Value per share (12.5$) and the lowest Price to Book ratio (3.5), meaning it could be an attractive investment compared to the other two companies. The Pfizer's Adjusted Quarterly Earnings per share were 1.07$ in Q2 2021 compared to 0.78$ of Q2 2020. Pfizer's revenue for Q2 2020 was 18.98$ billion for the quarter, compared with the 11.8$ billion in revenue generated in the second quarter of 2020. Two factors explain this performance: a better year-over-year performance compared to Q2 2020 (most of the Western world in pandemic lockdown), and 7.8$ billion in revenue from the COVID-19 vaccine.

If we choose Pfizer stock as investment, we can have a look at its future Earning per Share (EPS). The full code is available in the jupyter notebook. I considered the EPS values starting from 1997 on a quarter level (a lower granularity was not available) and I used an autoregressive model to predict the EPS for the next 12 quarters. Autoregression predicts the value at the next time step by using observations from previous time steps as input. It's used for forecasting when there is some correlation between values in a time series and the values that precede and succeed them.

Here are the results:

	2021-10-25	2022-01-31	2022-05-02	2022-07-26	2022-10-25	2023-01-31	2023-05-02	2023-07-26	2023-10-25	2024-01-31	2024-05-02	2024-07-26
EPS Forecasting	0.84456	0.532783	0.918975	1.044639	0.847722	0.587293	0.897335	1.016173	0.84844	0.63128	0.88079	0.99104

[1] article
[2] link
[3] report EFPIA
[4] Pfizer competitor