

# A 2010 - 2020 analysis of investment and return of 14 Pharma companies.

## 1 Methodology

A sample of 14 Pharmaceutical and Biotech companies with the following characteristics were analysed:

- A balance between US and EU players: 6 in EU (AstraZeneca (AZN), GlaxoSmithKline (GSK), Novartis (NOVN), Novo-Nordisk (NOVO), Sanofi (SAN) and Roche (ROG)), 8 in the US (AbbVie (ABBV), Amgen (AMGN), Biogen (BIIB), Bristol Myers Squibb (BMY), Gilead (GILD), Lilly (LLY), Merck&Co (MRK) and Pfizer (PFE)),
- Mostly pure-players in their field,
- Excluded from this analysis are companies where Pharma is not the dominant activity in terms of sales (*e.g.* Merck KGaA, Bayer) or privately-held groups (*e.g.* Boehringer Ingelheim, Servier) where access to detailed info is not possible.

Whenever possible, the analysis of the financial performance was performed only for the Pharmaceutical division on a “core” (or non-GAAP) approach (i.e. excluding exceptional):

- Cost structure: Cost of Good Sold (COGS), Selling, General & Administrative (SG&A) and Research & Development (R&D) expenditures
- Margin performance: Gross Margin (GM) and Operating Margin (OM) or EBITA (earning before interest, tax and amortisation) margin

The results are presented using: Pharma Sales, Last 10-y Dividend, Last 10-y SBB, Pharma Sales in % of Total Sales, Pharma Sales in USDm, Gross margin in % of Pharma Sales, R&D in % of Pharma Sales, SG&A in % of Pharma Sales, EBITA margin in % of Pharma Sales.

### 1.1 Limits to the current analysis

Past performances do not reflect future performances and one shouldn't predict companies futur performances based on this analysis; the more so that several companies from the sample have embarked in large-scale merger & acquisition (M&A) transactions during the period of analysis:

- BMY with the acquisition of Celgene in 2019, for \$74bn,
- AbbVie with the acquisition of Allergan in 2019, for \$63bn,
- AZN with the planned acquisition of Alexion in 2021, for \$39bn,
- Amgen with the acquisition of the rights to Otesla for \$13.4bn,
- Pfizer with the acquisition of Array Pharmaceuticals in 2019 for \$11.4bn,
- Lilly with the acquisition of Loxo Oncology in 2019, for \$8bn,
- GILD with the acquisitions of Kite Pharma in 2017 for \$12bn and in 2020, with the acquisition of Forty Seven for \$5bn.

- NOVN with the spin-off of their MedTech division, Alcon, in 2019, and potentially the sale of their US commodity generics business (at Sandoz). in 2019, Novartis acquired The Medicines Company for \$9.7bn,
- GSK with the spin-off of their Consumer Healthcare division planned for 2022,
- PFE with the recent spin-off of Upjohn, which combine with Mylan in 2019 (\$12bn) to create Viatrix (11/2020).

All these operations render the direct year-to-year comparison more difficult (*e.g.* changing consolidation perimeter, choice of financing for M&A, corporate tax rate). Hence our decision to limit the comparison at the operating level, net results being widely impacted by financial decisions related to M&A and tax laws. Last methodological consideration, the Non-USD denominated sales have been converted to the 2019 average annual exchange rate.

## 2 Main results

There has been a consistent trend over the past 5 years to refocus the business toward prescription Pharma and spin-off the deemed non-core businesses (*i.e.* sell them to other players, handing them to shareholders or take them public with an Initial Public Offering (IPO)). Hence Novartis spun-off Alcon, its Ophthalmology MedTech activity into a publicly-traded company in 2018, Lilly (LLY) spun-off its Animal Health division, Elanco, into a publicly-traded company. More recently, Pfizer (PFE) merged its Established Pharma products division that it had names Upjohn (*i.e.* branded off-patented medicines) with the generic company Mylan to create Viatrix, which was publicly quoted in November 2020.

Overall, among our sample, US groups are in general more focus on prescription Pharma, with only two groups (Merck&Co and Pfizer) out of 8 having some activities outside prescription Pharma. In Europe, this is the opposite but will change as the recent trend is to reshuffle the business-mix; for now, only two groups out of six are pure-players: Novo-Nordisk and AstraZeneca (AZN).

### 2.1 Total sales, R&D investment, SG&A and Gross Margin in 2020.

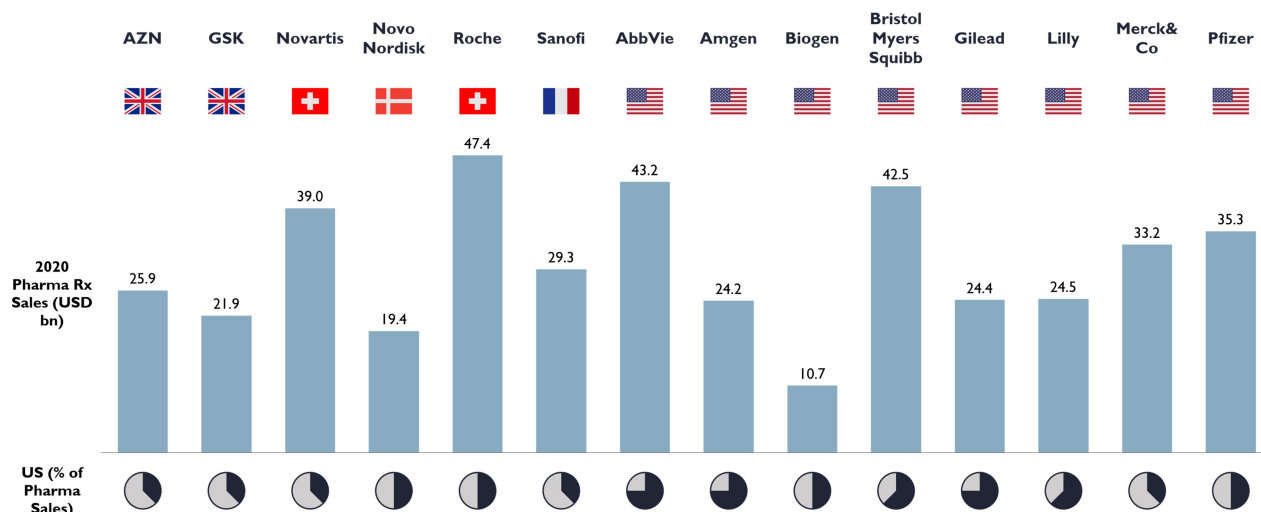


Figure 1: Total sales 2020

Figure 1 gives 2020 net sales done with prescription Pharma. In total the 14 groups had **cumulative 2020 prescription Pharma sales of \$421bn**. Nine groups out of 14 are doing 50% or more of their sales in the US. As expected, the vast majority of US groups (7 out of 8) are making most of their sales in their domestic market. In Europe, only Novo-Nordisk and Roche (*cf.* Genentech) are making ~50% of their sales in the US. Roche is the largest Pharma company worldwide with \$47.4bn in sales in 2020, followed by AbbVie (\$43bn) and Bristol Myers Squibb (\$42bn). As the US market is the most profitable market, there should be some correlation between the proportion of sales done in the US and the EBITA margin. However, it is not as simple because profitability is also a function of the kind of therapeutic areas a company is playing in. In addition,

groups with a lower relative proportion of their sales in the US are also the ones having the largest proportion of their sales in the Emerging Markets, which are less-profitable markets.

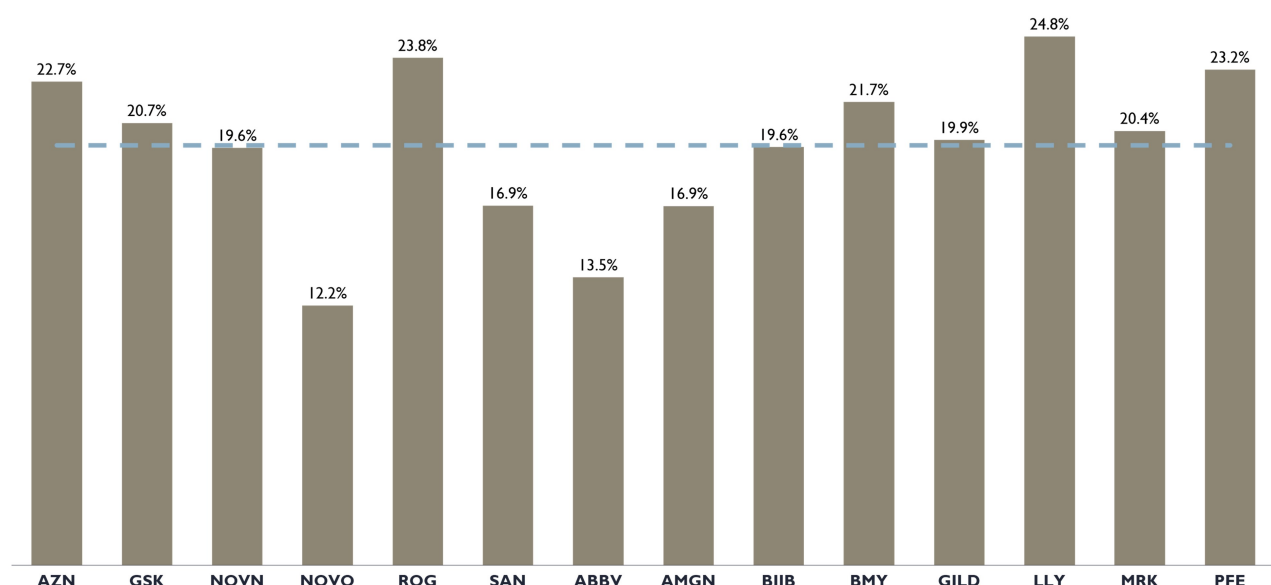


Figure 2: R&D in % of Total sales 2020

In Figure 2, we can see that the ratio Pharma R&D on Pharma sales varies a lot among the groups we have analysed. On average for 2020, R&D as % of sales was 19.7%, a level which has increased over the past ten years. Even if the exact figure is prone to debate, it has been well documented that it costs more and more to innovate in the pharmaceutical and biotech fields. The evolution of the R&D ratio over the past 10-year certainly confirms that trend. The minimum R&D to sales ratio (12.2%) in 2020 was put out by Novo Nordisk, a pure player almost solely dedicated to Diabetes. This shows Novo's focus almost exclusively on Diabetes as a therapeutic area with a limited number of opportunities for R&D. On the contrary, the largest relative R&D expenses was put out by Lilly with 24.8% in 2020 with very diverse therapeutic areas explored. Note that half of the companies here had Pharma R&D expenses above 20% of their sales. Having 20% of its sales in R&D each year represents a strong pressure on the EBITA margin. As a reminder, the average R&D spent jumped from 12.8% in 2010 to 19.7% in 2020.

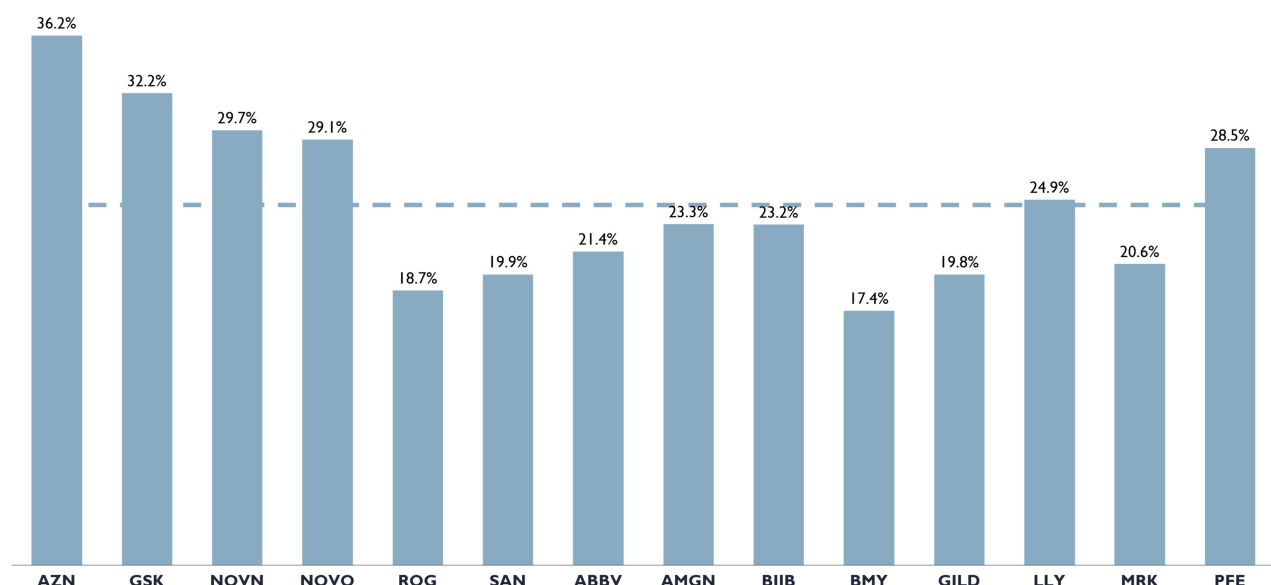


Figure 3: SG&A in % of Total sales 2020

Interestingly in Figure 3, the ratio SG&A on Pharma sales has an average value of 24.6%, 5 points higher than the reinvestment in R&D. This is related, in a consumer type model, to the belief that marketing & sales

will be the main driver to sustain the top line. However, it is fair to mention that depending on the company culture, SG&A can regroup different expenses: marketing, sales, administrative and even medical.

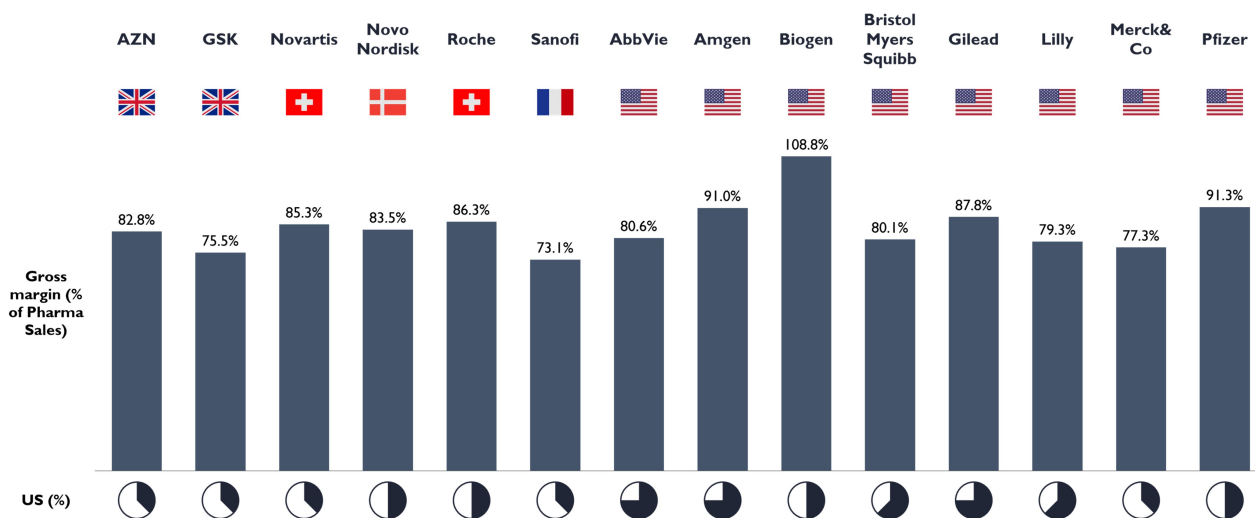


Figure 4: Gross Margin in % of Total sales 2020

When analysing Gross Margin in Figure 4 it is clear that Pharma seems very profitable with an average value of 84.5%; However considering all the costs highlighted above, the profit margin figures are slightly different (see below). As the gross profit margin provides an indication of how efficiently a company produces its goods given the costs involved, it is quite clear that the Pharma industry is definitely optimising all costs related to the production of drugs. In the present analysis, EBITA margin are used to measure company's financial performance and profitability. Considering all the costs related to research, sales and marketing, this figure is definitely less favourable but still makes the Pharma industry highly attractive for investors.

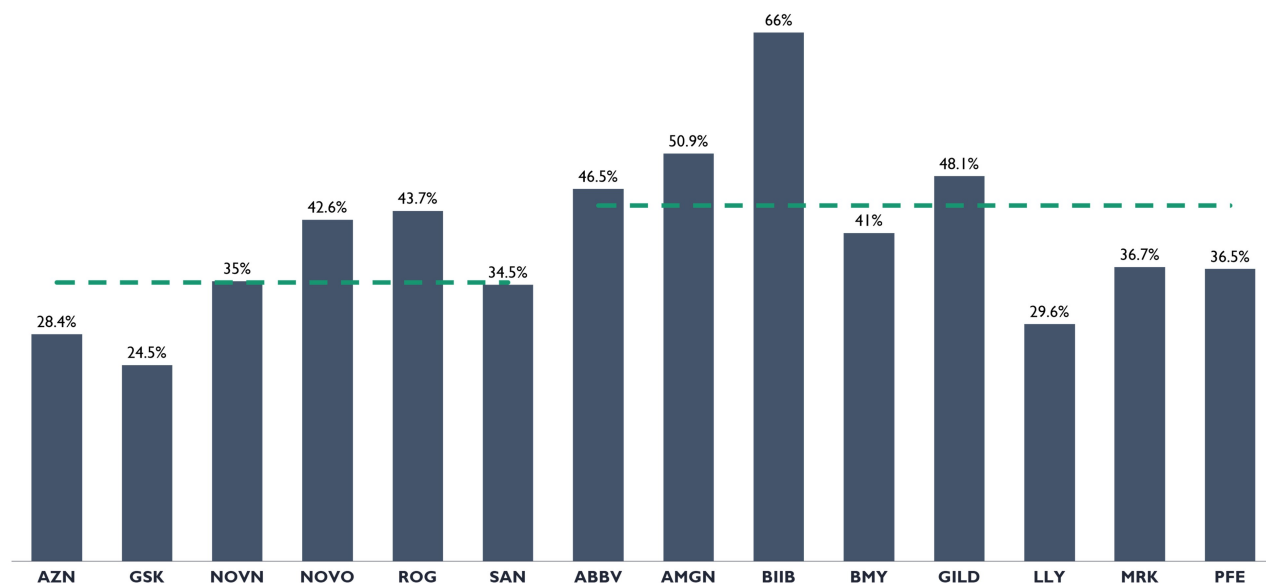


Figure 5: EBITA Margin in % of Total sales 2020

EBITA margin, which is a profit margin adding back in depreciation and amortisation, are highly variable between companies with a clear difference between EU and US, respectively 35% and 45% on average (average figure across our panel is around 40.3%). It has to be reminded that EBITA margin translates the potential for companies to reward shareholders but also to maintain an ambitious external growth through acquisition or partnerships.

In 2020, analysing this panel of 14 companies:

- Total Sales: \$421bn
- average R&D ratio: 19.7% (83bn)
- average SG&A ratio: 24.6% (103bn)
- average Gross Margin: 84.5% (355bn) *i.e.* 15.5% in COGS (65bn)
- average EBITA margin: 40.3% (170bn)

## 2.2 10 years cumulative figures

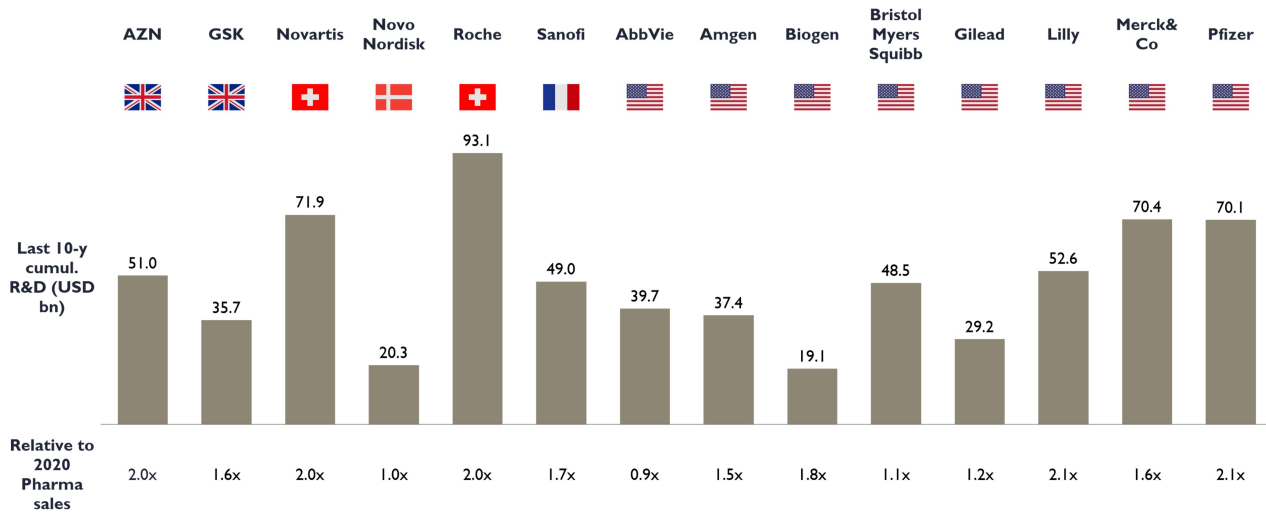


Figure 6: 10-y cumulative Total Sales

In Figure 6, the 10-y cumulative Total Sales represents around \$5000bn with a 10-y cumulative R&D spending of \$700bn, 14% of Total cumulative revenue of the 10 years

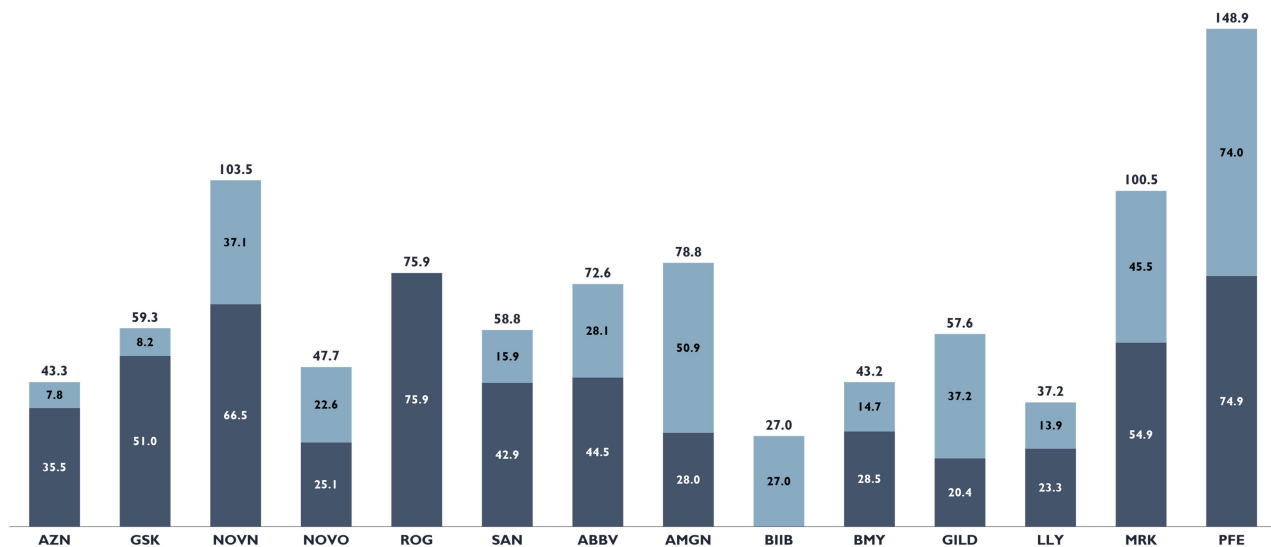


Figure 7: 10-y cumulative return to shareholders

In Figure 7, the 10-y cumulative dividends paid to shareholders represent on average 0.8x the 10-y cumulative R&D spending. Over the last 10-y, around \$500 billion was paid to shareholders. When share buy-back programmes are taking into account, the ratio DIV+SBB over 10-y cumulative R&D spending shows that

substantially more money (1.4x) was returned to shareholders than invested in R&D for an estimated total of \$950bn.

As a summary, over the last 10 years:

- Total sales of \$5000bn on the 10y period,
- \$700bn were invested in R&D (14% of Total Sales),
- \$ 950bn were returned to investors (19%of Total Sales).

### 2.3 Share evolution over the last 10 years

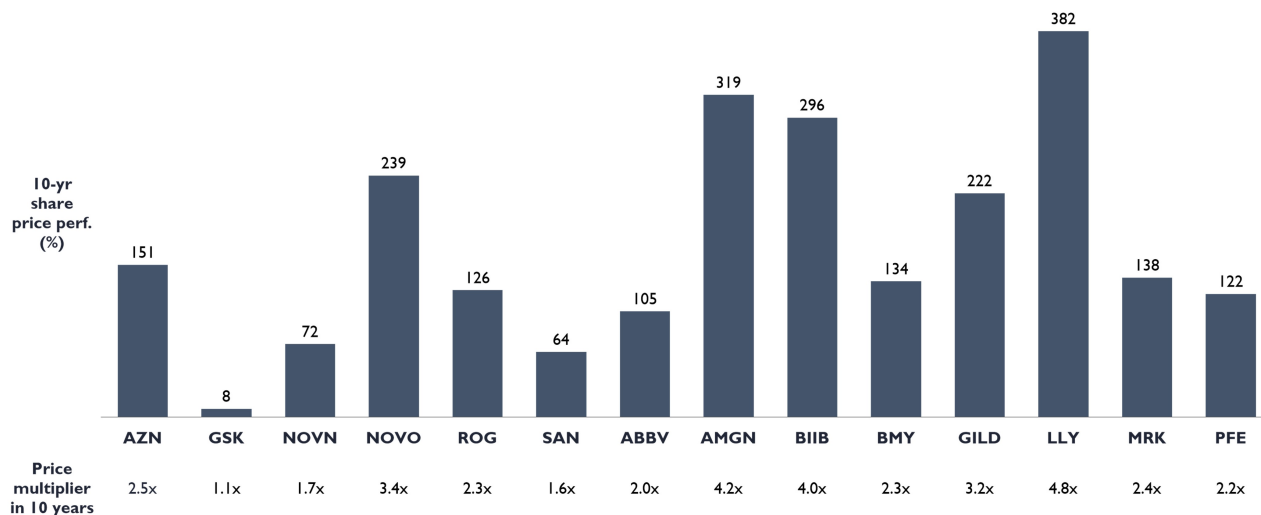


Figure 8: 10-y Share evolution

Figure 8 shows the absolute adjusted share price performance from 31 December 2010 to 31 December 2020, in percentage over this 10-year period. A 10-year period encompasses more than just a product cycle, *i.e.* within this time frame most companies will have been faced with generic competition on one or more of their blockbusters and would have have to launch new products to continue to grow, this gives a better evaluation of the real share price performance. For example, during the period Sanofi saw generic competition on Plavix, AZN on Nexium and Crestor, Pfizer on Lipitor, etc... Interestingly GSK did not suffer from generic competition on its blockbusters apart from Advair/Seretide in 2018/19 but had many smaller products hit by generic competition. Overall, most share prices have at least doubled over the period apart from GSK's, Novartis' and Sanofi's share prices. Amgen, Biogen and Lilly have seen their share price quadruple over the timeframe.

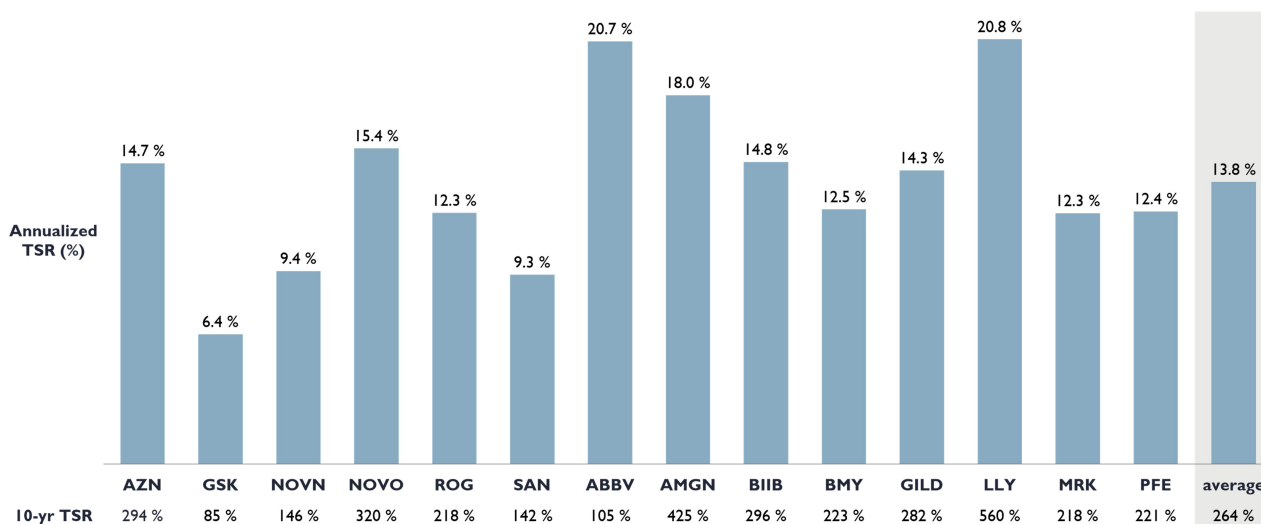


Figure 9: acTSR annualized

Figure 9 presents the annualised compounded total shareholder return (acTSR), which takes into account the dividend paid and the share buyback program, both of them considered as reinvested into shares. On average companies in the sector returned 13.8% per year. The lowest acTSR comes from GSK, at 6.4% a year which more or less corresponds to its dividend yield, calculated as its dividend over its share price. Hence, over a 10-year period, it seems like investors have considered GSK as a “bond” yielding 6% per year. The highest annual returns for investors came from Lilly and AbbVie, both over 20% per year, quite exceptional returns over such a long period. It is interesting to mention that AZN had a return similar to the average value, this clearly demonstrates that its exceptional performance in R&D has not been yet evaluated at its true level. When looking at the correlation between the 10-year Sales CAGR and the acTSR over the period none is found, it seems investors are not anticipating over such a long period and Sales CAGR is a better metric to look at over a 3-year forward period for any correlation with returns.

### 3 A closer look at Drugs

#### 3.1 Drugs launched in the past years and available in 2020

In 2020, 943 New Active Substances (NAS) were available on the market, introduced in the prior 25 years with the vast majority available to populations around the world<sup>1</sup>. A split by 5-years interval clearly show a very consistent number of NAS launched from 1996 to 2020:

Table 1: Number of NAS launched in the past 25 years

Period	Number of NAS
1996 - 2000	223
2001 - 2005	165
2006 - 2010	146
2011 - 2015	184
2016 - 2020	225

This can be summarised as an average of 37 NAS per year for the last 25 years. In the last 5 years, these NAS were mostly related to oncology and orphan diseases and provide a range of specialty small molecule medicines. Targeted therapies, use of biomarkers, focus on orphan diseases with no or limited treatment available, are some key characteristics of the drugs developed in the past 5 years.

#### 3.2 Analysis of the pipeline of the 14 Pharma companies: looking forward

A total of 686 products were under development in 2021 with 7% New Drug Application (NDA), 21% in Phase III, 28% in Phase II and 44% in Phase I. 7% NDA will translate in 48 products to be approved in the coming

<sup>1</sup>Global Use of Medicines in 2020. Report by the IMS Institute for the Healthcare Informatics

months, this is fairly consistent with the average figure of the past 25 years mentioned above. To evaluate the potential of the pipeline, a score was conducted for each of the 14 companies as follows :

- the number of products in Phase I weighted 1
- the number of products in Phase II weighted 2
- the number of products in Phase III weighted 3
- the number of NDA weighted 4

In Table 2 below, the score is displayed by company; to illustrate the acceleration between 2020 to 2021 the change between 2021 score and 2020 score in Table 1 is always displayed by company. AZN is the big winner here with almost a score twice as large as GSK score.

Table 2: Classification of Pharma companies based on development score

Companies	Score 2021	Score change 2021 - 2020
AZ	190	31
NOVN	181	23
ROG	166	13
BMY	132	6
PFE	131	15
GSK	112	6
ABBV	105	17
SAN	98	5
LLY	86	-3
MRK	80	24
NOVO	36	8