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Ana Carolina Silva Campião **Equity Research: AstraZeneca PLC**

Universidade do Minho
Escola de Economia e Gestão

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maio de 2023

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Projeto de Mestrado
Mestrado em Finanças

Trabalho efetuado sob a orientação do
Professor Doutor Nelson Brandão da Costa Areal

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Disclaimer

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Acknowledgements

This project's completion signals the end of my studies at the University of Minho, as well as a chapter in my life.

Firstly, I would like to thank my supervisor, Professor Nelson Areal, for his time and guidance throughout the development of this project. I would also like to thank my close friends, especially Amadeu for his never-ending encouragement, and Márcia for her companionship during this journey. Lastly, I would like to thank my family for their support and patience, particularly in the last few months.

STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

Resumo

O objetivo deste relatório é avaliar a AstraZeneca PLC e a sua estrutura seguirá os padrões do Instituto CFA. Esta empresa foi selecionada principalmente por dois motivos: primeiro, a indústria farmacêutica está em ascensão como resultado do recente surto de covid-19 e, segundo, o recente investimento substancial em I&D da AstraZeneca.

AstraZeneca (AZN.L) é uma empresa farmacêutica e de biotecnologia. Os principais campos de pesquisa da empresa incluem doenças cardiovasculares, gastrointestinais, respiratórias, cancro e doenças raras.

AstraZeneca tem uma recomendação de COMPRA, projetando um preço-alvo de $ 75,39 por ação no final do ano de 2023, indicando um aumento potencial de 15,61% em relação ao preço de fechamento de $ 65,21 por ação em 1° de março de 2023. O preço-alvo foi obtido através do Modelo de Fluxo de Caixa Descontado (DCF). Além disso, foi também considerada uma Avaliação Relativa, usando o múltiplo de mercado Forward EV/EBITDA de empresas comparáveis do setor.

Palavras-chave: AstraZeneca; Equity Value; Indústria farmacêutica; Biotecnologia; Covid19; Investigação e desenvolvimento.

Abstract

The aim to this report is to value AstraZeneca PLC and its structure will follow the standards of the CFA Institute. This company was selected mainly for two reasons: first, the pharmaceutical industry is on the rise as a result of the recent covid-19 outbreak, and second, AstraZeneca's recent substantial R&D investment. AstraZeneca (AZN.L) is a pharmaceutical and biotechnology company. The main fields of research at the company include cardiovascular, gastrointestinal, respiratory, cancer, and rare diseases.

AstraZeneca has a BUY recommendation, projecting a 2023 year-end price target of $75.39 per share, indicating a potential increase of 15.61% from the closing price of $65.21 per share on March 1st, 2023. The price target was derived through a combination of the Discounted Cash Flow model (DCF). Furthermore, a Relative Valuation approach was taken into consideration, which involved evaluating the Forward EV/EBITDA market multiple from its industry peers.

Keywords: AstraZeneca; Equity Value; Pharmaceutical industry; Biotechnology; Covid-19; Research & Development.

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1. Research Snapshot

AstraZeneca: Pushing the Boundaries of Science, Delivering Life-Changing Medicines

BUY is the recommendation for AstraZeneca PLC (AZN), with a PT of $75.39/share for 2023YE, using the DCF model, resulting in an upside potential of 15.66%, when compared with the closing price of $65.21/share at 1st, March 2023 (Table 1). This recommendation is based on these three main pillars:

Intensive R&D Spending

AstraZeneca has a robust R&D pipeline and is focused on the following therapeutical areas: Oncology, Biopharmaceuticals, and Rare Diseases. The company has 179 projects in its pipeline[1] and 2022 had 72 regulatory events, either submissions or approvals for its medicines in major markets and 29 pipeline progression events (Figure 3). For 2023, it is anticipated a late-stage pipeline delivery of 30 new Phase III trials, including 10 potential new blockbusters.

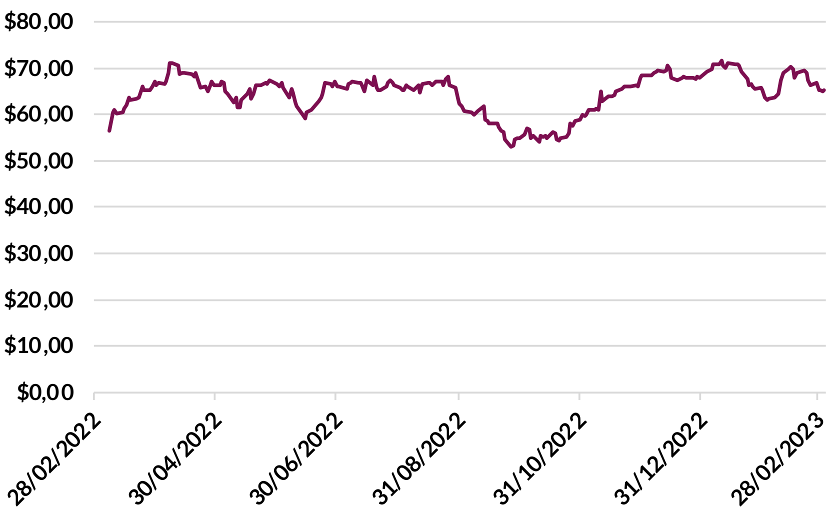
Wide Portfolio Diversification

AstraZeneca's widely diverse portfolio is critical for next year's growth, as the company's sales are predicted to expand at a 5.4% CAGR from 2023 to 2032F. Its expansion is primarily supported by the company's primary blockbusters, which are covered by longer-life patents and so protected from generic competition.

Strong Strategic Initiatives

In recent years, AstraZeneca has prioritized several strategic goals, including the creation of cutting-edge medicines and the expansion of its footprint in emerging markets. The firm has also centered on increasing its biopharmaceutical expertise and has made multiple acquisitions to expand its portfolio in the field.

Figure 1 - AstraZeneca's Stock Price



Source: Refinitiv, 2023

Table 1 - Investment Recommendation

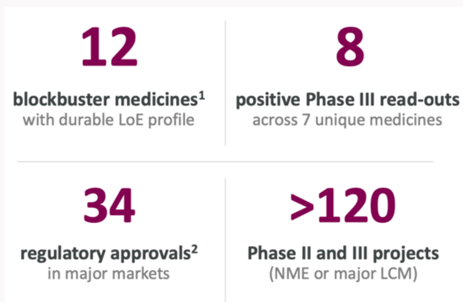
INVESTMENT RECOMMENDATION	
Price Target (2023YE)	$75.39
Upside Potencial	**15.61%**
Closing Price (March 1st, 2023)	$65.21
Stock Exchange	NADAQ Stock Exchange
Industry	Pharmaceutical
Ticker (Refinitv)	AZN.LN
52w Price Range ($)	$52.65 - $72.12
Shares Outstanding (#M)	1550
Market Cap ($M)	116 855

Source: Refinitiv & Author's Estimates

Figure 2 - Strategy Pillars

Source: AZN Annual Report, 2022

Figure 3 - AstraZeneca's Pipeline Highlights



Source: AZN Annual Report, 2022

[1] Includes NME and major LCM projects up to launch in all applicable major markets.

2.Business Description

AstraZeneca is a global, science-led, biopharmaceutical company founded through the merger of the Swedish Astra AB and the British Zeneca Group PLC, in the year 1999.

The History

Astra AB was founded in 1913, in Sweden, where the pharmaceutical sector was dominated by foreign companies. Zeneca was created in 1993 when Imperial Chemical Industries demerged its pharmaceutical and agrochemical operations. Post-merger, AstraZeneca focused on producing new medicines in oncology, cardiology, respiratory, and immunology. The firm has made significant investments in R&D and has been successful in bringing multiple blockbuster pharmaceuticals to life. The corporate headquarters are in Cambridge, United Kingdom, while its R&D headquarters are still In Sweden, but it also counts two major centers of research in the UK and USA.

AstraZeneca had its fair share of challenges throughout its history, including the expiration of patents on several of its top-selling drugs, competitive pressures, and regulatory constraints. Yet, the firm has continued to spend on R&D and has targeted strategic partnerships and acquisitions to boost its growth.

AZN played an important role in the battle against COVID-19 disease, including the creation of a vaccine in collaboration with the University of Oxford. It also had a big impact on the development of drugs for lung cancer and heart diseases.

After AstraZeneca restarted its growth trajectory after 2018. Product sales have been increasing in all geographic locations where the firm operates, which include emerging markets like China, the United States, Europe, and the Rest of the World. By 2022, total Revenue has more than doubled to $44 billion. In 2021, the company announced its largest acquisition to date, Alexion, for $39 billion, to expand toward rare diseases market. The company expects it to become one of its key sources of revenue. AstraZeneca anticipates double-digit average annual revenues through 2025, with Alexion's Rare Diseases sector being the most significant because to its high relevance and unmet treatment need.

Business Strategy

AstraZeneca's business strategy focuses on Oncology, Biopharmaceuticals, Vaccines & Immune Therapies, and Rare Diseases. It has a portfolio with primary and specialty care, coverage for rare diseases, and global strength through a balanced presence across regions. The firm has three initiatives that will help them deliver on their plan and meet their financial goals:

- **Science and Innovation:** Promote innovation potential across worldwide R&D centers and use AI and machine learning to improve medicines development.
- **Growth and Treatment Area Leadership:** Provide long-term growth by capitalizing on opportunities in regions, markets, and focused business development prospects, as well as by using digital techniques to enhance the patient experience.
- **People and Sustainability:** Maintain positive employee engagement, drive digital transformation and productivity, and address the health and biodiversity impacts of the climate crisis.

Shareholder Structure

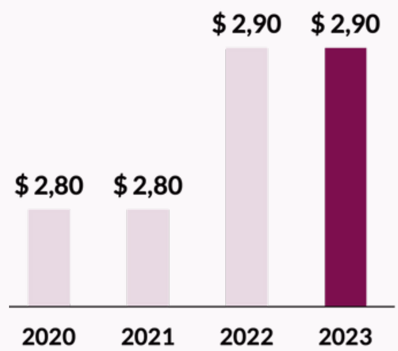
AstraZeneca has approximately 1.55bn shares outstanding as of December 31, 2022. BlackRock, Inc. is the company's largest investor, owning around 6.0% of the outstanding shares (Table 2). At 2022YE, shareholder equity had declined by $2.2bn to $37.0bn. Non-controlling interests totaled $21m (2021: $19m). The Board currently considers it appropriate to maintain the suspension of the share repurchase program announced in 2012.

Table 2 - Top 10 Shareholders (% of capital)

Holder Name	Institution Type	%
BlackRock Institutional Trust Company, N.A.	Investment Advisor	6.51%
Wellington Management Company, LLP	Investment Advisor	4.20%
Capital Research Global Investors	Investment Advisor	4.12%
Investor AB	Private Equity	3.33%
The Vanguard Group, Inc.	Investment Advisor	2.93%
Norges Bank Investment Management	Sovereign Wealth Fund	2.19%
BlackRock Investment Management (UK) Ltd.	Investment Advisor	1.20%
BlackRock Advisors (UK) Ltd.	Investment Advisor	1.12%
GQG Partners, LLC	Investment Advisor	1.00%
Capital World Investors	Investment Advisor	0.89%

Source: Refinitiv, 2023

Figure 4 – AstraZeneca's Dividend per Share



Source: AZN Annual Report, 2022

Dividend Policy

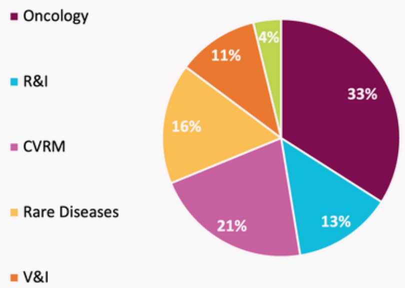
The Board recommended a second interim dividend of $1.97 to be paid on March 27, 2023. This raises the full-year dividend to $2.90, which is consistent with the Board's progressive dividend policy, under which the payout will be maintained or increased each year (Figure 4).

Therapeutical Areas

AstraZeneca's pipeline is focused on Oncology, Biopharmaceuticals, which comprise Respiratory & Immunology (R&I), Cardiovascular, Renal & Metabolism (CVRM) and Vaccines & Immune Therapies (V&I) and, also Rare Disease (Figure 5 and Appendix 1 - 2).

- **Oncology:** AstraZeneca aims to redefine cancer care through its oncology field.[2] Product Sales increased by 13% in 2022 to $14.6bn, reflecting new launches and increased patient access for Tagrisso, Imfinzi, Lynparza, and Calquence. However, this revenue growth was partially offset by some older medicine's sales decline.
- **R&I:** The company is dedicated to discovering medicines for respiratory illnesses, such as asthma and chronic obstructive pulmonary disease, as well as immunologic diseases. In 2022, product sales decrease by 1%. Pulmicort revenue's significant decrease due to the impact of VBP[3] for drugs in China was offset by the growth in Fasenra, Breztri, and Saphnelo.
- **CVRM:** CVRM business segment focuses on developing medicines for cardiovascular, renal, and metabolic diseases.
  This is the company's most mature segment since its blockbusters has already expired or will expire in the next years (Brilinta, Crestor, and Bydureon have already expired, while the remaining three will expire during the next three to five years). Older drugs, such as Diabetes and Crestor are currently in decline due to generic competition. Farxiga is the current main driver of growth. It was developed to treat diabetes, but it has lately been licensed to treat heart failure and renal illness as well. In 2022, product sales grew by 13%, achieving $10.3bn ($4.4bn due to Farxiga contribution).
- **Rare disease:** AstraZeneca's Rare Disease[4] is its newest business segment added to the company through the Alexion acquisition in 2021.
  In 2022, product sales grew substantially, by 129.7%. The segment counts with two blockbusters medicines in 2022, Soliris and Ultomiris. Soliris total revenues increased to $3.8bn, however it saw a pro rata decline of 11% due to the successful conversion to Ultomiris, which had a pro rata growth of 34% to $2.2bn. Ultomiris is a longer-lasting version of the company's Soliris, which is injected every 8 weeks rather than biweekly.
- **V&I:** AZN's V&I division is centered on the research, development, and distribution of vaccines and immunotherapies.
  Most of this segment revenue has been generated by the COVID-19 vaccine, which was developed, at cost, in partnership with the University of Oxford through a landmark agreement in 2020. Since last year, with the end of the COVID-19 pandemic, its revenue has been dropping. However, this revenue decline has been offset by Evusheld revenues.

Figure 5 - AstraZeneca's Therapeutical Areas % of Total Revenue



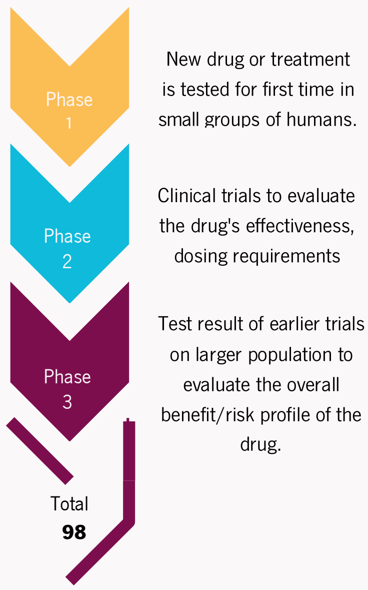
Source: AZN Annual Report, 2022

Table 3 - AstraZeneca Expired Blockbuster Drugs

Expired	Expired in the next 3-5Y
Falsodex	Zoladex
Iressa	Symbicort
Pulmicort	Daliresp
Seloken/Toprol-XL	Tudorza
Atacand	Dualklir
Byetta	Breztri
Nexium	Brillinta
Seroquel XR/IR	Crestor

Source: AZN Annual Report, 2022

Figure 6 - AstraZeneca's Pipeline



Source: Refinitiv, 2023

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[2] In FY 2022, Total Revenue from Koselugo is included in Rare Disease (FY 2021: Oncology).

[3] Value-Based-Pricing (VBP) is a pricing system that assesses the value of drugs based on their therapeutic benefit, which can impact the pricing and sales of drugs in China.

[4] Total Revenue from Andexxa is included in BioPharmaceuticals: CVRM (FY 2021: Rare Disease).

Collaboration Revenue

Product sales from collaboration revenue amounted to $1.4bn in 2022, representing an increase of more than 50%, compared with 2021.

Enhertu generated $0.4bn of the total revenue and is a collaboration between AstraZeneca and Daiichi Sankyo, a multinational Japanese pharmaceutical. A year later, the companies also started developing TROP-2.

Lyparnza and Koselugo generated $0.4bn of revenue from the milestone's payments received from the ongoing agreement with Merck & Co.

3. Environmental, Social and Governance (ESG)

AstraZeneca is dedicated to tackling ESG issues. The company has a strong MSCI ESG rating (18), has set ambitious goals to minimize its environmental impact, promote global health and strengthen its corporate governance (Figure 7-9).

Environmental

The firm has set ambitious environmental targets, including reducing its carbon footprint and increasing its usage of renewable energy sources. The company has achieved significant milestones, having reduced Scope 1 and 2 greenhouse gas emissions by 59% (relative to the 2015 baseline) and is on track to reduce emissions from global operations (Scope 1 and 2) by 98% by 2026. Also, it was one of the first seven corporations to meet the Net-Zero Corporate Standard, which was recognized by The Science Based Goals project.

Social

The company is committed to enhancing world health and has made a significant contribution to the battle against the COVID-19 pandemic. The firm updated its Global Inclusion and Diversity (I&D) strategy, with a strong emphasis on furthering AstraZeneca's I&D goals. AstraZeneca was a key player in COP27 and the World Economic Forum's (WEF) Annual Conference. Other highlights from the Group's social initiatives include the launch of Accelerating Change Together for Cancer Care Africa, the expansion of the Healthy Heart Africa program, and participation in the World Economic Forum's EDISON Alliance's "1 Billion Lives Challenge" to improve access to innovative and scalable digital health solutions by 2025.

Governance

AstraZeneca has a strong corporate governance framework with a board of directors that includes experienced and diverse professionals. All matters not expressly reserved to the Board are assigned to the CEO or one of the Board's five Committees (Figure 10):

Audit Committee

The Audit Committee's principal duties include overseeing the integrity of financial reporting and formal financial performance statements. The Committee's primary focus throughout 2022 was the integration of Alexion, exploring additional alignment of accounting policies and judgments as they integrate the acquisition.

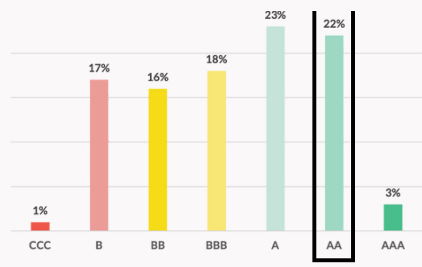
Remuneration Committee

The Remuneration Committee is in charge of developing, approving, and assessing the remuneration principles and frameworks to ensure that they complement the business strategy and promote long-term sustainable performance. Since 2021, AstraZeneca's executive annual bonus reflects the fulfillment of the Ambition Zero Carbon goals.

Figure 7 - AstraZeneca ESG Rating Evolution

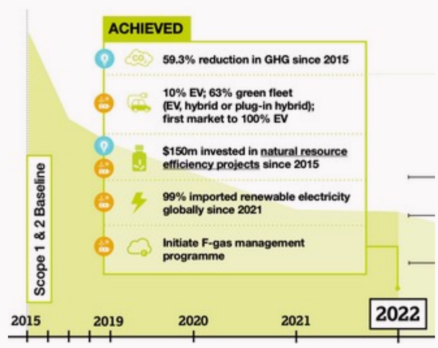
Source: MSCI ESG Ratings, 2023

Figure 8 - MSCI's ESG Rating Distribution in relation to Industry Peers



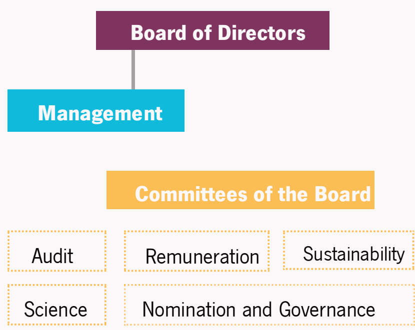
Source: MSCI ESG Ratings, 2023

Figure 9 - AstraZeneca ESG Achievements



Source: AZN Sustainability Report, 2022

Figure 10 - AstraZeneca's Corporate Governance Structure



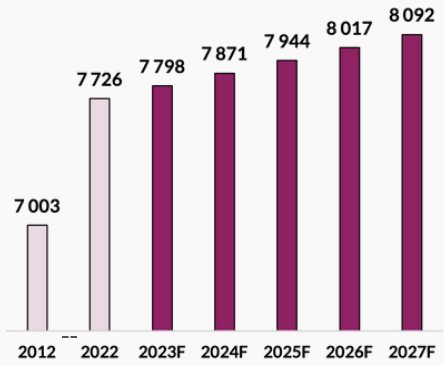
Source: AZN Annual Report, 2022

Sustainability Committee
The Science Committee's primary responsibility is to offer assurance to the Board on the quality, competitiveness, and integrity of the Group's R&D activities. The Sustainability Committee is critical in ensuring that the company stays on track to meet these targets and continues to prioritize sustainability in its business operations.

Science Committee
The Science Committee's key function is to offer assurance to the Board on the quality, competitiveness, and integrity of the Group's R&D activities. During 2022, the committee was focused on the strategic priorities for R&D, acquisitions, licensing agreements, and deep diving into Alexion R&D.

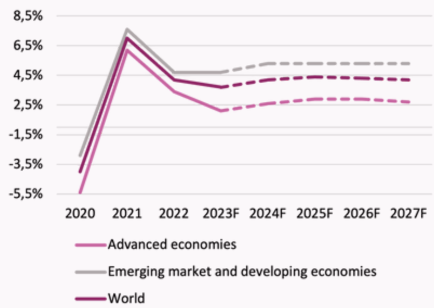
Nomination and Governance Committee
The Nomination and Governance Committee reviews the composition of the Board and its Committees on behalf of the full Board and plans succession for all Board seats. This year, the Committee looked for a new Chair of the Board, Michel Demaré, who has extensive experience and a proven track record leading multinational companies such as UBS Group AG where he was Vice-Chairman (2010-2019) and Syngenta and Syngenta Foundation for Sustainable Agriculture where he was Chairman (2013-2017).

Figure 11 - World Population Projections (millions)



Source: IMF, 2023

Figure 12 - World Real GDP Growth Projections



Source: IMF, 2023

4. Industry and Macroeconomic Overview

Macroeconomic Outlook

Broadly, the global economy is likely to continue its recovery in 2023, owing to a mix of factors: supporting policies, increased consumer demand, and technological advances.

According to the January 2023 Global Economic Outlook Update[5], global growth is likely to slow to 2.9% in 2023 before rising to 3.1% in 2024 (Figure 12). Increasing interest rates and the conflict in Ukraine continue to weigh on the economy. World inflation is forecast to decline to 6.6% in 2023 and 4.3% in 2024, still higher than pre-pandemic levels.

Pharmaceutical Industry Outlook

The pharmaceutical industry focuses on the development and manufacture of drugs and vaccines. It is sometimes referred to as the "haven sector" due to the lower stock market volatility of the firms that form this sector when compared to reference indices such as the S&P 500.

Global Health Care
The COVID-19 pandemic irrevocably altered global health care, speeding the introduction of new technologies and service delivery paradigms while emphasizing sustainability and resiliency. It also brought to attention current labor issues and worldwide inequities in health equity.[6]

Aging Global Population
The need for healthcare services and drugs to treat chronic illnesses will increase as the world's population ages. According to the UN, the number of people aged 60 and over would more than double by 2050.[7]

R&D Spending
The pharmaceutical business is heavily reliant on research and development to identify and develop new treatments. Businesses that can develop and bring new medications to market will be in a good position to expand (Appendix 4 and 6).

[5] IMF, 2023: https://mediacenter.imf.org/news/imf—imf-world-economic-outlook-january-2023-update/s/46e363bf-e563-4b35-80b7-2bda96f6ec39

[6] Deloitte - Global Life Sciences Outlook 2023

[7] https://www.who.int/news-room/fact-sheets/detail/ageing-and-health

Therapeutic Areas Expectations

Markets may rise and fall, but the fundamentals for pharmaceuticals remain positive. Global pharmaceutical sales are expected to expand at a 6% CAGR until 2028.[8]

Oncology Dominance

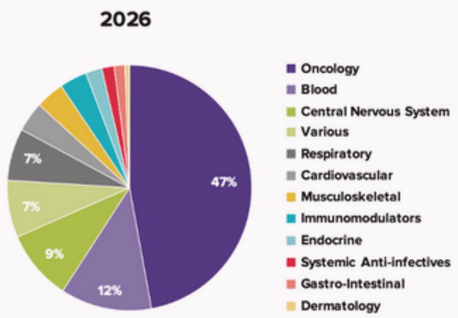
Oncology is at the vanguard of targeted therapy; its high costs, diverse product purposes, therapeutic combination possibilities, and rapid regulatory assessment all contribute to its attractiveness. This therapy area is predicted to not only create the highest sales in 2028 (more than double the next largest therapy area) but also to grow at one of the quickest rates.

Rare Disease Drug Sales Growth Continues to Outpace the Wider Market

The rare disease drug market is increasing more than twice as fast as the non-orphan market, with a CAGR of 12% between 2021 and 2026. However, the orphan drug industry is unlikely to slow down. Despite its fast expansion, many of the estimated 7000 uncommon illnesses continue to be underserved (Appendix 7).[9]

Johnson & Johnson (J&J) is forecasted to surpass Bristol Myers Squibb as the biggest orphan seller by 2026. AstraZeneca will likely follow J&J due to its acquisition of Alexion, while Roche and Novartis will remain third and fourth, respectively. AstraZeneca's projected CAGR of 22.6% between 2021 and 2026, fueled by Alexion, is more than double the next best, Johnson & Johnson's 11%.[9]

Figure 13 - Forecast of Worldwide Orphan Drug Share by Therapeutic Area

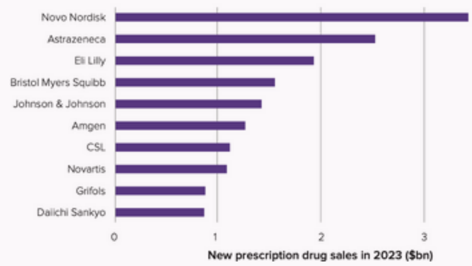


Source: Evaluate Pharma, 2022

Blood Cancer Triggers Orphan Expenses

In 2026, liquid cancers will account for the lion's share of the top ten orphans' drugs. Five of the top 10 2026 orphan drugs which treat blood diseases are forecasted to account for more than half (56%) of the total $65 billion in sales. Imbruvica, Darzalex, Venclexta, Calquence (AstraZeneca), and Jakaf cure uncommon bone marrow malignancies myelofibrosis and polycythemia vera. Roche's Hemlibra treats hemophilia A, a blood clotting condition, while AstraZeneca's Ultomiris for paroxysmal nocturnal hemoglobinuria and atypical hemolytic uremic syndrome.[10]

Figure 14 - Biggest New Sales Generators: Companies in 2023

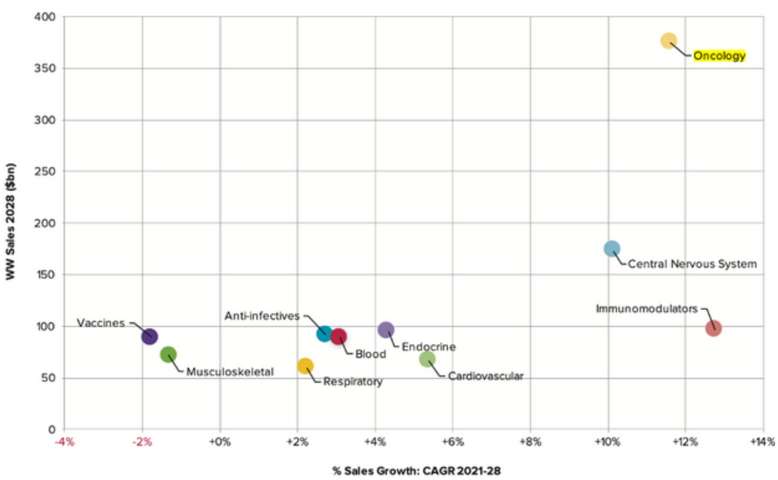


Source: Vantage Preview Report, 2023

Promising R&D Projects

Daiichi Sankyo intends to capitalize on the success of Enhertu, and a critical readout early next year for the second Astrazeneca-partnered research, datopotamab deruxtecan, will be a substancial deal for both firms and the ADC [11] field in general (Appendix 8).[10]

Figure 15 - Top 10 Therapy Areas in 2028: Market share and Sales growth



Source: Evaluate Pharma, 2022

[8] Evaluate Pharma: World Preview 2022 Outlook to 2028: Patents and Pricing

[9] Evaluate Pharma: Orphan Drug Report 2022

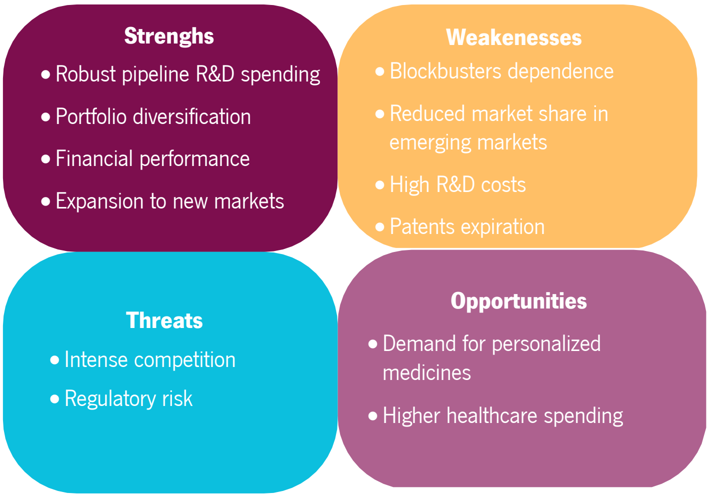
[10] Evaluate Pharma: Orphan Drug Report 2022

[11] Antibody-Drug Conjugates (ADC)

SWOT Analysis

To better understand AstraZeneca's competitiveness, it was performed a SWOT analysis of the company.

Figure 16 - SWOT Analysis



Source: Author's Analysis

Porter's 5 Forces Analysis

Threat of New Entrants: LOW

The threat of new entrants is minor in the pharmaceutical industry since traversing the "valley of death" is especially difficult due to strict government regulations and legislation (EMA and FDA). Furthermore, the costs of creating a firm are substantial, as is the investment in R&D for new pharmaceuticals. Companies well-established in the sector are likely to have economies of scale, which increases profitability. However, that is difficult for new companies to accomplish. In addition, most pharmaceuticals have patents protecting their drugs, but a new company must start from scratch to develop a new drug.

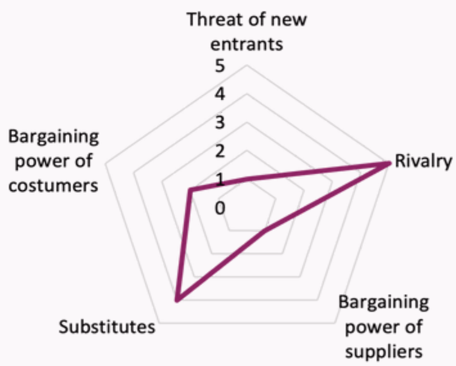
Threat of Substitutes Products: MEDIUM to HIGH

The threat of substitutes might be moderate or high. If the medicine is still in its patent period, there are no perfect substitutes, however, a rival drug might appear. When that protection period ends, generic manufacturing begins as the demand for low-cost pharmaceuticals rises. Furthermore, alternative medicines and a healthy lifestyle may also be substitutes.

Bargaining Power of Costumers: MEDIUM

Costumers bargaining power is moderate in Europe and the US. Patents on new medications in both countries extend 20 years, enabling the manufacturer to determine the price. When the protection expires, production of generics begins, and prices become more competitive, giving customers additional options, and lowering switching costs. More customers also put more pressure on pharmaceutical companies to keep costs low. For instance, hospitals, healthcare insurance firms, and governments wield considerable negotiating leverage since they may refuse to finance specific medicines. Furthermore, people are under a "duty" to obey medical prescriptions, giving them less negotiating power.

Figure 17 - Porter's 5 Forces



Source: Author's analysis

Bargaining Power of Suppliers: LOW

Suppliers have less bargaining leverage since sales are made mainly in larger firms, and there are several suppliers. Firms have more switching costs when investing in new medications (high R&D expenditure), and raw materials required in drug manufacture are widespread. When researchers discover new products, the company to which they belong gains significant negotiating power owing to the creation of new patents.

Industry Rivalry: HIGH

The pharmaceutical industry players have strong brand awareness, so the sector is highly competitive. Profit margins are high, there are many competitors, and government regulations make this industry very competitive. Corporations are becoming more competitive with the increased R&D spending due to the ongoing pressure to innovate. Many mergers and acquisitions for the development of pharmaceuticals and chemicals have also been emerging.

Peers Overview

- **Pfizer |** American pharmaceutical company, one of the largest companies in the world. Produces and manufactures a wide range of pharmaceuticals, including immunology, cancer, cardiology, and infectious disease therapies.
- **Novartis |** Switzerland-based pharmaceutical company that divides its operations into two segments: Sandoz and Innovative Medicines.
- **Novo Nordisk |** Danish pharmaceutical company. The company focuses on drugs for diabetes and other chronic diseases like obesity. It is the world's largest producer of insulin.
- **Roche |** Biotechnology company with differentiated medicines in oncology, immunology, infectious diseases, ophthalmology, and central nervous system diseases. Roche also works in vitro and tissue-based cancer diagnostics, besides occupying a leading position in diabetes management.
- **Abbvie |** American research-based biopharmaceutical company, which focuses on immunology, oncology, neuroscience, and virology.

For more details about the peers selection, please refer to Table 4 and Appendix 19.

5. Valuation

Revenues Assumptions

Oncology

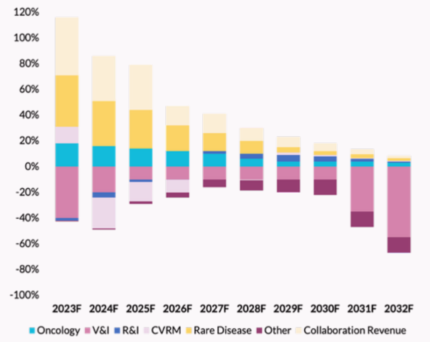
Oncology was projected to grow 6.42% CAGR between 2023-32F as it is the firm main driver of revenues and is predicted to continue rising in the upcoming years, fueled by the three blockbuster drugs (Tagrisso, Imfinzi, and Lynparza), it top-selling product Tagrisso ($4.3 billion in sales in 2020) ranking eighth among the major cancer drugs by revenue in 2021. (6), Moreover, Imfinzi maintained its great commercial performance, with product sales increasing 39% from $1.5 billion in 2019 to $2.0 billion in 2020. With over 250 market approvals, this success will be underpinned by the rapid and broad market penetration of oncology medicines. According to Evaluate Pharma (2021), Tagrisso, the major driver, is predicted to remain in the top ten selling medications worldwide by 2026, more than doubling its sales. In the case of Enhertu, it is expected that the treatment will become a blockbuster in the future years, and the growth estimate has been altered to reflect this, with the medicine expected to generate about $1 billion in sales by the end of 2023 (Figure 19).

Table 4 - AZN and Peers Market Capitalization

Identifier	Company Name	Market Cap ($m)
AZN.L	AstraZeneca PLC	205 436
NOVN.S	Novartis AG	205 369
ROG.S	Roche Holding AG	237 540
ABBV.N	Abbvie Inc	270 205
MRK.N	Merck & Co Inc	278 966
PFE.N	Pfizer Inc	234 596

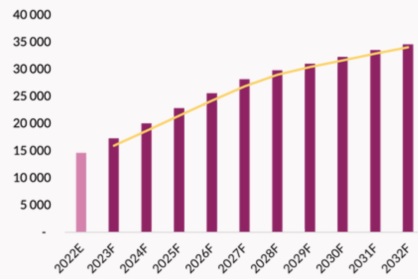
Source: Refinitiv, 2023

Figure 18 - Grow per Therapeutic Area Estimated



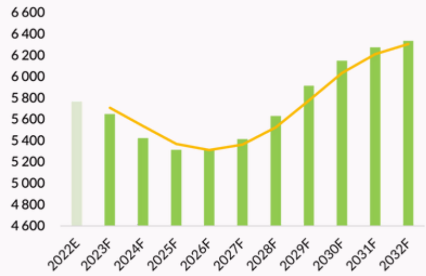
Source: Author's analysis

Figure 19 – Oncology Revenues Forecasted



Source: Author's analysis

Figure 20 – R&I Revenues Forecasted



Source: Author's analysis

R&I

R&I was forecasted to grow 1.15% CAGR between 2023-32F since its blockbusters are already expired (Symbicort) or will expire shortly (Fasenra). Backed by its blockbuster drugs Symbicort and Fansera with revenues of $2.5bn and $1.4bn in 2022. It was estimated a higher growth during 2028F-31F due to the development of potential new drugs and potential blockbusters medicines like Tezepelumab (Figure 20).

V&I

V&I is expected to decline significantly in 2023, with a severe revenue drop from Vaxzervria and lower revenue from COVID-19 antibodies as a result of the end of the pandemic. It was forecasted a CAGR of -18.82% between 2023-32F, with a residual value in 2032F (Figure 21).

CVRM

CVRM is expected to decline 4.95% CAGR between 2023-32F. The revenue from this segment comes mostly from its blockbusters Farxiga and Brilinta, which patents will expire in 2025 and 2024, respectively, in the US, where most sales are generated. Therefore, it was estimated a double-digit decline from 2024-26F to account for possible generic manufacturing (Figure 22).

Other Medicines

Other medicines will decline at a 6.81% CAGR between 2023-32F. Since the two big blockbuster goods have expired, sales have dropped significantly. Nexium, a major drug used to treat various stomach disorders, expired in 2014, however, AZN still owns European rights, so its sales continue to generate revenue. Thus, it was estimated a smooth decline in revenues in the upcoming years, followed by a more accentuated drop.

Rare Diseases

Rare diseases segment was forecast to grow at 11.51% CAGR between 2023-32F. We took into account the rare disease market growth, which amounts to a CAGR of 12% between 2021 and 2026. Soliris follow-on Ultomiris will replace its predecessor and it was assumed to be the unit's best-selling product in 2027. Due to the Company's recent acquisition of Alexion and its associated increasing strategic focus on the Rare Disease unit, we assume new product contribution impact to accelerate when compared to CVRM and Respiratory & Immunology, reaching 12% in 2031. Overall, AstraZeneca's Rare Disease unit is forecasted to reach product sales of $29.3bn in 2031, representing a 2023-32F CAGR of 11.51% (Figure 23).

Collaboration Revenue

Collaboration revenues was forecasted to grow at 12,40% CAGR between 2023-32F, driven primarily by the drugs developed in partnership with Daiichi Sankyo, Enhertu, and TROP-2. Enhertu is a novel catalyst in AZ's Oncology pipeline that was developed in collaboration with Daiichi Sankyo. It gets off to a fast start with a rapid US launch, with revenues expected to increase in the double digits through 2026 (see 17) thanks to groundbreaking Phase III data showing a 72% reduction in the risk of cancer progression or death. Currently authorized for several HER2+ breast cancer treatments, including positive evidence in second-line therapy. Enhertu may become a $2,000 million product by 2026, generating a billion dollars in profit. TROP-2 development had already begun under an agreement between the Group and Daiichi Sankyo (Figure 24).

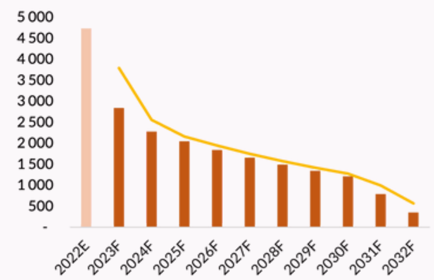
Valuation Models

AstraZeneca's valuation considers a forecasted period of 10 years, from 2023F to 2032F. This valuation seeks to achieve a company PT target for 2023 YE. For the valuation, two primary methods were employed: a Discounted Cash Flow (DCF) model and a Relative Valuation model utilizing the previously mentioned peer group.

Figure 21 – CVRM Revenues Forecasted

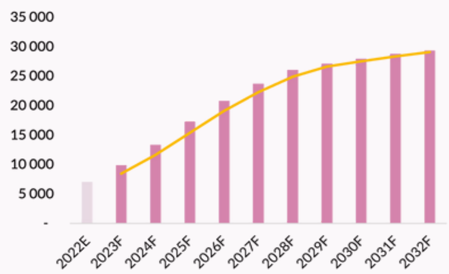
Source: Author's analysis

Figure 22 – V&I Revenues Forecasted



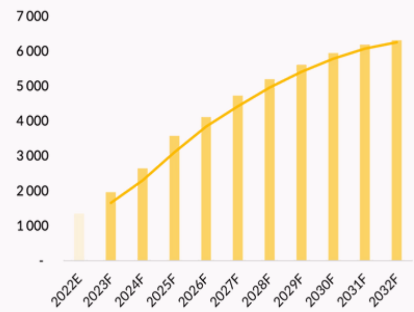
Source: Author's analysis

Figure 23 – Rare Diseases Revenues Forecasted



Source: Author's analysis

Figure 24 – Collaboration Revenues Forecasted



Source: Author's analysis

Discounted Cash Flow Model

The first method used to compute AstraZeneca's Price Target was DCF, assuming a high growth period in the first three years, a transition, a declining growth period from years until maturity, and a stable growth period from year 2032F onwards.

AstraZeneca's capital structure is only expected to change marginally over the years. As a result, we use their current WACC of 10.34% to discount the estimated FCFF. This method yielded a 2023YE PT of $75.39/share, representing a 16% upside potential over the current price of $65.21/share.

Cost of Capital Assumptions

We used a risk-free rate of 3.67% for the Cost of Equity (Re) calculation, which corresponds to the 10-year maturity yield of the US T-Bond on February 9th. The beta was estimated using Damodaran's database's average unlevered industry beta for Pharmaceutical/Drug industry. It was then levered using the D/E previously computed with market prices and the UK's marginal tax rate.

The 7.34% Equity Risk Premium was calculated by taking the weighted average of the Equity Risk Premiums in the regions where AstraZeneca operates. Using the CAPM method, we calculated a Cost of Equity of 12.09%.

Moody's and Standard & Poor's ratings were used to calculate the after-tax Cost of Debt (Rd) of 3.97%.

A WACC of 10.33% was later obtained using a D/(D+E) of 21.66% calculated considering both market prices of Debt and Equity (Appendix 20).

Long-Term Sustainable growth rate (g)

According to our forecasts during the 2023-32F period and our expectations for the future, we will be considering a reinvestment rate of 9.37% and a return on assets of 17.24% for the long term. Thus, generating a g of 1.62% (Appendix 17).

Relative Valuation

The Relative Valuation was implemented using the Forward EV/EBITDA multiple since it a metric based on operating earnings relative to enterprise value which also considers the future expectations of AstraZeneca's performance. For the determination of the peer's multiples, it was retrieved information from Refinitv and as for AstraZeneca it was used the author's forecasts. This model generated a PT of $83.24 for 2023YE (Table 5).

Table 5 – Relative Valuation

Forward EV/EBITDA	2023YE
Merck & Co Inc	12,24
Novartis AG	11,34
Pfizer Inc	10,19
Roche Holding AG	10,17
Abbvie Inc	12,46
Peers Average	**11,28**
AZN - EBITDA	13 363
AZN - EV	150 723
(-) Debt & Minority Interests	28 089
(+) Cash & Other Non-operating Assets	6 405
(=) Equity	129 039
(-) Equity Options	12
#Shares (M)	1 550
AstraZeneca Target Price	**83,24**

Source: Author's analysis & Refinitiv (2023)

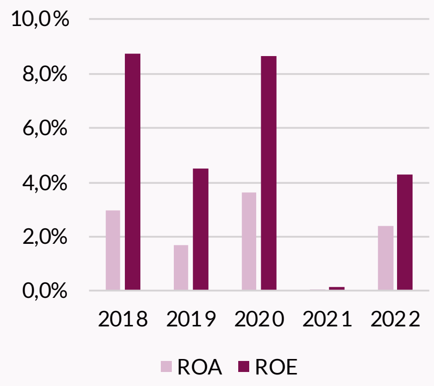
6. Financial Analysis

Overall, AstraZeneca's financial ratios indicate that the company has strong profitability, and solid revenue growth, and has maintained a moderate level of debt. Furthermore, its liquidity ratios have strengthened, indicating good financial performance for the company in the upcoming years.

Profitability

AstraZeneca's ROA (Return on Assets) increased significantly from 0.1% in 2021 to 2.4% in 2022, indicating that the company is producing greater income from its assets (Figure 25). This advancement indicates that AstraZeneca has grown more efficient in exploiting its assets to generate revenue and a higher return on investment. Furthermore, AstraZeneca's gross margin increased from 66.8% in 2020 to 72.1% in 2021, illustrating the company's capacity to consistently maintain a high gross margin in the 70-80% area. This shows that AstraZeneca effectively manages its manufacturing costs and pricing strategies, resulting in increased gross profit profitability. Furthermore, AstraZeneca's ROE (Return on Equity) climbed from 0.2% in 2021 to 4.3% in 2022, showing that the company's profitability in comparison to shareholders' equity has greatly improved. Furthermore, AstraZeneca's operating margin climbed from 15.1% in 2020 to 16.7% in 2022, indicating the company's increasing profitability from operations. This demonstrates that AstraZeneca has been successful in minimizing its operating expenses and optimizing revenue creation.

Figure 25 – ROA & ROE



Source: Author's analysis

Overall, the increasing ROA, gross margin, ROE, and operating margin illustrate AstraZeneca's improved profitability and operational efficiency, displaying strong financial performance and suggesting the company's ability to create larger returns for its shareholders.

Leverage

In 2022, AstraZeneca had a debt-to-equity ratio of 38.1% down from 44.4% in 2021 (Figure 26). A lower debt-to-equity ratio indicates that the company has been using a higher portion of equity to fund its operations and expansion and denotes a lower level of financial leverage. The company may be attempting to strengthen its financial stability, improve its creditworthiness, and possibly cut the associated interest expenses by reducing its leverage. AstraZeneca's objective of upholding a stable and balanced financial position is consistent with this cautious approach to managing its capital structure.

Liquidity

AstraZeneca's current ratio and quick ratio significantly improved between 2021 and 2022, which is a reflection of the company's improved capacity to satisfy its short-term financial obligations (Figure 27). In comparison to its current liabilities, AstraZeneca's current assets have grown, with a current ratio of 0.92 in 2022, up from 0.36 in 2021. The corporation now has a larger pool of assets that may be converted into cash to pay its short-term debts, indicating a better financial position and greater liquidity.

Additionally, AstraZeneca's quick ratio, which compares the company's current obligations to its most liquid assets (such as cash, cash equivalents, and marketable securities), increased from 0.36 in 2021 to 0.56 in 2022. This suggests that AstraZeneca has more highly liquid assets available to pay its immediate financial obligations without depending primarily on inventory or other less liquid assets. The increased current ratio and quick ratio indicates that AstraZeneca's financial situation has improved, allowing the company to better manage its short-term financial commitments and potentially explore growth possibilities with lower liquidity concerns.

7. Investment Risks

AstraZeneca faces a diverse range of risks and uncertainties. The risks that have the potential to have a material impact on its strategic priorities are the principal risks (Figure 28).

Market Risks

Competitive Products (MR1)

New competitive product introductions can affect AstraZeneca's revenues since they can reduce sales of both existing and in-development products.

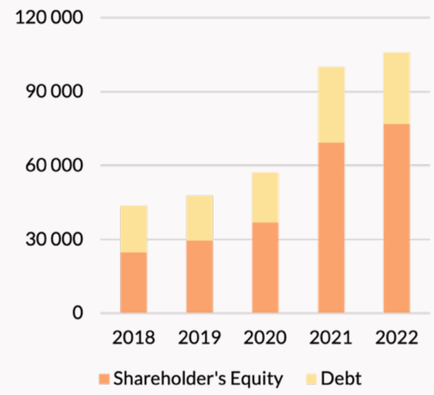
Generics Competition (MR2)

Generic competition can have a severe effect on an AstraZeneca product whose patent is about to expire since once a product loses its protection, its sales are anticipated to decline sharply if a generic product is expected to emerge. Due to patent expirations, AstraZeneca's primary blockbusters might face considerable generic competition in the future years.

Geopolitical and Macroeconomic Volatility (MR3)

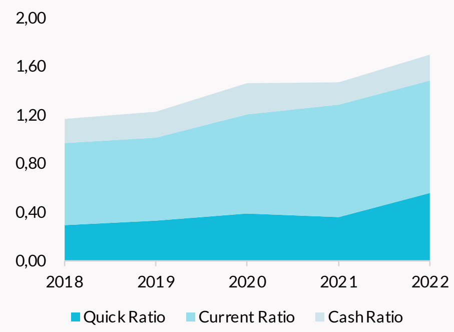
With operations in over 100 countries, AZN is affected by political, social, and financial issues all around the world. An enduring global economic slowdown might have a negative influence on the firm. Global operations are being challenged by geopolitical tensions, like the current crisis in Ukraine and the emergence of national and regional interests.

Figure 26 – Shareholder's Equity and Debt



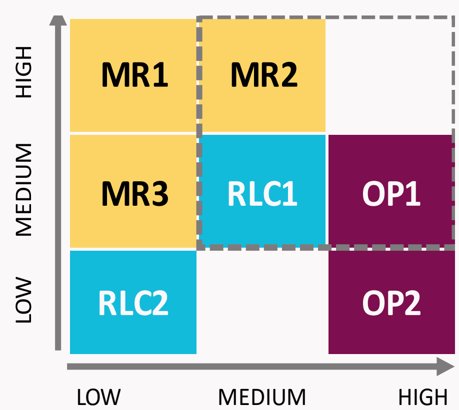
Source: Author's analysis

Figure 27 - Liquidity Ratios



Source: Author's analysis

Figure 28 - Risk Matrix



Source: Author's analysis

Regulatory, Legal, and Compliance Risks

Pricing Pressure (RLC1)

Ongoing worldwide pressures to reduce healthcare expenditure may force payers to take cost-cutting initiatives, which might harm the company and its financial results.
Mitigation: Focus on key products and diversified portfolio.

Intellectual Property (RLC2)

The pharmaceutical industry is under many laws and regulations. Delays in regulatory reviews and approvals limit its ability to commercialize products, and thus adversely affect its revenues. If AstraZeneca is unable to enforce its intellectual property, the firm may face rapid and heightened competition.
Mitigation: Partnerships with regulatory agencies and advocacy organizations are used to monitor and adapt to regulatory changes and active management of IP rights and IP litigation.

Operational Risks

Failure or Delays in Manufacturing Operations (OP1)

Drug manufacturing is a difficult, risky, and time-consuming process that requires large resources. A project may fail at any point in the process owing to a variety of causes, which might harm our future business and operational performance.
Mitigation: Accelerate the pipeline and improve R&D productivity.

Failure in Information Technology or Cybersecurity (OP2)

Significant disruption to IT systems, including breaches of data security or cybersecurity, or legal compliance failure could harm AstraZeneca's reputation and materially affect its results of operations.
Mitigation: Cybersecurity framework and dashboard, disaster and data recovery plans, and regular cybersecurity and privacy training for the employees.

Sensitivity Analysis

A sensitivity analysis was performed to assess the Price Target sensitivity to cost of capital (WACC), to the long-term sustainable growth rate (g) and the strength of the investment recommendation.

The **WAAC rate** is set at 10.34% for the base, an **increase (decrease)** of 20 bps could lead to a decrease (increase) of about $3.1-5.2/share on PT, with all other variables remaining constant. The long-term sustainable growth rate is set for 1.62% in the base, **an increase (decrease) of 10bps** could lead to an increase (decrease) of about $0.8-1/share on the PT, with all other variables remaining constant.

Figure 30 - Sensitivity Analysis

Cost of Capital (WACC) \ Long-term Sustainable Growth Rate (g)	1,22%	1,32%	1,42%	1,52%	1,62%	1,72%	1,82%	1,92%	2,02%
9,54%	$79,91	$80,47	$81,03	$81,61	$82,20	$82,81	$83,44	$84,08	$84,73
9,74%	$78,19	$78,71	$79,24	$79,78	$80,34	$80,91	$81,49	$82,09	$82,70
9,94%	$76,56	$77,05	$77,55	$78,06	$78,58	$79,11	$79,66	$80,22	$80,79
10,14%	$75,02	$75,48	$75,95	$76,42	$76,91	$77,41	$77,92	$78,45	$78,99
10,34%	$73,56	$73,99	$74,43	$74,88	$75,39	$75,81	$76,29	$76,78	$77,28
10,54%	$72,18	$72,58	$72,99	$73,42	$73,85	$74,29	$74,74	$75,20	$75,68
10,74%	$70,86	$71,24	$71,63	$72,03	$72,44	$72,85	$73,28	$73,71	$74,15
10,94%	$69,61	$69,97	$70,34	$70,71	$71,10	$71,49	$71,89	$72,30	$72,71
11,14%	$68,42	$68,76	$69,11	$69,46	$69,82	$70,19	$70,57	$70,96	$71,35

Source: Author's analysis

Figure 29 - Investment Recommendation and Upside Potential

Investment Recomendation	Upside Potencial
Strong Buy	>30%
Buy	>15% & <= 30%
Hold	>5% & <= 15%
Reduce	>=--5% & <= 5%
Sell	<-5%

Source: Author's analysis

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Appendices

Appendix 1 - AstraZeneca's Therapeutic Areas

Therapeutic Area	Description	Key Products
Oncology	Focuses on developing treatments for various types of cancers.	Tagrisso, Lynparza, Imfinzi and Calquence
Respiratory & Immunology	Addresses respiratory disorders and immunological conditions.	Fansera, Breztri and Saphnelo
Cardiovascular, Renal & Metabolism	Concentrates on cardiovascular, renal and metabolic disorders.	Brilinta, Farxiga and Onglyza
Vaccines & Immune Therapies	Develops vaccines and immune therapies for various diseases.	COVID-19 Vaccine and Evusheld
Rare Disease	Focuses on rare diseases with unmet medical needs.	Soliris and Ultomiris

Source: AZN Annual Report, 2022

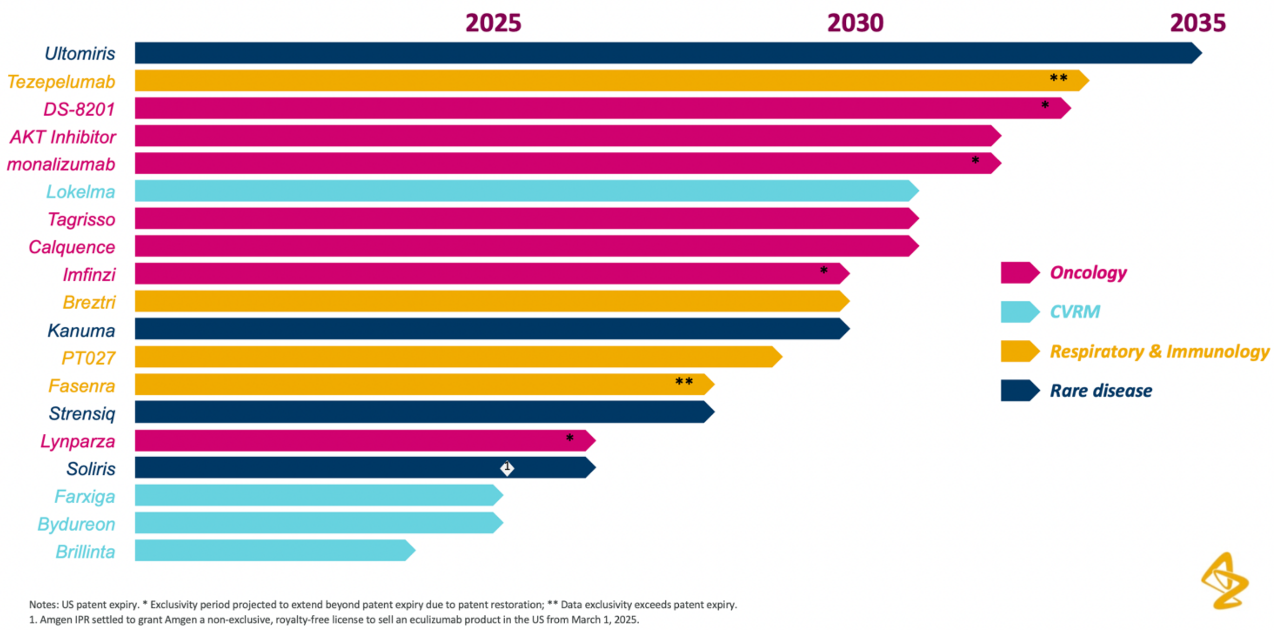
Appendix 2 - Key Products Description

Key Products Description

Key Products	Description
Tagrisso	A non-small cell lung cancer targeted treatment that has showed substantial increases in progression-free survival when compared to regular chemotherapy.
Lynparza	A PARP inhibitor (a substance that blocks an enzyme in cells) used for the treatment of ovarian and some kinds of breast cancer.
Infinzi	A checkpoint inhibitor licensed to treat non-small cell lung cancer and some kinds of bladder cancer.
Enhertu	An authorized HER2-targeted antibody drug conjugate for the treatment of HER2-positive breast cancer.
Calquece	Develops vaccines and immune therapies for various diseases.
Fansera	Approved for the treatment of severe eosinophilic asthma.
Breztri	A long-term prescription medicine used to treat chronic obstructive pulmonary disease
Saphnelo	A drug used to treat adults with moderate to severe systemic lupus erythematosus who are also being treated with other lupus medications.
Brillinta	An antiplatelet therapy which is used to treat acute coronary syndrome and to prevent cardiovascular problems.
Farxiga	A drug developed to treat diabetes, but it was also licensed to treat certain types of heart failure and renal illnesses.
Onglyza	A prescription medication used to decrease blood sugar levels in persons with type 2 diabetes
Evusheld	A long-acting antibody combination, the treatment of COVID-19.
Soliris	It is used to treat patients with Paroxysmal Nocturnal Hemoglobinuria (PNH), a rare red blood cell disorder, and atypical hemolytic uremic syndrome.
Ultomiris	The first and only long-acting C5 complement inhibitor. It is used to treat PNH and adults and children aged 1 month and older with atypical hemolytic uremic syndrome.

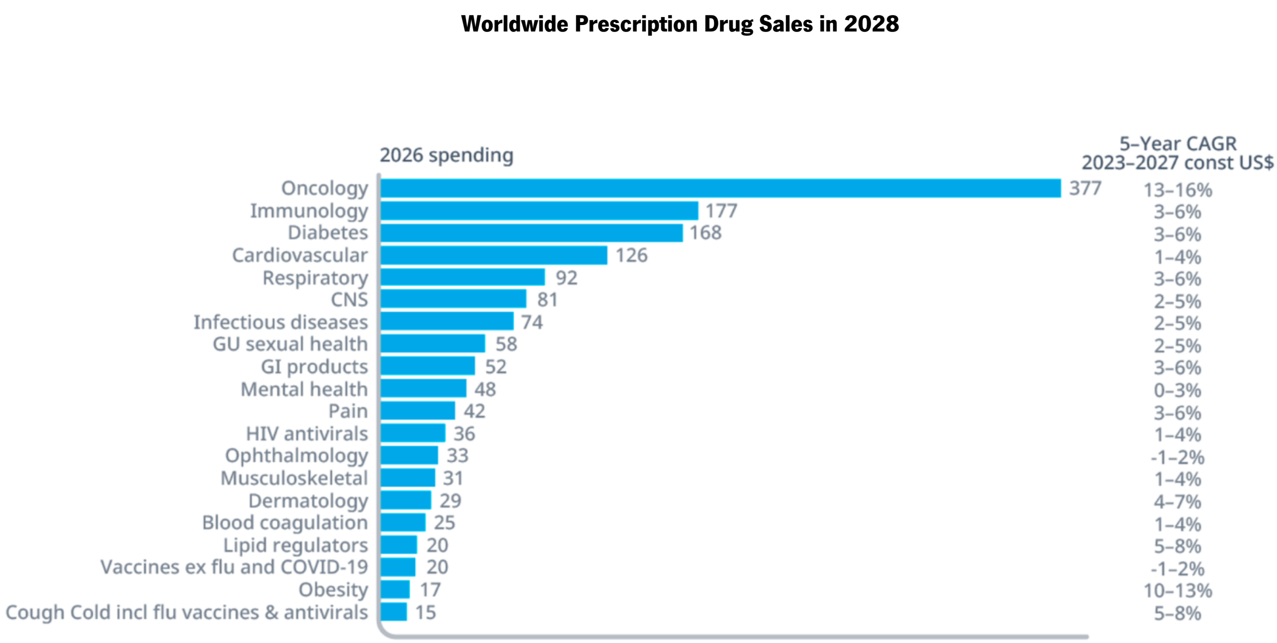
Source: AZN Annual Report, 2022

Appendix 3 - AstraZeneca's Patents Longevity



Source: AstraZeneca Patent Expiries of Key Marketed Products, 2021

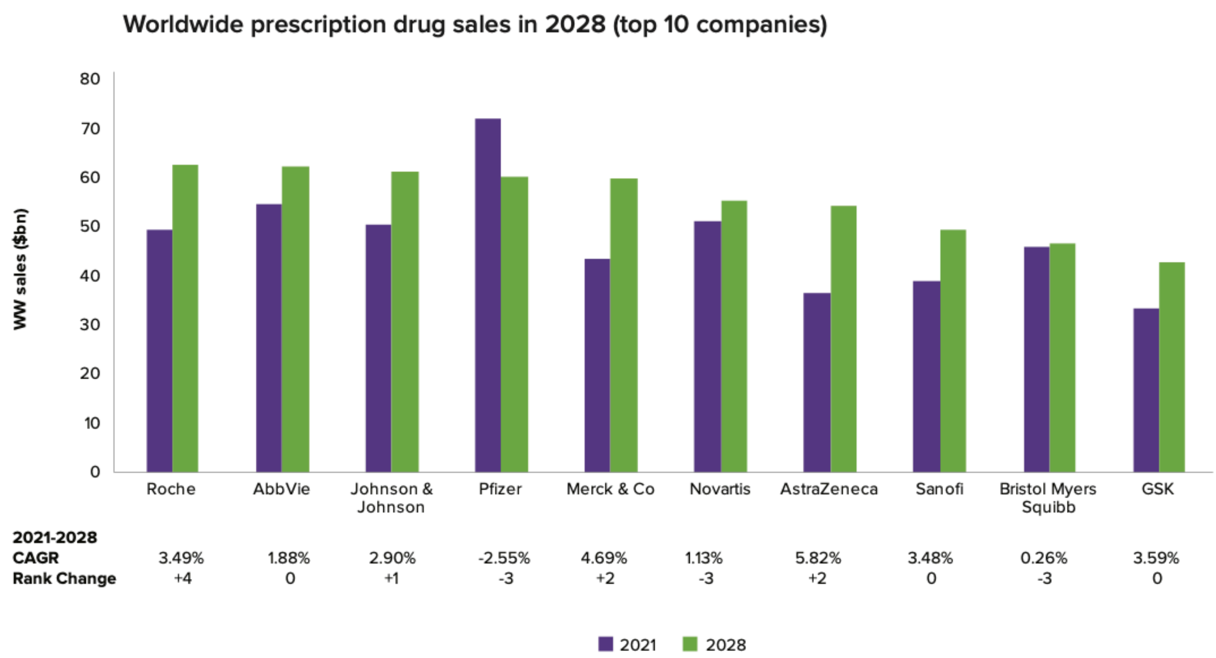
Appendix 4 - Top 20 Therapy Areas in 2027 in Terms of Global Spending



Source: IQVIA Forecast, 2022

Appendix 5 - Worldwide Prescription Drug Sales Forecasted for 2028

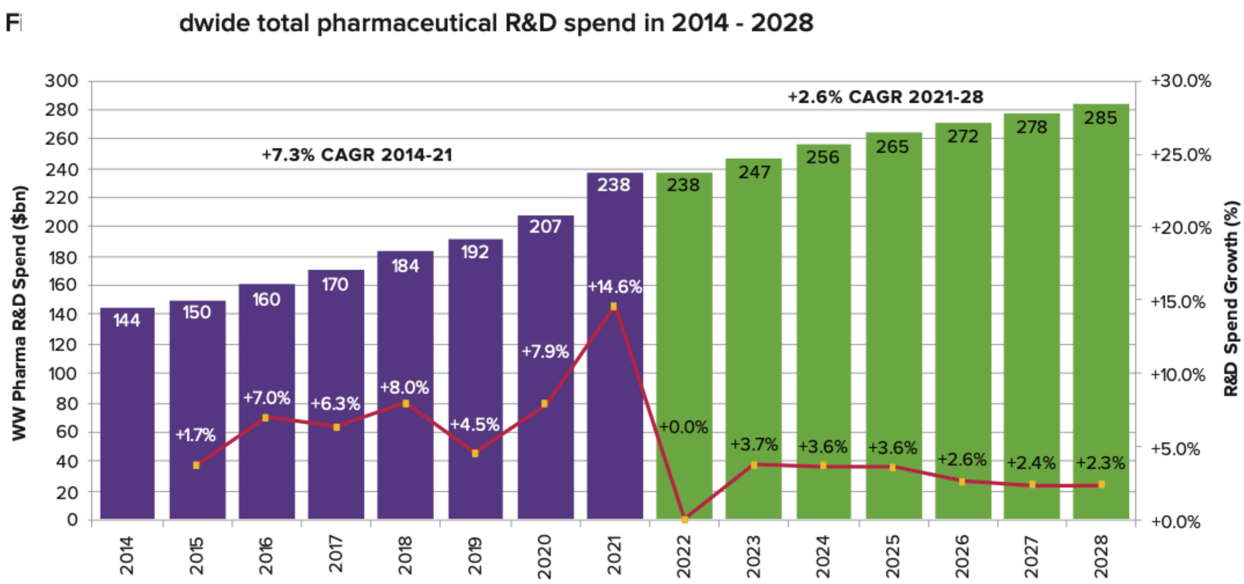
AstraZeneca is among the top 10 companies that are expected to have the highest worldwide prescription drug sales in 2028.



Source: Evaluate Pharma, 2022

Appendix 6 - Pharmaceutical R&D Spending

Pharmaceutical R&D spending is forecast to continue increasing with a 2.6% CAGR increase between 2021-28.



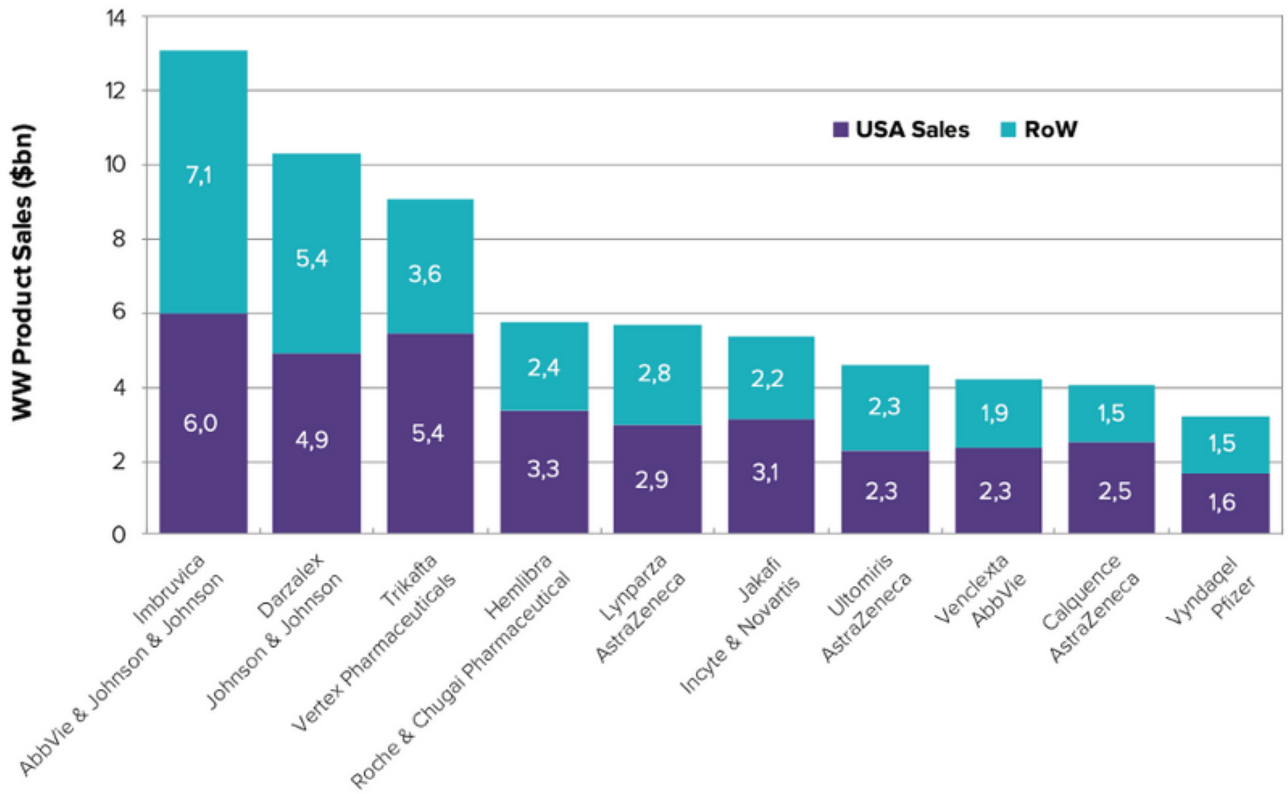
Source: Evaluate Pharma, 2022

Appendix 7 - Top 10 Selling Orphans by Worldwide Sales Forecast in 2026

In 2026, big pharma will fund eight of the top 10 best-selling orphan medications, with Novartis owning the ex-US rights to Incyte's Jakafi. Following Alexion's $39 billion acquisition by AstraZeneca in 2021 and Celgene's $74 billion acquisition by Bristol Myers Squibb in 2019, Vertex will be the only biotech in the top 10.

		Worldwide orphan sales ($bn)			WW non orphan sales ($bn)		Percentage of sales from orphan drugs	
Rank	Company	2021	2026	CAGR	2021	2026	2021	2026
1	Johnson & Johnson	13.0	22.0	+11,0%	39.4	34.9	25%	39%
2	AstraZeneca	6.7	18.6	+22,6%	28.7	32.8	19%	36%
3	Roche	10.1	15.8	+9,3%	39.1	45.3	21%	26%
4	Novartis	13.7	13.2	-0,8%	37.4	45.0	27%	23%
5	AbbVie	7.8	12.2	+9,4%	46.6	47.3	14%	20%
6	Bristol Myers Squibb	22.0	11.3	-12,5%	23.6	36.1	48%	24%
7	Sanofi	7.0	10.8	+8,9%	31.7	37.5	18%	22%
8	Vertex Pharmaceuticals	7.2	10.1	+7,1%	0.0	0.2	100%	98%
9	Takeda	6.7	8.0	+3,3%	23.0	21.3	23%	27%
10	Pfizer	5.1	7.7	+8,6%	65.1	41.9	7%	16%

FIGURE 3: Top 10 Selling Orphans by Worldwide Sales 2026



Sourc *Source: Evaluate Pharma, 2022*

Appendix 8 - Biopharma's Most Valuable R&D Projects

Ones to watch: biopharma's most valuable R&D projects			
Project	**Companies involved**	**Description**	**NPV**
Datopotamab deruxtecan	Daiichi Sankyo/ Astrazeneca	Trop-2 targeted antibody-drug conjugate; first phase 3 data due H1'23	$9.6bn
NTLA-2001	Intellia/Regeneron	Crispr-Cas9 gene editing therapy for hereditary transthyretin amyloidosis; further cuts of ph1 data due over 2023, pivotal plans awaited	$6.3bn
Nipocalimab	Johnson & Johnson	FcRn antagonist for autoimmune conditions; ph3 in myasthenia gravis ongoing, further pivotal plans awaited	$5.4bn
mRNA-1647	Moderna	Cytomegalovirus vaccine; ph3 ongoing	$4.7bn
Talquetamab	J&J/Genmab	T-cell redirecting bispecific targeting GPRC5D for multiple myeloma; mid-stage readouts due over the year	$4.5bn
KarXT	Karuna Therapeutics	M1/M4-muscarinic agonist for schizophrenia; pivotal programme ongoing, further data and US filing slated for 2023	$4.2bn
Aficamten	Cytokinetics	Cardiac myosin inhibitor; ph3 data in hypertrophic cardiomyopathy due H2'23	$3.7bn
Tiragolumab	Roche	Anti-Tigit MAb; further overall survival readouts due in 2023	$3.2bn
Patritumab deruxtecan (U3-1402)	Daiichi Sankyo	Her3 targeted antibody-drug conjugate for for breast and lung cancer; potentially pivotal ph2 data due 2023	$2.9bn
CTX001 (exagamglo-gene-autotemcel)	Crispr/Vertex	Crisr-Cas9 gene editing therapy for sickle cell disease and beta-thalassaemia; US and European filings anticipated by Q1'23	$2.4bn

Source: Evaluate Pharma, 2022

Appendix 9 - Consolidated Balance Sheet

CONSOLIDATED BALANCE SHEET ($m)	2018	2019	2020	2021	2022E
Fixed Assets	**41 087**	**40 836**	**41 709**	**72 555**	**68 576**
Property, Plant and Equipment, net	7 421	8 335	8 917	10 171	9 449
Goodwill, Net	11 707	11 668	11 845	19 997	19 820
Intangibles, Net	21 959	20 833	20 947	42 387	39 307
Current Assets	**19 564**	**20 541**	**25 020**	**32 808**	**27 907**
Cash and & Cash Equivalents	5 680	6 218	7 992	6 398	6 405
Trade Receivables, net	2 995	3 813	3 956	6 324	10 521
Other Receivables	1 350	1 368	1 695	2 471	731
Inventories	2 890	3 193	4 024	8 983	4 699
Prepaid Expenses	1 436	865	1 735	1 512	-
Investments in Affiliate Companies and others	922	1 459	1 147	1 237	1 142
Deferred Charges	-	392	395	391	-
Defered Income Tax - Long Term Asset	2 379	2 718	3 438	4 330	3 263
Other Current Assets	1 912	515	638	1 162	1 146
TOTAL ASSETS	**60 651**	**61 377**	**66 729**	**105 363**	**96 483**
Common Stock	317	328	328	387	387
Additional Paid-In Capital	4 427	7 941	7 971	35 126	35 155
Retained Earnings	7 724	4 858	7 323	3 755	1 495
SHAREHOLDER'S EQUITY	**12 468**	**13 127**	**15 622**	**39 268**	**37 037**
Debt	**19 113**	**18 227**	**20 380**	**30 781**	**29 232**
Short Term Debt	1 754	2 010	2 386	1 893	5 542
Current Port. of LT Debt / Capital Leases	1 594	1 856	2 016	1 599	5 281
Notes Payable / Short Term Debt	160	154	370	294	261
Long Term Debt	17 359	16 217	17 994	28 888	23 690
Long Term Debt	17 359	15 730	17 505	28 134	22 965
Capital Lease Obligations	0	487	489	754	725
Current Liabilities	**29 070**	**30 023**	**30 727**	**35 314**	**30 214**
Accounts Payable	1 720	1 774	2 350	2 824	-
Payable / Accrued	-	-	-	-	19 040
Accrued Expenses	5 148	5 085	4 994	8 079	-
Customer Advances	92	28	1 881	1 082	-
Income Taxes Payable	1 164	1 361	1 127	916	896
Other Payables	5 014	6 203	5 913	6 104	--
Deferred Income Tax	3 286	2 490	2 918	6 206	2 944
Minority Interest	1 576	1 469	16	19	21
Reserves	385	841	584	956	896
Pension Benefits - Underfunded	2 511	2 807	3 202	2 454	1 168
Other Current Liabilities	8 174	7 965	7 742	6 674	5 249
TOTAL LIABILITIES	**48 183**	**48 250**	**51 107**	**66 095**	**59 446**
TOTAL EQUITY AND LIABILITIES	**60 651**	**61 377**	**66 729**	**105 363**	**96 483**

Appendix 10 - Consolidated Income Statement

Consolidated Income Statement ($m)	2018	2019	2020	2021	2022E
Total Revenues	**22 090**	**24 384**	**26 617**	**37 417**	**44 351**
Product Sales	21 049	23 565	25 890	35 541	42 998
Oncology	6 028	8 667	10 850	13 048	14 631
Biopharmaceuticals: R&I	4 911	5 391	5 357	6 034	5 765
BioPharmaceuticals: CVRM	6 710	6 906	7 096	8 020	9 188
BioPharmaceuticals: V&I	-	-	-	4 002	4 736
Rare Disease	-	-	-	3 070	7 053
Other Medicines	3 400	2 601	2 587	2 637	1 625
Collaboration Revenue	1 041	819	727	876	1 353
Cost of sales	-4 645	-4 868	-5 299	-12 437	-12 391
Gross Profit	**17 445**	**19 516**	**21 318**	**24 980**	**31 960**
Distribution expense	-331	-339	-399	-446	-536
R&D expense	-5 932	-6 059	-5 991	-9 736	-9 762
SG&A expense	-10 210	-10 480	-11 306	-15 234	-18 419
Depreciation and Amortization	3 753	3 766	3 148	6 530	5 480
Other operating income and expense	2 527	1 541	1 528	1 492	514
EBIT	**3 499**	**4 179**	**5 150**	**1 056**	**3 757**
Finance income	138	172	87	43	95
Finance expense	-1 419	-1 432	-1 306	-1 300	-1 346
Share of after tax losses in associates and joint ventures	-113	-116	-27	-64	-5
EBT	**1 993**	**1 548**	**3 916**	**-265**	**2 501**
Taxation	57	-321	-772	380	792
Profit for the period	**2 050**	**1 227**	**3 144**	**115**	**3 293**
Other comprehensive income/(loss) for the period, net of tax	-1 059	-611	1 608	-145	-878
Total Profit income	**991**	**616**	**5**	**-30**	**2 415**
Profit attributable to Non-controlling interests	-105	-108	-52	3	5
Profit attributable to AZN	**2 155**	**1 335**	**3 196**	**112**	**3 288**

Appendix 11 - Consolidated Cash Flow Statement

CONSOLIDATED CASH FLOW STATEMENT ($m)	2018	2019	2020	2021	2022E
NET CASH FLOWS FROM OPERATING ACTIVITIES	**2 618**	**2 969**	**4 799**	**5 963**	**9 808**
Net Income	1 993	1 548	3 916	-265	2 501
Depreciation/Depletion	3 753	3 762	3 149	6 530	5 480
Non-cash charges	-1 276	-103	-332	141	542
Changes in Working Capital	-1 852	-2 238	-1 934	-443	1 285
NET CASH FLOWS FROM INVESTING ACTIVITIES	**963**	**-657**	**-285**	**-11 058**	**-2 960**
PP&E and Intangible Assets	-1 371	-2 460	-2 606	-2 200	-2 571
Acquisition of Business	0	0	0	-9 263	-48
Sale of Fixed Assets	12	37	106	13	282
Sale/Maturity of Investment	24	18	1 381	785	42
Investment, Net	405	194	745	96	-114
Purchase of Investments	-289	-87	-127	-276	-71
Sale of Intangible Assets	2 338	2 076	951	587	447
Other Investing Cash Flow	-156	-435	-735	-800	-927
NET CASH FLOW FROM FINANCING ACTIVITIES	**-2 044**	**-1 765**	**-2 203**	**3 649**	**-6 823**
Financing Cash Flow Items	-67	4	-101	-178	-1 047
Cash Dividends Paid	-3 484	-3 592	-3 572	-3 856	-4 364
Issuance (Retirement) of Stock, Net	34	3 525	30	29	29
Issuance (Retirement) of Debt, Net	1 473	-1 702	1 440	7 654	-1 441
CHANGES IN CASH & EQUIVALENTS	**4 671**	**5 223**	**7 546**	**-1 446**	**25**
Cash & equivalents (Initial) & Exchange rate fluctuations	0	0	-	7	6
CASH AND EQUIVALENTS (END OF PERIOD)	**4 671**	**5 223**	**7 546**	**6 038**	**5 983**

Appendix 12 - R&D Adjusted Forecasted Consolidated Income Statement

R&D adj. Forecasted Consolidated Income Statement ($m)	2022E	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
Total Revenues	**44 351**	**49 591**	**53 194**	**59 373**	**65 171**	**71 088**	**75 527**	**78 301**	**80 715**	**82 688**	**83 946**
Product Sales	42 998	47 629	50 546	55 797	61 059	66 359	70 325	72 683	74 760	76 495	77 630
Oncology	14 631	17 265	20 027	22 831	25 570	28 127	29 815	31 008	32 248	33 538	34 544
Biopharmaceuticals: R&I	5 765	5 650	5 424	5 315	5 310	5 416	5 633	5 914	6 151	6 274	6 337
BioPharmaceuticals: CVRM	9 188	10 382	7 891	6 707	6 036	6 036	6 006	6 126	6 188	6 219	6 250
BioPharmaceuticals: V&I	4 736	2 842	2 273	2 046	1 841	1 657	1 491	1 342	1 208	785	353
Rare Disease	7 053	9 874	13 330	17 329	20 795	23 706	26 077	27 120	27 934	28 772	29 347
Other Medicines	1 625	1 617	1 601	1 569	1 506	1 416	1 303	1 172	1 032	908	799
Collaboration Revenue	1 353	1 962	2 648	3 575	4 112	4 729	5 201	5 618	5 955	6 193	6 317
Cost of sales	-12 391	-12 398	-13 299	-14 843	-16 293	-17 772	-18 882	-19 575	-20 179	-20 672	-20 987
% Sales	*-28%*	*25%*	*25%*	*25%*	*25%*	*25%*	*25%*	*25%*	*25%*	*25%*	*25%*
Gross Profit	**31 960**	**37 193**	**39 896**	**44 529**	**48 878**	**53 316**	**56 645**	**58 726**	**60 536**	**62 016**	**62 960**
Distribution expense	-536	-496	-532	-594	-652	-711	-755	-783	-807	-827	-839
% Sales	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*
SG&A expense	-18 419	-21 324	-22 873	-25 530	-28 024	-30 568	-32 476	-33 669	-34 707	-35 556	-36 097
% Sales	*-42%*	*-43%*	*-43%*	*-43%*	*-43%*	*-43%*	*-43%*	*-43%*	*-43%*	*-43%*	*-43%*
Depreciation and Amortization	5 480	4 932	4 981	5 031	5 081	5 132	5 184	5 235	5 288	5 341	5 394
% Sales	*12%*	*10%*	*9%*	*8%*	*8%*	*7%*	*7%*	*7%*	*7%*	*6%*	*6%*
R&D Amortization	6 100	6 819	7 314	8 164	8 961	9 775	10 385	10 766	11 098	11 370	11 543
% Sales	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*	*14%*
Other operating income and expense	514	2 975	3 192	3 562	3 910	4 265	4 532	4 698	4 843	4 961	5 037
% Sales	*1%*	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*
EBIT	**7 419**	**11 530**	**12 368**	**13 804**	**15 152**	**16 528**	**17 560**	**18 205**	**18 766**	**19 225**	**19 518**
Finance income	95	104	112	125	137	149	159	164	170	174	176
% Sales	*0,21%*	*0,21%*	*0,21%*	*0,21%*	*0,21%*	*0,21%*	*0,21%*	*0,21%*	*0,21%*	*0,21%*	*0,21%*
Finance expense	-1 346	-1 488	-1 596	-1 781	-1 955	-2 133	-2 266	-2 349	-2 421	-2 481	-2 518
% Sales	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*	*-3%*
Share of after tax losses in associates and joint ventures	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
% Sales	*-0,01%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*	*0%*
EBT	**6 163**	**10 141**	**10 879**	**12 143**	**13 329**	**14 540**	**15 448**	**16 015**	**16 509**	**16 913**	**17 170**
Taxation	792	-1 014	893	1 163	1 563	1 918	2 265	2 583	2 802	2 995	3 168
Profit for the period	**3 293**	**9 127**	**11 772**	**13 306**	**14 892**	**16 458**	**17 713**	**18 598**	**19 311**	**19 908**	**20 338**
Other comprehensive income/(loss) for the period, net of tax	-878	-496	-532	-594	-652	-711	-755	-783	-807	-827	-839
% Sales	*-2%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*	*-1%*
Total Profit income	**2 415**	**8 631**	**11 240**	**12 712**	**14 241**	**15 747**	**16 957**	**17 815**	**18 504**	**19 082**	**19 499**
Profit attributable to Non-controlling interests	5	5	5	5	5	5	5	5	5	5	5
Profit attributable to AZN	**3 288**	**9 122**	**11 767**	**13 301**	**14 887**	**16 453**	**17 708**	**18 593**	**19 306**	**19 903**	**20 333**

Appendix 13 – Financial Analysis

Financial Analysis	2018	2019	2020	2021	2022
Profitability					
Gross Profit Margin	79,0%	80,0%	80,1%	66,8%	72,1%
Adj. EBIT Margin	27,6%	25,9%	24,8%	15,1%	16,7%
Adj. EBITDA Margin	59,7%	57,4%	53,7%	46,3%	42,8%
Net Profit Margin	9,8%	5,5%	12,0%	0,3%	7,4%
ROA	3,0%	1,7%	3,6%	0,1%	2,4%
ROE	8,7%	4,5%	8,7%	0,2%	4,3%
ROE - DuPont Analysis	8,7%	4,5%	8,7%	0,2%	4,3%
Net Profit/Revenues	9,8%	5,5%	12,0%	0,3%	7,4%
Revenues/Assets	30,3%	31,3%	30,3%	27,6%	32,6%
Assets/Equity	295,4%	263,2%	238,7%	195,4%	177,4%
Liquidity					
Quick Ratio	0,30	0,33	0,39	0,36	0,56
Current Ratio	0,67	0,68	0,81	0,93	0,92
Cash Ratio	0,20	0,21	0,26	0,18	0,21
Leverage					
Debt/Equity	77,5%	61,7%	55,3%	44,4%	38,1%
Interest Coverage	4,30	4,41	5,06	4,36	5,51
Net Debt/EBITDA	1,02	0,86	0,87	1,41	1,20
Efficiency					
Total Assets Turnover	0,3	0,3	0,3	0,3	0,3
Inventory Turnover	7,6	7,6	6,6	4,2	9,4
Receivables Turnover	7,4	6,4	6,7	5,9	4,2
Payables Turnover	12,8	13,7	11,3	13,2	1,2
Avg. Inventory (Days)	227	239	277	264	138
Avg. Receivables (Days)	235	286	272	186	310
Avg. Payable (Days)	135	133	162	83	561
Cash Cycle (Days)	327	392	388	366	-113

Appendix 14 – Revenues Estimates

Revenues

	2021	2022E	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
TOTAL REVENUES	**37 417**	**44 351**	**49 591**	**53 194**	**59 373**	**65 171**	**71 088**	**75 527**	**78 301**	**80 715**	**82 688**	**83 946**
YoY%	**40,6%**	**18,5%**	**11,8%**	**7,3%**	**11,6%**	**9,8%**	**9,1%**	**6,2%**	**3,7%**	**3,1%**	**2,4%**	**1,5%**
Product Sales	**35 541**	**42 998**	**47 629**	**50 546**	**55 797**	**61 059**	**66 359**	**70 325**	**72 683**	**74 760**	**76 495**	**77 630**
Oncology	13 048	14 631	17 265	20 027	22 831	25 570	28 127	29 815	31 008	32 248	33 538	34 544
YoY%	20,26%	12,13%	18%	16%	14%	12%	10%	6%	4%	4%	4%	3%
Biopharmaceuticals: R&I	6 034	5 765	5 650	5 424	5 315	5 310	5 416	5 633	5 914	6 151	6 274	6 337
YoY%	12,64%	-4,46%	-2%	-4%	-2%	0%	2%	4%	5%	4%	2%	1%
BioPharmaceuticals: CVRM	8 020	9 188	10 382	7 891	6 707	6 036	6 036	6 006	6 126	6 188	6 219	6 250
YoY%	13,02%	14,56%	13%	-24%	-15%	-10%	0%	0%	2%	1%	0%	0%
BioPharmaceuticals: V&I	4 002	4 736	2 842	2 273	2 046	1 841	1 657	1 491	1 342	1 208	785	353
YoY%		18,34%	-40%	-20%	-10%	-10%	-10%	-10%	-10%	-10%	-35%	-55%
Rare Disease	3 070	7 053	9 874	13 330	17 329	20 795	23 706	26 077	27 120	27 934	28 772	29 347
YoY%		129,74%	40%	35%	30%	20%	14%	10%	4%	3%	3%	2%
Other Medicines	2 637	1 625	1 617	1 601	1 569	1 506	1 416	1 303	1 172	1 032	908	799
YoY%	1,93%	-38,38%	-0,50%	-0,99%	-2,00%	-4,00%	-6,00%	-8,00%	-10,00%	-12,00%	-12,00%	-12,00%
Collaboration Revenue	**876**	**1 353**	**1 962**	**2 648**	**3 575**	**4 112**	**4 729**	**5 201**	**5 618**	**5 955**	**6 193**	**6 317**
YoY%	20,50%	54,45%	45%	35%	35%	15%	15%	10%	8%	6%	4%	2%

Appendix 15 – Non-Cash Working Capital Estimates

Non-Cash Working Capital (WC)

	2021	2022E	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
Non-Cash Working Capital	-8 904	-8 712	-7 935	-7 979	-8 312	-7 821	-8 175	-7 553	-6 264	-5 650	-4 961	-4 197
% Sales	-23,80%	-19,64%	-16,00%	-15,00%	-14,00%	-12,00%	-11,50%	-10,00%	-8,00%	-7,00%	-6,00%	-5,00%
Var. Non-Cash WC	4 795	192	777	-45	-333	492	-355	622	1 289	614	689	764

Appendix 16 – Capital Expenditures Estimates

Capital Expenditures (CAPEX)

	2021	2022E	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
CAPEX (from statement of CF)	**2 200**	**2 571**	**2 480**	**2 128**	**1 781**	**1 955**	**2 133**	**2 266**	**1 958**	**1 614**	**1 654**	**1 679**
% Sales	5,9%	5,8%	5,0%	4,0%	3,0%	3,0%	3,0%	3,0%	2,5%	2,0%	2,0%	2,0%
DEPR (from stat CF)	**6 530**	**5 480**	**4 932**	**4 981**	**5 031**	**5 081**	**5 132**	**5 184**	**5 235**	**5 288**	**5 341**	**5 394**
YoY%	107,43%	-16,08%	-10,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%	1,00%
% Sales	17,45%	12,36%	9,95%									
Net CAPEX (from statement of CF)	**-4 330**	**-2 909**	**-2 452**	**-2 854**	**-3 250**	**-3 126**	**-3 000**	**-2 918**	**-3 278**	**-3 673**	**-3 687**	**-3 715**
R&D expense	**9 736**	**9 762**	**9 918**	**10 639**	**11 875**	**12 382**	**13 507**	**14 350**	**14 877**	**15 255**	**15 628**	**15 866**
YoY%	62,51%	0,27%	1,60%	7,27%	11,61%	4,28%	9,08%	6,24%	3,67%	2,54%	2,44%	1,52%
% Sales	26,0%	22,01%	20,0%	20,0%	20,0%	19,0%	19,0%	19,0%	19,0%	18,9%	18,9%	18,9%
Amortization of R&D	**5 127**	**6 100**	**6 819**	**7 314**	**8 164**	**8 961**	**9 775**	**10 385**	**10 766**	**11 098**	**11 370**	**11 543**
YoY%	13,23%	18,99%										
% Sales	13,70%	13,75%	13,75%	13,75%	13,75%	13,75%	13,75%	13,75%	13,75%	13,75%	13,75%	13,75%
Acquisitions	9 263	48	0	0	0	0	0	0	0	0	0	0
Adjusted Net CAPEX	**9 542**	**801**	**647**	**471**	**461**	**295**	**732**	**1 047**	**833**	**483**	**572**	**608**

Appendix 17 – Reinvestment Rate based on Estimates

Reinvestment Rate

	2021	2022E	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F	2032F
Net Capex	9 542	801	647	471	461	295	732	1 047	833	483	572	608
Var. WC	4 795,00	192,00	777,39	- 44,51	- 333,03	491,63	- 354,58	622,44	1 288,60	614,03	688,74	763,96
EBIT(1-T)	2 570	9 768	12 683	10 884	11 872	12 728	13 553	14 048	14 200	14 450	14 611	14 638
Reinvestment Rate	**557,81%**	**10,16%**	**11,23%**	**3,92%**	**1,08%**	**6,18%**	**2,79%**	**11,89%**	**14,94%**	**7,59%**	**8,63%**	**9,37%**

Appendix 18 – Free Cash Flow to the Firm (FCFF) Computation

Free Cash Flow to the Firm

	Revenues	EBIT	Tax Rate	EBIT (1-t)	Adj. Net CAPEX	Var. Non-Cash WC	FCFF
2022E	*$ 44 351,00*	*$7 418,60*	*-32%*	*$9 767,87*	*$ 800,60*	*$ 192,00*	*$ 8 775,27*
2023F	$ 49 591,29	$11 529,97	-10%	$12 682,97	$ 647,02	$ 777,39	*$ 11 258,56*
2024F	$ 53 194,13	$12 367,64	12%	$10 883,52	$ 471,08	$ -44,51	*$ 10 456,96*
2025F	$ 59 372,51	$13 804,11	14%	$11 871,53	$ 460,82	$ -333,03	*$ 11 743,74*
2026F	$ 65 170,98	$15 152,25	16%	$12 727,89	$ 295,16	$ 491,63	*$ 11 941,10*
2027F	$ 71 087,79	$16 527,91	18%	$13 552,89	$ 732,48	$ -354,58	*$ 13 174,98*
2028F	$ 75 526,56	$17 559,92	20%	$14 047,94	$ 1 047,36	$ 622,44	*$ 12 378,14*
2029F	$ 78 300,72	$18 204,92	21%	$14 199,84	$ 832,89	$ 1 288,60	*$ 12 078,35*
2030F	$ 80 714,61	$18 766,15	23%	$14 449,93	$ 483,32	$ 614,03	*$ 13 352,58*
2031F	$ 82 688,05	$19 224,97	24%	$14 610,98	$ 571,55	$ 688,74	*$ 13 350,69*
2032F/Terminal year	$ 83 946,48	$19 517,56	25%	$14 638,17	$ 608,12	$ 763,96	*$ 13 266,09*

Appendix 19 – Peer's Group selection

To identify AstraZeneca's peers, it were combined the Refinitiv peer group with the SARD technique. To rank the companies using the SARD technique, five selection variables were employed. The variables used were market capitalization as a size metric, ROE as a proxy for profitability, Net debt-to-EBITDA as a risk proxy, EPS, and EBIT margin.

As an outcome of this technique, it was determined the most comparables of the group, which includes five companies is comprised Pfizer, Novartis, Novo Nordisk, Roche, and Abbvie.

Identifier	Company Name	Market Cap (USD)	Forward Net Debt/EBITDA	ROE	EBITDA Margin	Basic Normalized EPS	Forward P/E	Forward Price/Sales
AZN.L	**AstraZeneca PLC**	**205 435 536 374**	**1,39**	**28,0%**	**31,2%**	**3,92**	**18,20**	**4,52**
GSK.L	GSK plc	70 924 745 786	1,34	50,1%	28,1%	1,26	9,97	2,05
ROG.S	Roche Holding AG	237 540 070 084	0,70	48,2%	37,6%	19,65	13,98	3,62
SASY.PA	Sanofi SA	120 401 880 907	0,55	13,2%	33,4%	6,75	11,01	2,52
NOVOb.CO	Novo Nordisk A/S	249 445 577 695	0,03	77,2%	46,2%	3,57	32,38	8,67
PFE.N	Pfizer Inc	234 596 365 427	0,02	17,2%	42,4%	5,49	12,45	3,51

Appendix 20 – Cost of Capital Estimation

The beta was estimated using Damodaran's database's average unlevered industry beta for Pharmaceutical industry. It was then levered using the D/E previously computed with market prices and the UK's marginal tax rate.

Cost of Capital	10,33%
Cost of Equity	**12,09%**
Rf (10Y US T-Bond | 15 Dec)	3,67%
Beta Unlevered (Damodaran Industry Average)	0,95
Market Value D/E	27,65%
Tax Rate (UK Marginal Tax Rate)	25%
Beta Levered	1,15
Equity Risk Premium (based on operating regions)	7,34%
Pre-Tax Cost of Debt	**5,29%**
Default Spread (Rating A3/A-)	1,29%

Beta estimation

Unlevered beta (Pharmaceutical Industry Average)	0,95
D/E (Market Values)	27,65%
Tax Rate	25,00%
Levered beta	1,15

ERP estimation using operating regions

Region	Revenues	ERP	Weight	Weighted ERP
Emerging Markets				
China	5 792	7,16%	13,06%	0,93%
Ex-China	5 953	10,29%	13,42%	1,38%
US	17 920	5,94%	40,40%	2,40%
Europe	8 738	7,45%	19,70%	1,47%
Established RoW	5 948	8,65%	13,41%	1,16%
Total	**44 351**		**100,00%**	**7,34%**