



NOVO NORDISK

UTM Capital Management

Healthcare | March 2023

- **March 23, 2023 Close:** **\$147.63**
- **Target Price:** **\$171.54**
- **Upside:** **16.20%**
- **Recommendation:** **BUY**

Recommendation

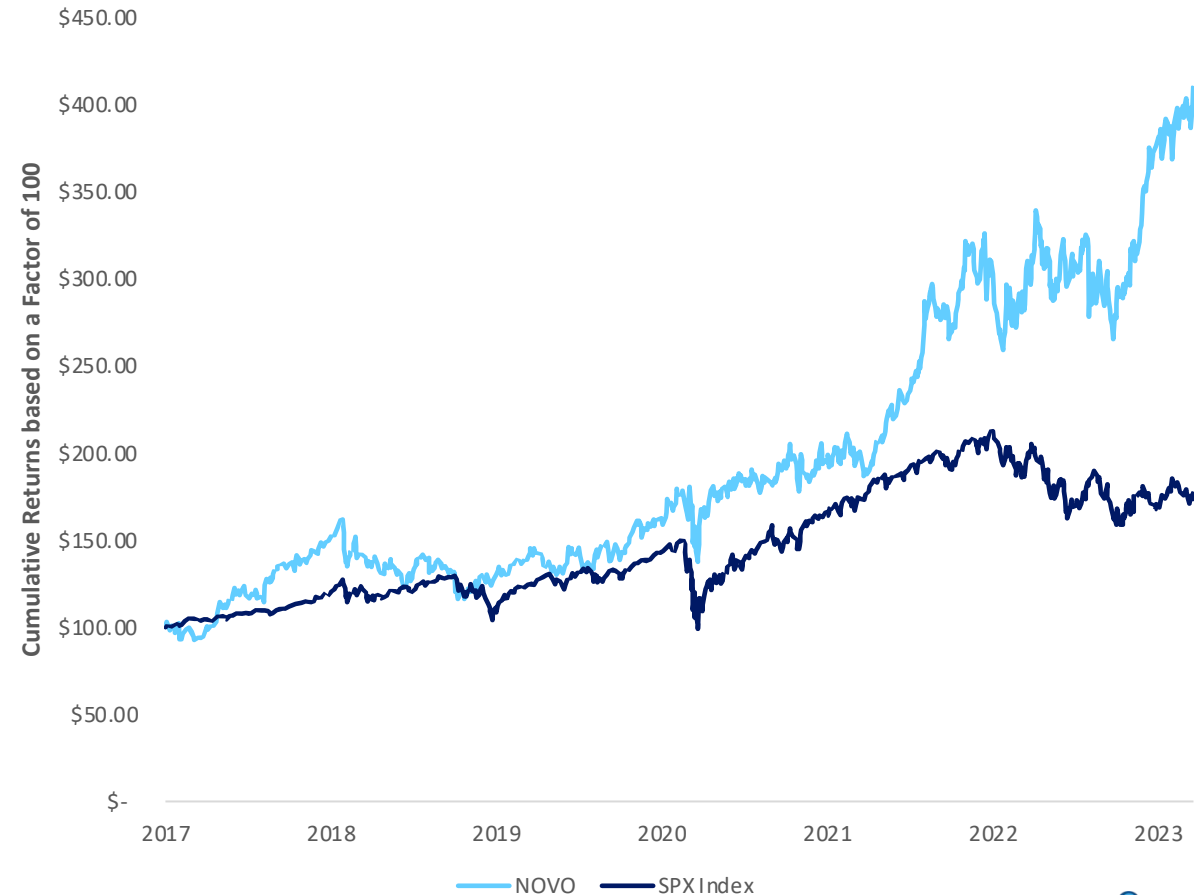
Key Facts

| | |
|-----------------------|----------------|
| Ticker | NOVO-B |
| Founded | 1923 |
| Headquarters | Denmark |
| Industry | Pharmaceutical |
| Revenue | \$15,802M |
| # of Employees | 54,789 |

Key Stats (as of March 23, 2023)

| | |
|---------------------------|------------------|
| Share Price | \$147.58 |
| Market Cap | \$327,940M |
| Shares Outstanding | 2,261,600M |
| EV | 329,200M |
| 52-Week Range | \$95.02-\$147.43 |
| Beta(5Y) | 0.31 |
| P/E Ratio | 41.05x |

6 Year Cumulative Returns



Company Overview

Highlights

- ❑ Novo Nordisk A/S is a global healthcare company, which engages in the discovery, development, manufacturing, and marketing of pharmaceutical products.
- ❑ The company was founded in 1923 and is headquartered in Denmark.
- ❑ It operates through the Diabetes and Obesity Care, and Biopharmaceuticals segments.
- ❑ The Company supplies 50% of the world's insulin.
- ❑ Some key drugs include: **Ozempic**, **NovoRapid**, & **Rybelsus**.

Performance

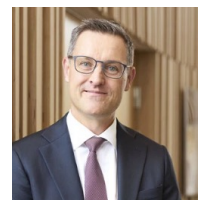


Key Management



Lars Fruergaard Jørgensen, President & CEO

- ❑ Appointed CEO in 2017
- ❑ Been with Novo since 1991
- ❑ Served as senior VP, Executive VP, CIO, and Chief of staff
- ❑ Serves as first vice-president of the EFPIA



Karsten Munk Knudsen, Executive VP & CFO

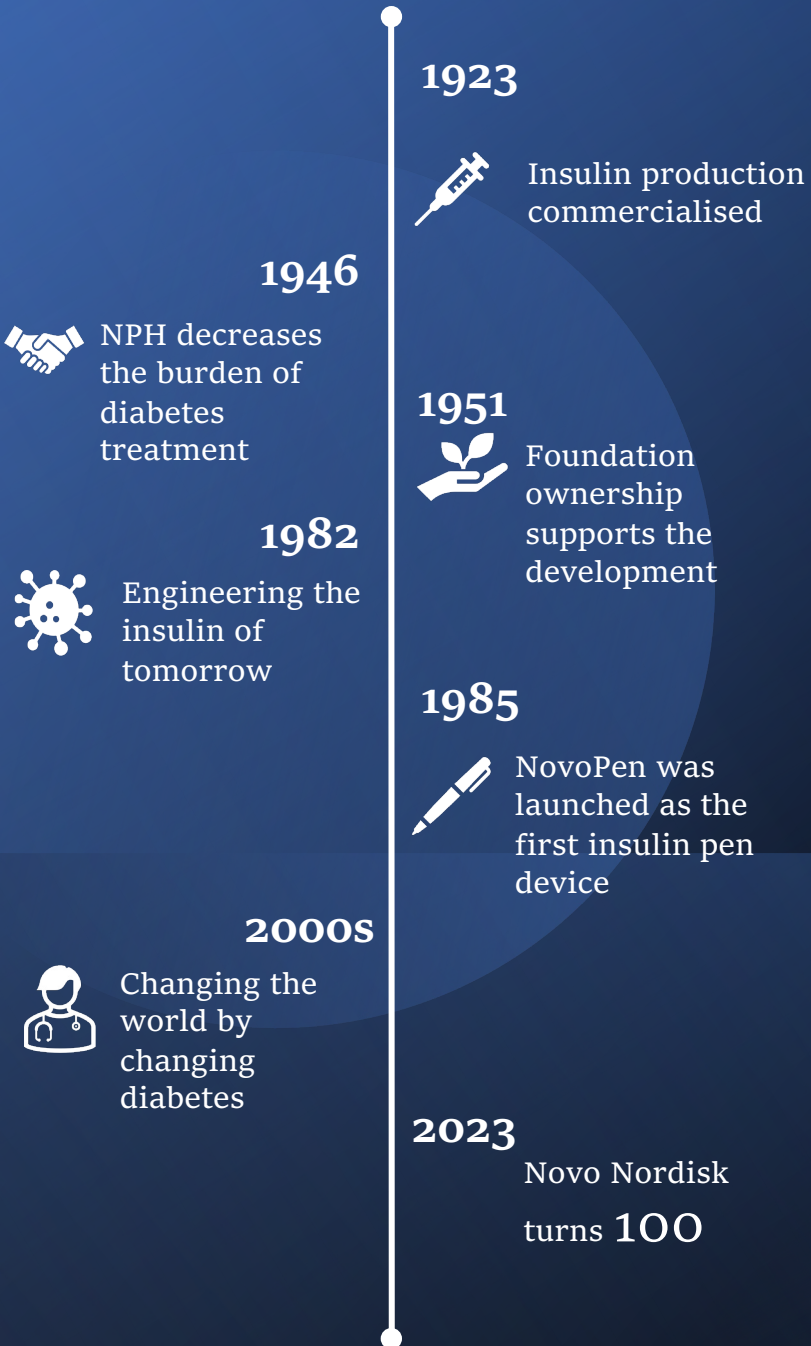
- ❑ Promoted to CFO in 2018
- ❑ Joined Novo in 1999 as a business analyst and was previously Senior VP of corporate finance
- ❑ Responsibilities: Finance, Legal, Procurement, & Global Solutions



Maziar Mike Doustdar, Executive VP International Operations

- ❑ Assumed current role in 2015
- ❑ Joined Novo in 1992
- ❑ Responsibilities include leading all commercial units globally, except for the USA and Canada

Company Portfolio

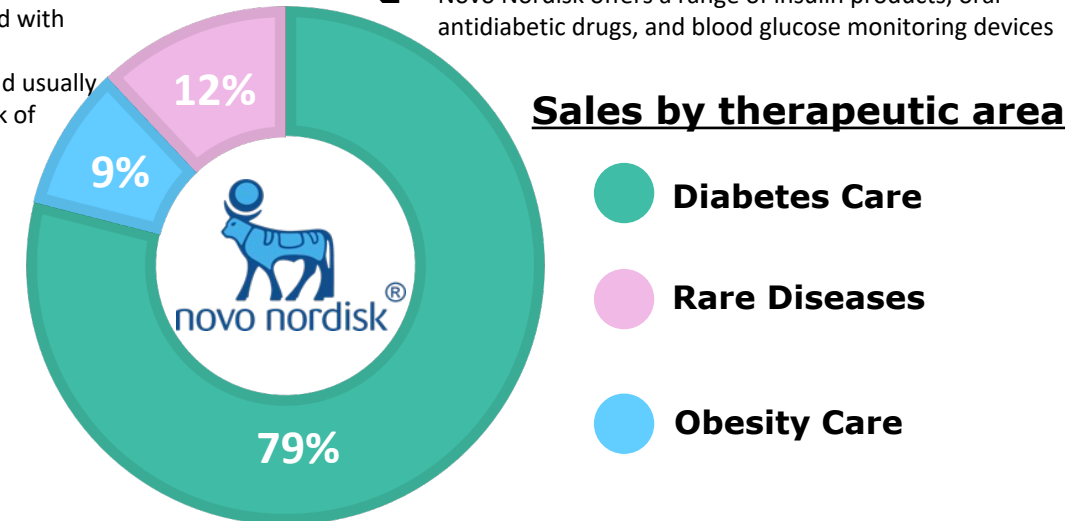


Diabetes Care

- ❑ Diabetes is a chronic condition that affects the way the body processes blood sugar (glucose). (11.3% of population)
- ❑ Type 1 diabetes is an autoimmune disease that usually develops in childhood and requires lifelong insulin therapy.
- ❑ Type 2 diabetes is a metabolic disorder that typically develops in adulthood and can often be managed with lifestyle changes and medications.
- ❑ Gestational diabetes occurs during pregnancy and usually goes away after delivery but can increase the risk of type 2 diabetes later in life.

Obesity Care

- ❑ A chronic condition that affects insulin production or use (70% of population)
- ❑ Can lead to complications such as heart disease and blindness
- ❑ Novo Nordisk offers a range of insulin products, oral antidiabetic drugs, and blood glucose monitoring devices







Rare Diseases

- ❑ Refers to diseases that affect a small percentage of the population, typically fewer than 200,000 individuals in the United States.
- ❑ These diseases are often genetic in nature and can be difficult to diagnose and treat.
- ❑ Novo Nordisk offers a range of products for rare diseases such as hemophilia, including factor replacement therapies and gene therapies.

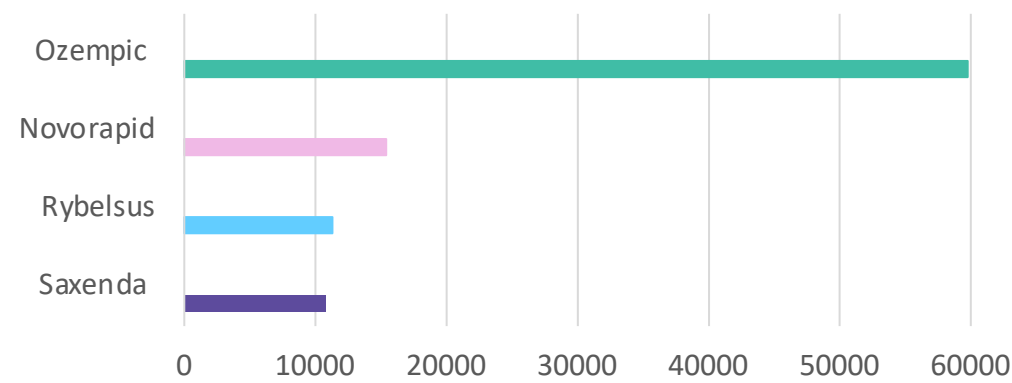
Other Chronic Diseases

- ❑ Refers to a range of chronic conditions beyond obesity and diabetes
- ❑ Examples include cardiovascular disease, chronic kidney disease, and non-alcoholic steatohepatitis (NASH)
- ❑ Novo Nordisk is committed to developing innovative treatments and ongoing research to improve patient outcomes

Product Pipeline

| Drug | Drug Effects | Disease Category | Competitor |
|--|---|-----------------------------|--|
|  OZEMPIC [®] semaglutide injection | GLP1 agonist injection. Helps regulate blood sugar levels and promote weight loss in patients with type 2 diabetes. | Type 2 Diabetes | Other GLP-1 agonists like Trulicity and Bydureon. |
|  NovoRapid [®] | Fast acting insulin. Helps regulate blood sugar levels in patients with type 1 or type 2 diabetes. | Type 1 and Type 2 Diabetes | Other long-acting insulins like Lantus, and Basaglar. |
|  RYBELSUS [®] semaglutide tablets | GLP-1 Agonist. Pill. Helps regulate blood sugar levels in patients with type 2 diabetes and promote weight loss. | Type 2 Diabetes and Obesity | Other GLP-1 receptor agonists like Trulicity and Bydureon. |
|  Saxenda [®] liraglutide injection | GLP1 agonist. Helps promote weight loss by reducing appetite and increasing feeling fullness. | Obesity | Other weight loss drugs like Qsymia and Contrave. |

Novo Nordisk's Best Selling Products



| Company | Rapid-acting insulins | Intermediate-acting insulins | L-acting insulins | GLP-1 Agonists |
|--------------|--|------------------------------|--------------------------------|--------------------------------|
| Novo Nordisk | NovoLog (insulin aspart) | Novolin N (Insulin NPH) | Novolin N (insulin NPH) | Semaglutide(Ozempic, Rybelsus) |
| Sanofi | Apidra (insulin glulisine) Admelog (follow-on of Humalog) | ✖ | Lantus (insulin glargine) | Lixisenatide (Adlyxin) |
| Eli Lilly | Humalog (insulin lispro); authorized generic Humalog | Humulin N (insulin NPH) | Basaglar (follow-on of Lantus) | Dulaglutide (Trulicity) |



Company Overview

| Project | Disease | Description | Phase |
|--------------------------------|-----------------------------------|--|---|
| Diabetes Care | | | |
| Icodec | Type I and II Diabetes | A long-acting basal insulin analogue intended for once weekly treatment. | <div><div></div><div></div><div></div><div></div></div> |
| Rare Disease | | | |
| Sompacitan | Growth Hormone Deficiency | A long-acting HGH derivative intended for once-weekly subcutaneous administration children. | <div><div></div><div></div><div></div><div></div></div> |
| Concizumab | Hemophilia A or B w/wo inhibitors | A monoclonal antibody against tissue factor pathway inhibitor intended for subcutaneous prophylaxis. | <div><div></div><div></div><div></div><div></div></div> |
| Nedosiran | Primary Hyperoxaluria | An SiRNA targeting lactate dehydrogenase A (LDHA) for once-monthly subcutaneous treatment. | <div><div></div><div></div><div></div><div></div></div> |
| Etavopiat | Sickle cell disease | Second generation selective, small molecule PKR-activator intended for once-daily oral administration. | <div><div></div><div></div><div></div><div></div></div> |
| Other Serious Chronic Diseases | | | |
| Semaglutide | Non-alcoholic steatohepatitis | A long-acting GLP-1 analogue for once-weekly subcutaneous treatment. | <div><div></div><div></div><div></div><div></div></div> |
| Semaglutide- Alzheimer | Alzheimer's Disease | A long-acting GLP-1 analogue for once-weekly subcutaneous treatment. | <div><div></div><div></div><div></div><div></div></div> |
| Ziltivekimab | Cardiovascular disease | A once monthly monoclonal antibody intended for inhibition of IL-6 activity. | <div><div></div><div></div><div></div><div></div></div> |

Industry & Market Analysis

The Anti-Diabetes Drugs market is experiencing steady growth, driven by the number of patients, which is projected to increase continuously over the next years.

Type 2 diabetes is the most common form; accounting for roughly 95% of all cases. It is associated with **obesity**, and the number of obese people worldwide is projected to increase.

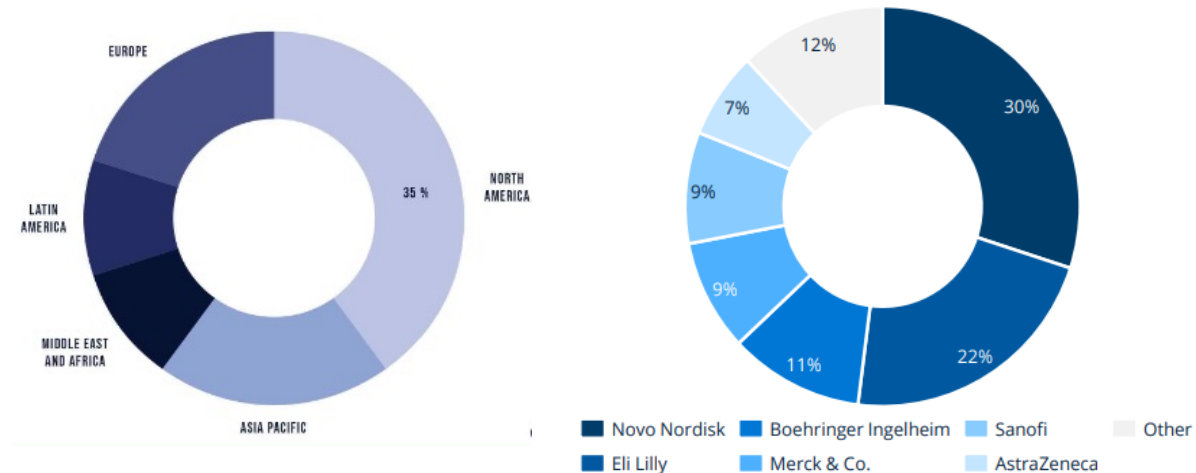
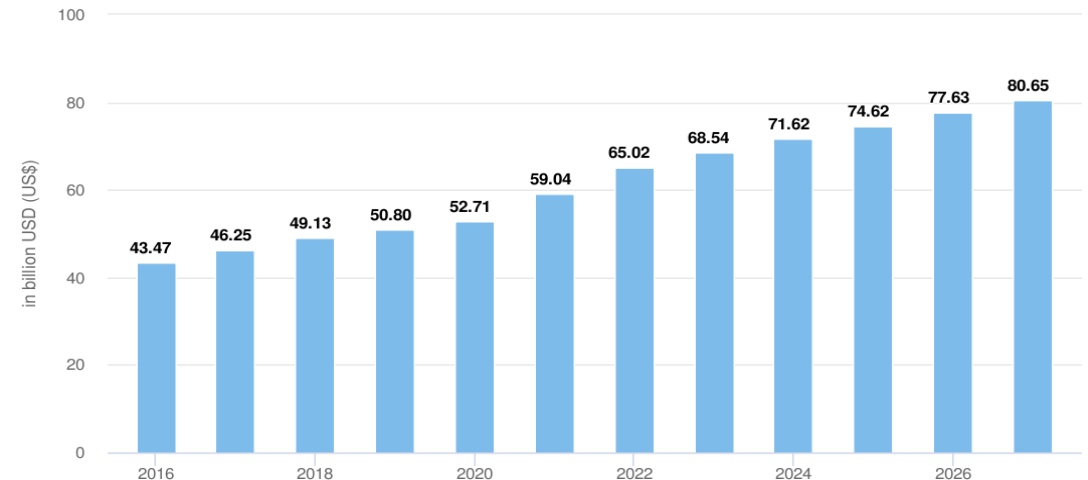
The market is driven by an increasing awareness of health issues and by improving access to healthcare in emerging countries.

According to the WHO, over **422 million** people worldwide have diabetes, the majority living in low-and middle-income countries.




North America has the highest revenue share with about 40 million people affected by Diabetes.

Anti-Diabetes Drugs - Revenue

Worldwide (billion USD (US\$))



Key Competitors

| Company | Description | Financial Statistics |
|---|--|---|
|  | <ul style="list-style-type: none"> Novo Nordisk engages in the research, development, manufacture, and marketing of primarily diabetes and obesity pharmaceuticals, alongside rare disease treatments. <p>Key Drugs:</p> <ul style="list-style-type: none"> ➤ Ozempic, NovoRapid, Victoza, Rybelsus, Tresiba – used to treat type 1 and type 2 diabetes. ➤ Novo Nordisk accounts for 35.3% of expected 2024 anti-diabetic market share. | <p>Ticker: NVO 52-week range: \$95.02-\$148.08 Stock Price: \$147.58 Market Cap (B): \$327.9</p> <p>EV/Sales: 9.3x EV/EBITDA: 20.3x P/E: 39.1x Long Term Debt/Total Assets: 10.08% Return on Assets: 24.43%</p> |
|  | <ul style="list-style-type: none"> Eli Lilly engages in the research, development, manufacture and sale of diabetes, oncology, immunology pharmaceutical products. <p>Key Drugs:</p> <ul style="list-style-type: none"> ➤ Trulicity, Humalog and Humulin – used to treat type 1 and type 2 diabetes. ➤ The rest of the diabetic drugs accounts for 14.2% of expected 2024 anti-diabetic market share. | <p>Ticker: LLY 52-week range: \$276.83-\$384.44 Stock Price: \$333.54 Market Cap (B): \$314.6</p> <p>EV/Sales: 12.7x EV/EBITDA: 36.9x P/E: 53.0x Long Term Debt/Total Assets: 29.78% Return on Assets: 12.71%</p> |
|  | <ul style="list-style-type: none"> Sanofi engages in the research, development, production and sale of pharmaceutical products in specialty care, diabetes, cardiovascular treatments, and vaccines. <p>Key Drugs:</p> <ul style="list-style-type: none"> ➤ Lantus and Toujeo – used to treat type 1 and type 2 diabetes. ➤ Sanofi accounts for 10.7% of expected 2024 anti-diabetic drug market share. | <p>Ticker: SNY 52-week range: \$36.91-\$58.10 Stock Price: \$49.24 Market Cap (B): \$121.7</p> <p>EV/Sales: 3.1x EV/EBITDA: 9.7x P/E: 13.8x Long Term Debt/Total Assets: 13.23% Return on Assets: 6.42%</p> |

Competitor Analysis

2007-2021 Global Spending

Annual Revenue Growth

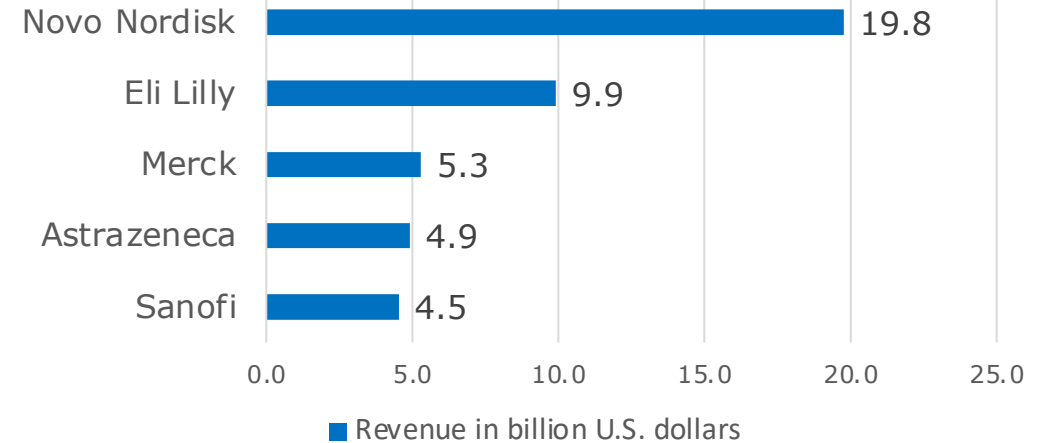
- Diabetes Treatment: 22.6%

2021-2030 Global Projections

Annual Revenue Growth

- Diabetes Treatment: 0.74%

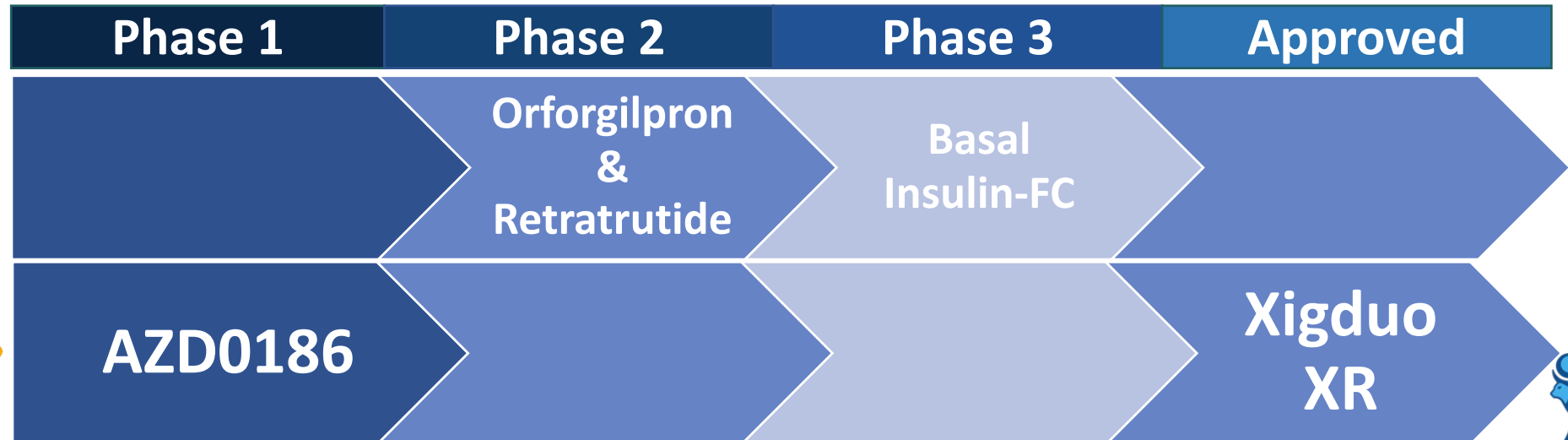
Global Diabetes Revenue



Diabetes Pipeline

Lilly

AstraZeneca 



ESG Analysis



Zero Environmental Impact

- ❖ Net zero emissions across entire value chain by 2045
- ❖ **96%** of total waste is recycled
- ❖ **100%** of power sourced were from renewable sites
- ❖ **0.6%** total amount of waste went to landfills



Diversity & Inclusion

- ❖ **42% to 44%** of women in leadership positions
- ❖ Women in senior leadership positions: **35% to 39%**
- ❖ The Inclusion Index increased **+4%** from 2021 to 2022
- ❖ Of the 39,127 employees, rates favorable: **78%** in 2021 to 82% in 2022



Access & Affordability

- ❖ **New Defeat Diabetes Strategy** as an affordability program for low-middle income countries
- ❖ Active contribution to **World Diabetes Foundation** and **Red Cross**
- ❖ Established the **Novo Nordisk Hemophilia Foundation** that provides care to patients with hemophilia in developing countries

Top 12% in pharmaceutical industry



AAA leadership rating



'A' leadership ranking in climate



S&P Global Industry Leading Overall Score



90%



78%



75%



73%

Pest Analysis



Political

- Novo has operations in over 160 countries; must deal with different health regulations
- Disruption of supply due to geopolitical instability
- Price controls by governments



Economic

- Rising interest rates affect cost of borrowing
- Fluctuating currency exchange rates
- Affordability concerns considering rising inflation rates affecting discretionary income and insurance access



Social

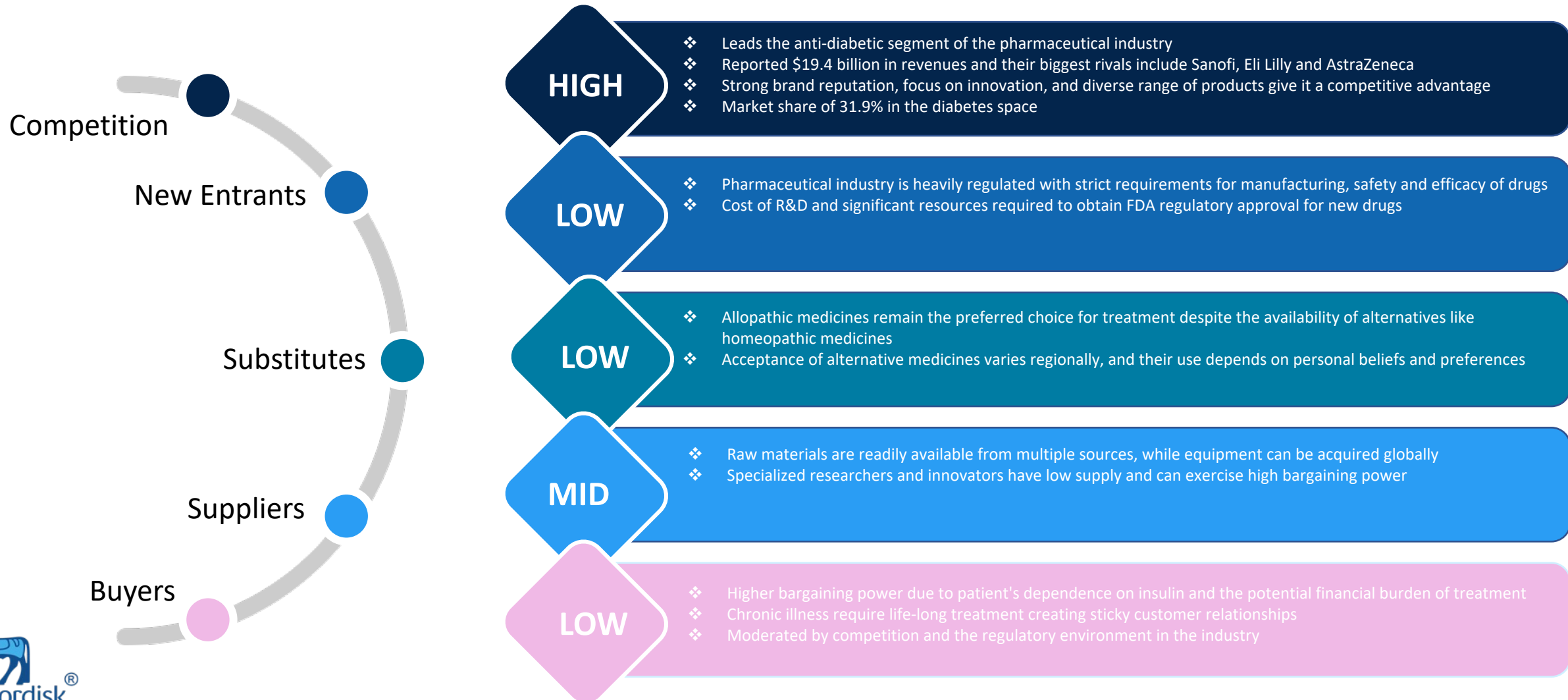
- Growing number of diabetes patients and obesity rates globally
- Increased focus on health trends in emerging markets leading to more diabetes diagnoses
- Aging world population



Tech

- Novo invested over \$3.5 Billion into R&D activities
- New innovations in the market
- Digital disruptions

Porters 5 Forces



Investment Thesis



Cases of Diabetes are Expected to Grow by 2050

51%

- Product alignment coincides with macro trends covering diabetes and obesity care.
- Revolutionary products that have changed treatment for Type II diabetes treatment like Ozempic, Wegovy and Rybelsus



Market Leadership in GLP-1s Holding 54.9% Value in Market Share

54.9%

- Potential geo-protective drugs that are anti-aging by reducing complementary diseases
- Have been recording double-digit growth since brought to market



31.9% of Diabetes Care is captured by Novo Nordisk

31.9%

- Oligopolistic market for insulin products competing alongside Eli Lilly and Sanofi enforcing High Barriers to Entry for Insulin & Diabetes Care
- The nature of disease requires life-long usage for most patients



38% FCF to Margins

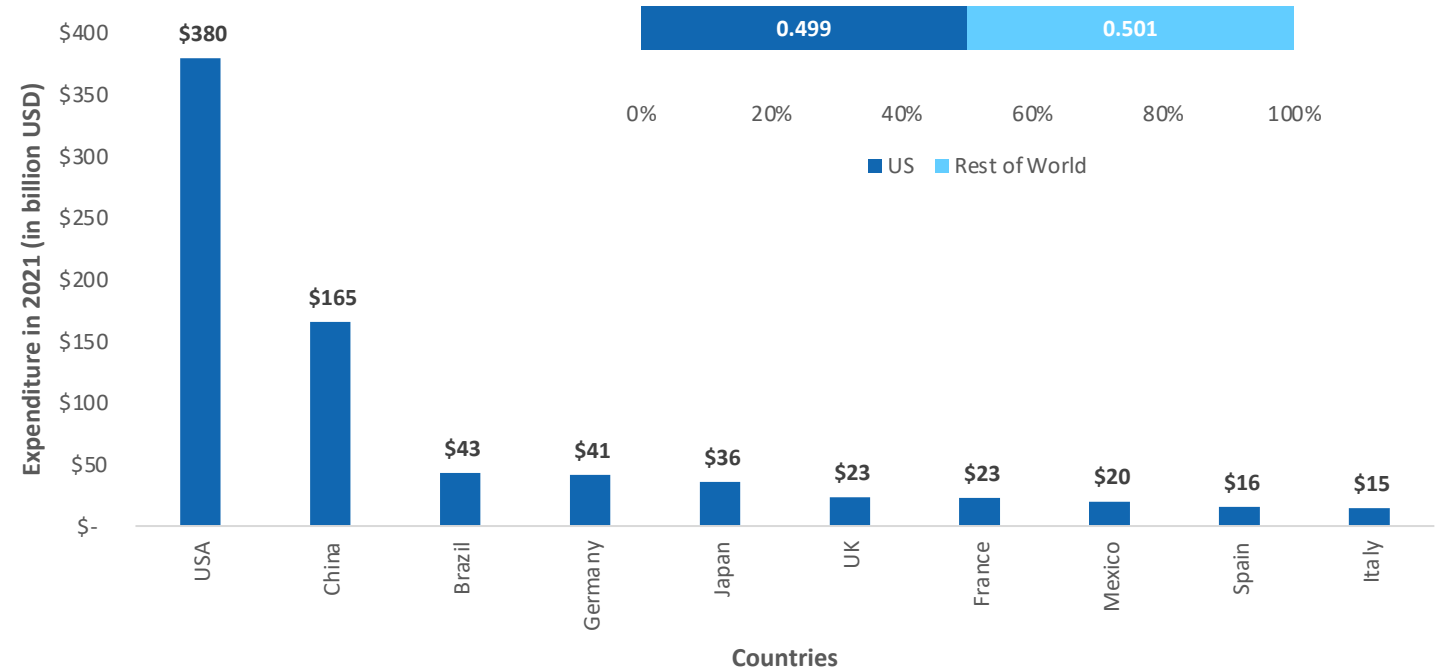
38%

- They operate more efficiently than competitors with higher profit, operating and free cash flow margins
- Novo Nordisk have more efficient production, assembly and packing capabilities which have helped them to reach greater economies of scale

Strong Alignment with Macro Trends

52% of sales is generated from North America

Diabetes Health Expenditure Top 10 Countries in 2021

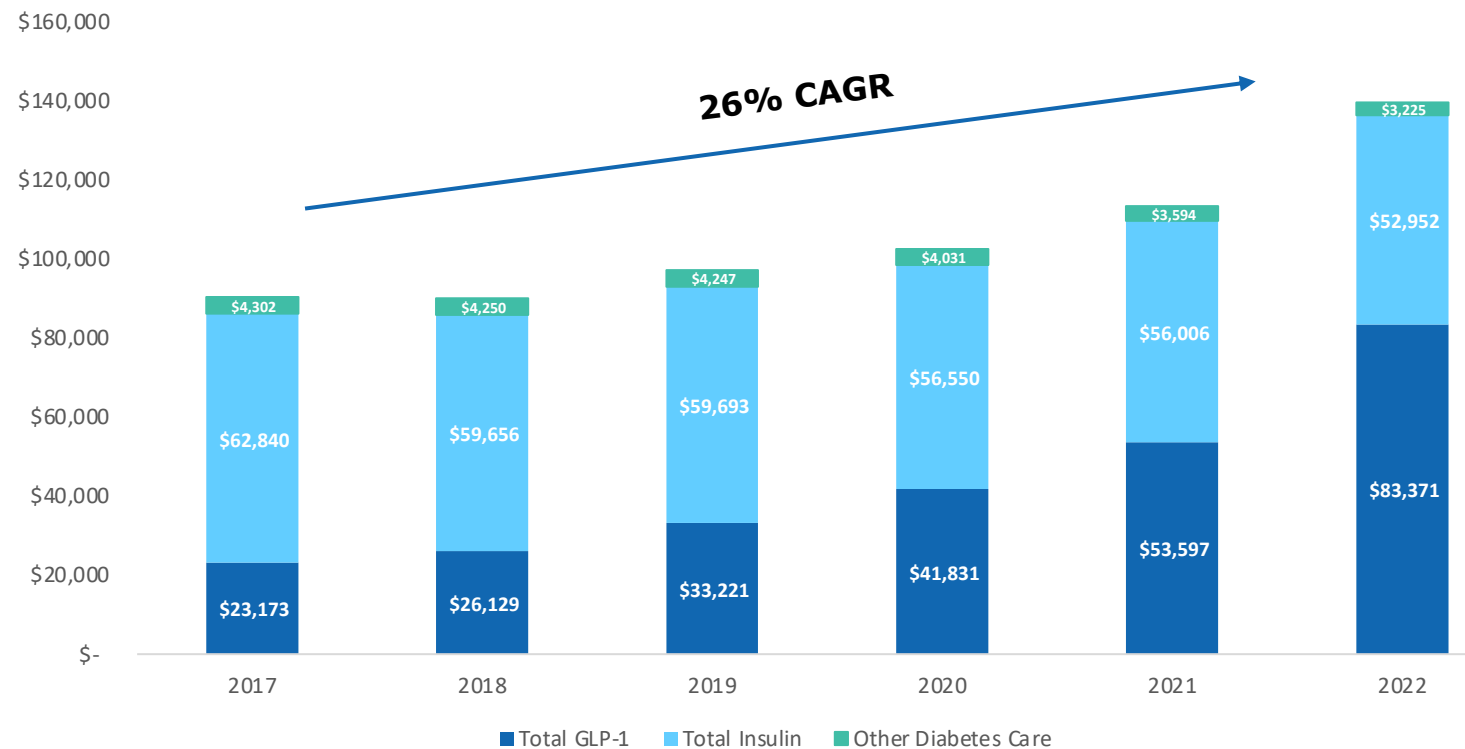




Market in a Fast-Growing Market

54.9% of GLP-1s Market Share Globally

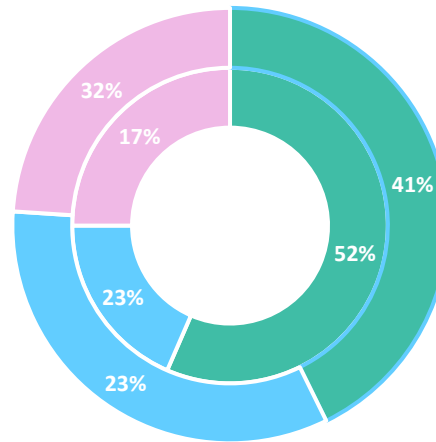
Diabetes Care Revenues by Product Group



High Barriers to Entry

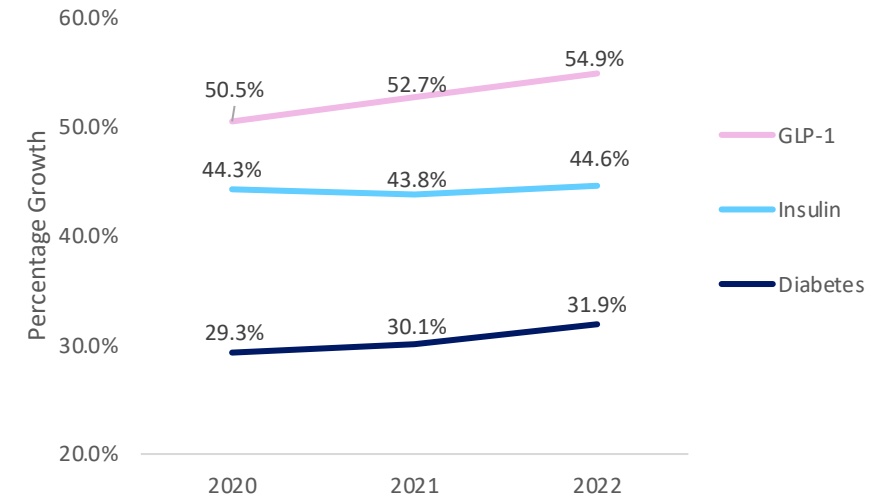
54.9% of GLP-1s Market Share Globally

Global Insulin Manufacturers Market Share



■ Novo Nordisk ■ Eli Lilly ■ Sanofi

Novo Nordisk's Diabetes Value Market Share (%)

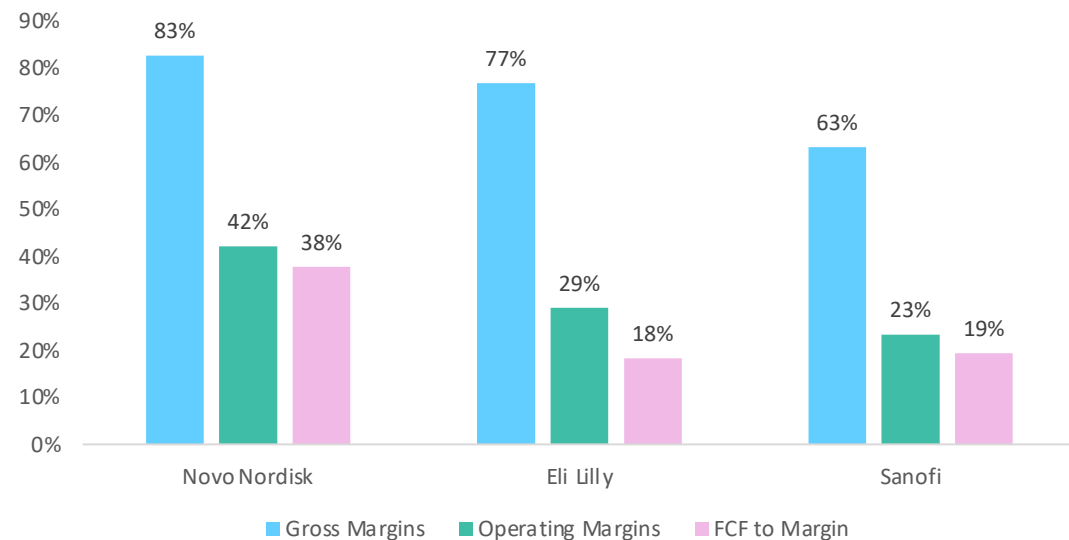




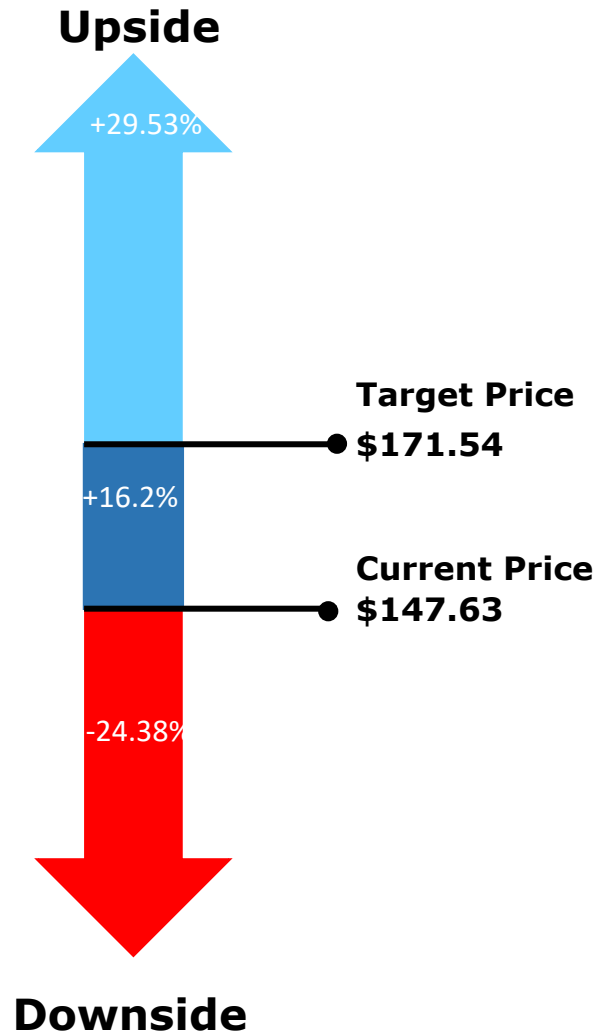
Strong Cash Flow Generation

38% FCF to Margins and higher margins across the board

Novo Nordisk vs. Competitor Margins



Valuation



Key Catalysts

- 1 Market leadership in a growing market for GLP-1 from Ozempic, Rybelsus and Wegovy
- 2 Robust positioning for insulin sales amongst oligopolistic environment
- 3 Effective cost control measures maintaining margins
- 4 Expanding manufacturing facilities to meet supply shortages

WACC 7.5%

Upside

- 1% higher revenue growth
- Gross Margins at 86.5%

WACC 7.5%

Base

- Conservative COGS and SG&A assumptions
- Gross Margins at 86%

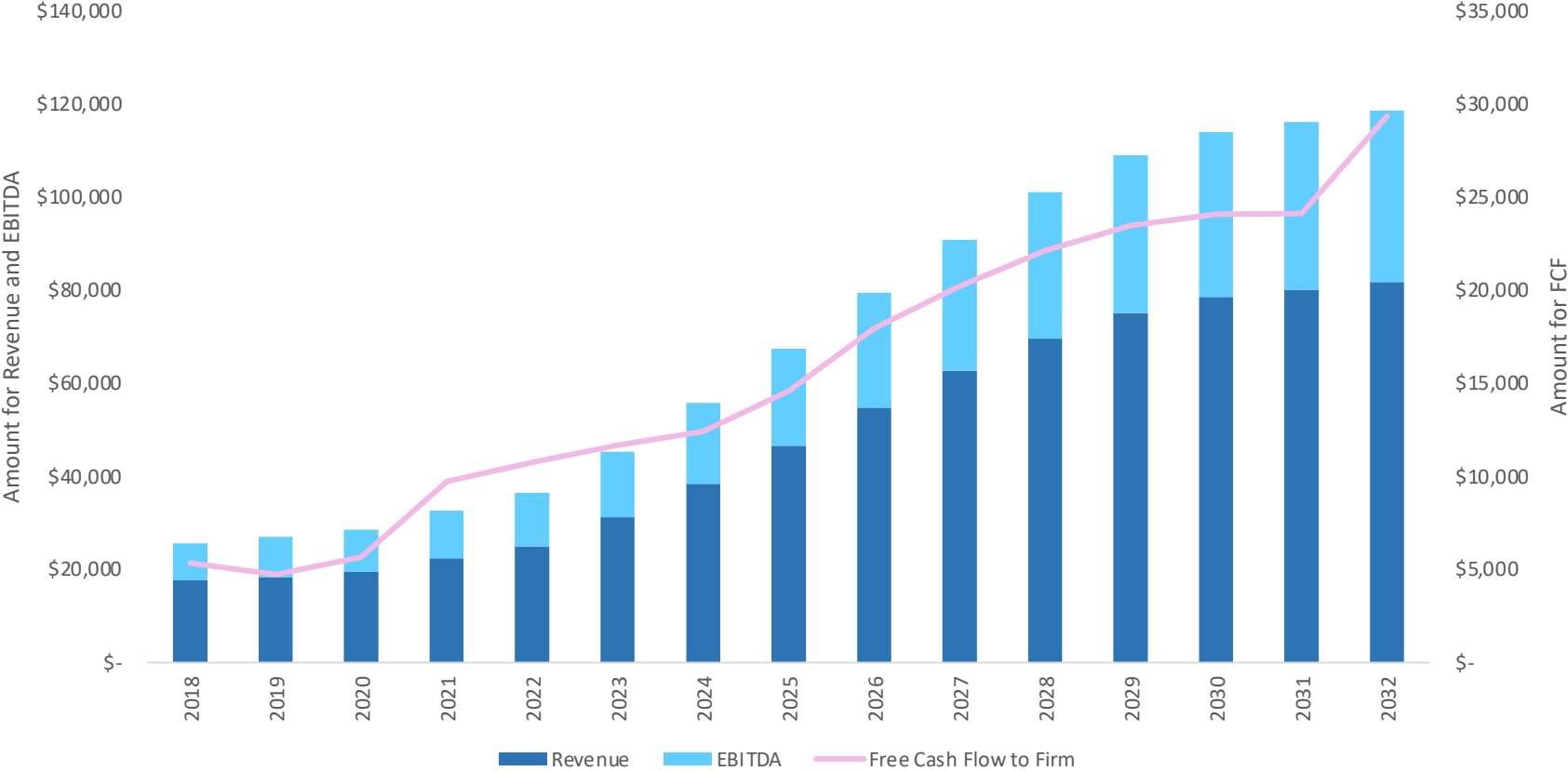
WACC 7.5%

Downside

- 2% lower revenue growth
- Gross Margins at 85.5%

Valuation

Novo Nordisk's DCF Forecast over 10 Years Horizon



Perpetuity Growth Method

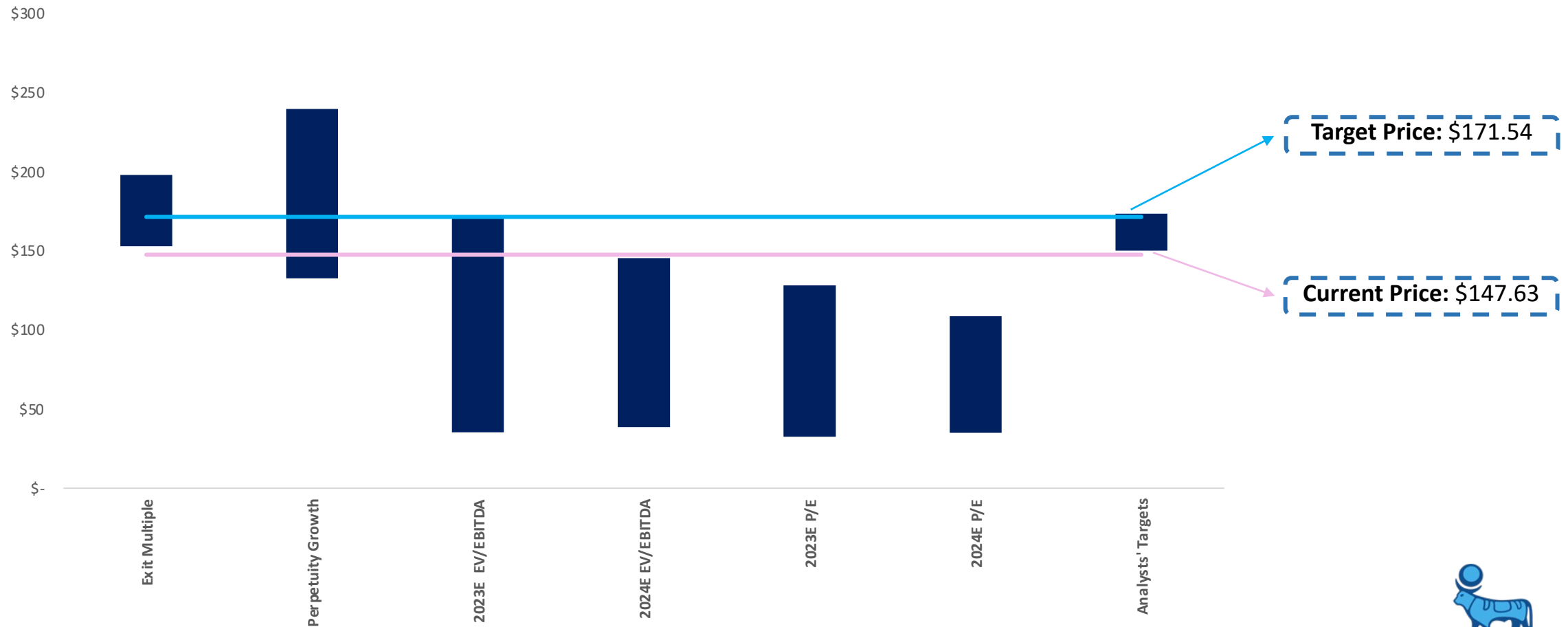
Terminal Growth: 3%
Target Price: \$171.54

Exit Multiple Method

Exit Multiple: 11.03x
Target Price: \$174.39

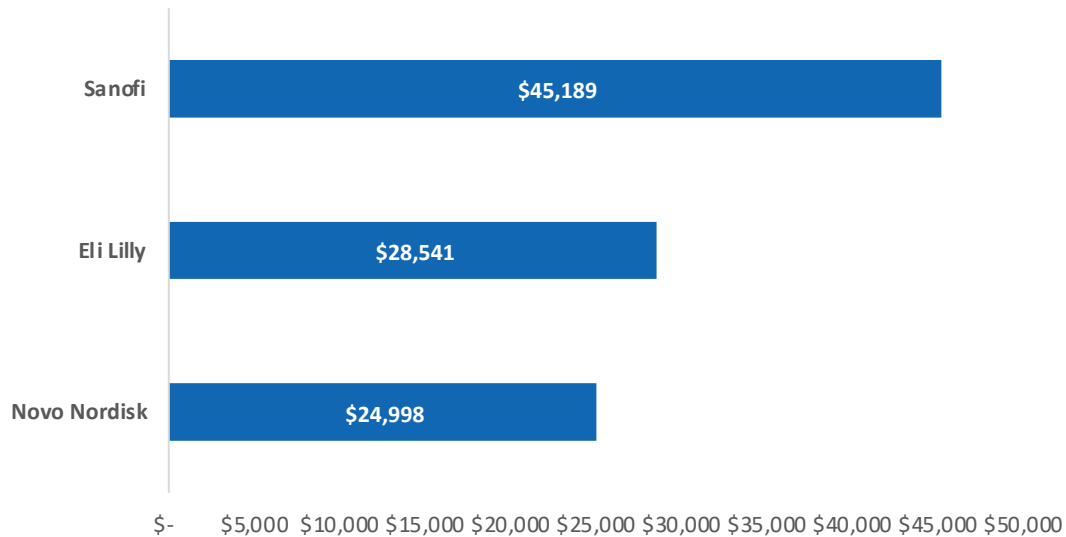
Valuation

Football Field Valuation

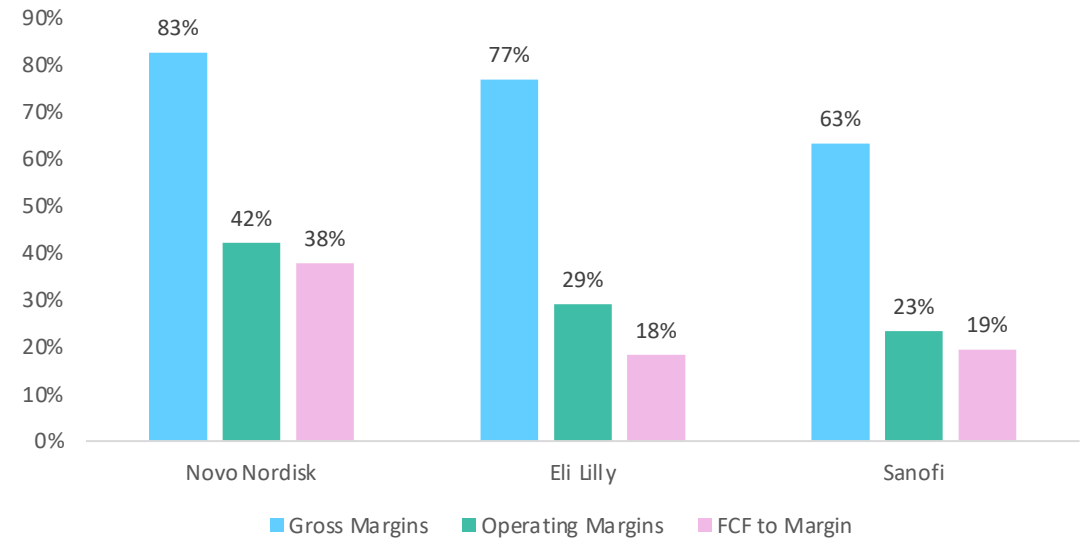


Valuation

Novo Nordisk vs. Competitor Revenues



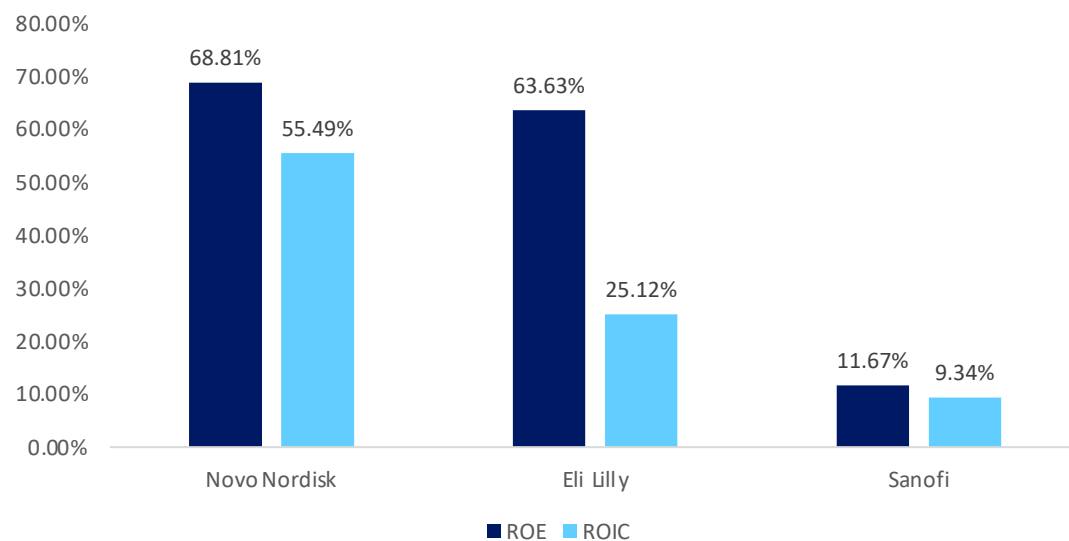
Novo Nordisk vs. Competitor Margins



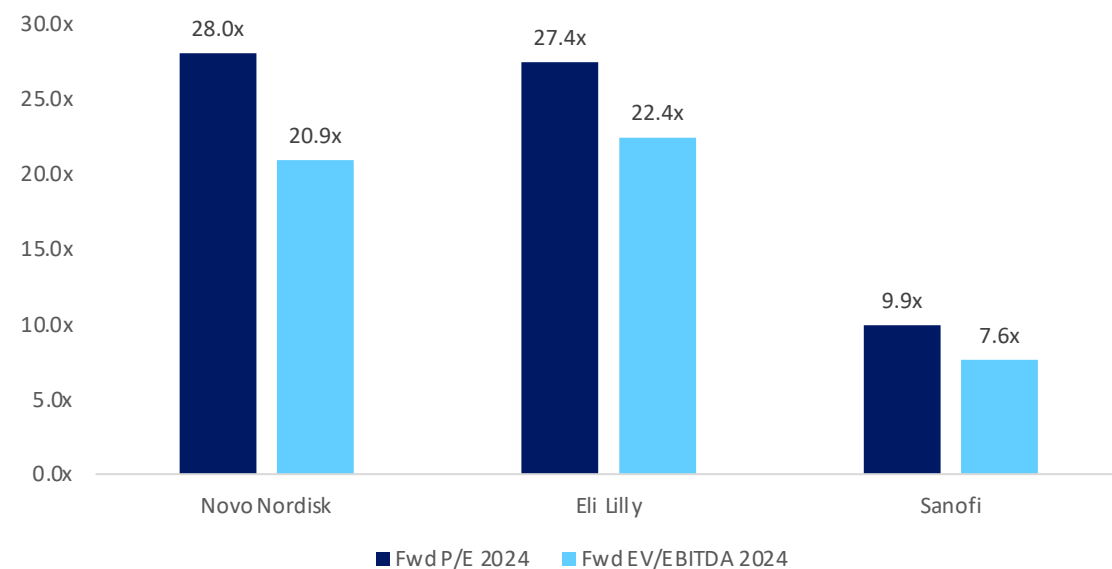
- Novo has lower revenues than competitors but has better margins across the board.
- Huge pricing power due to market leadership in GLP-1s
- In-house production, assembly and packing capabilities to cut costs

Valuation

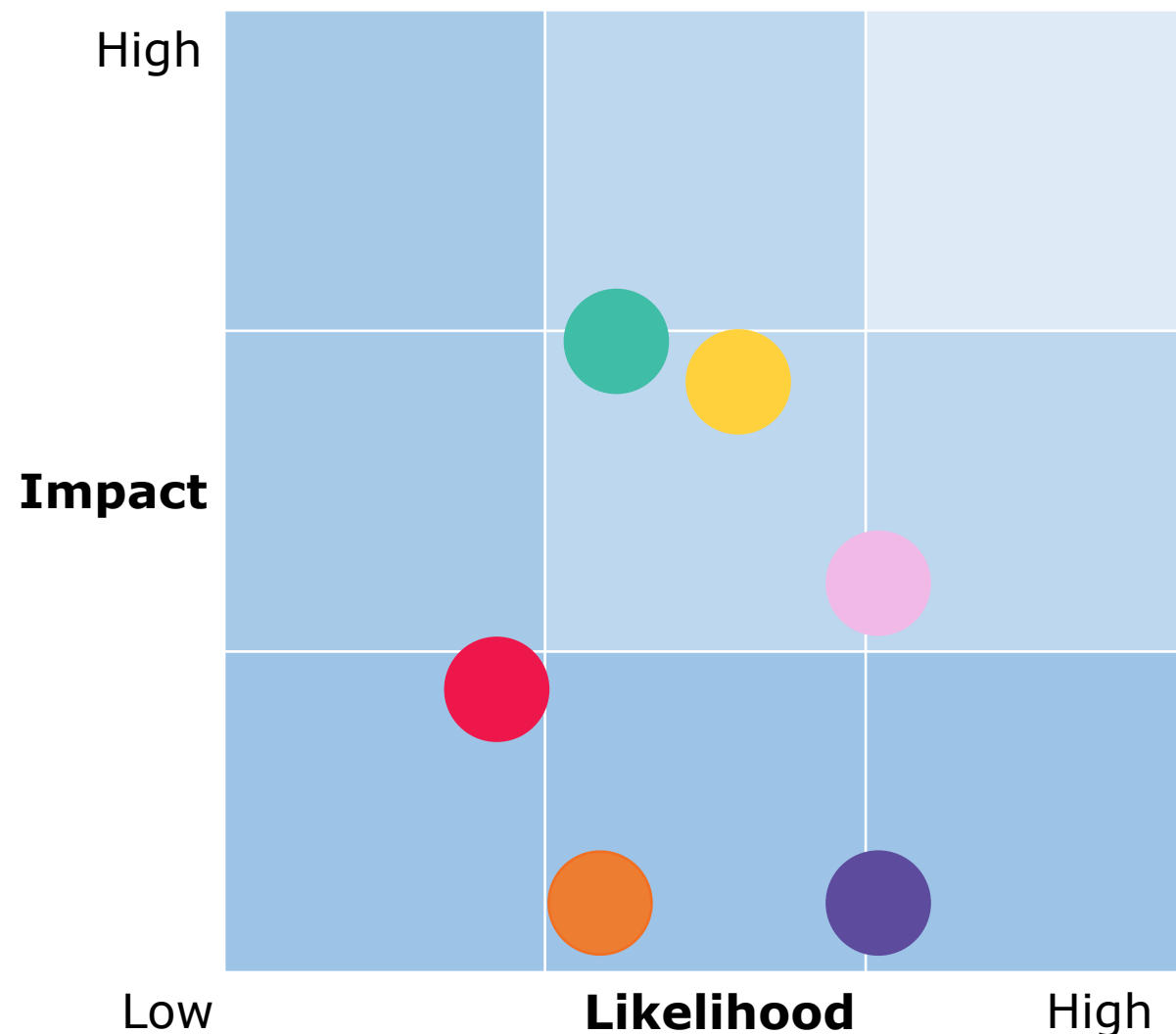
Profitability Ratios Comparables









Forward Multiple Valuation



Investment Risk



| Risk | Description | Mitigant |
|--|---|--|
|  Clinical Pipeline Risks | Clinical research, regulatory procedures, or a lack of awareness of the commercial potential that causes products in the pipeline to be delayed or fail | <ul style="list-style-type: none"> ➤ Consultations with regulators to review pre-clinical and clinical findings and obtain guidance on development path |
|  Product Supply, Quality and Safety Risk | Disruptions of product supply due to geopolitical instability or quality failure may compromise the availability of products | <ul style="list-style-type: none"> ➤ Establish global production with multiple facilities and safety stock ➤ Regular quality audits |
|  Commercialization Risk | Market dynamics and geopolitical, macroeconomic, or healthcare crises leading to reduced payer ability and willingness to pay | <ul style="list-style-type: none"> ➤ Payer negotiations to ensure improved patients' access ➤ Increased and new access and affordability initiatives |
|  IT Security Risks | Cyber-attacks of infrastructure failure, resulting in business disruption or breach of data confidentiality | <ul style="list-style-type: none"> ➤ Company-wide internal audit of IT security controls ➤ Detection and protection for IT systems and business processes |
|  Financial Risks | Exchange rate fluctuations in USD, CNY and JPY, disputes with tax authorities and changes to tax legislation and interpretation | <ul style="list-style-type: none"> ➤ Hedging for selected currencies ➤ Integrated treasury management ➤ Multi-year Advanced Pricing Agreements with tax authorities |
|  Legal, Patents & Compliance Risks | Breach of legislation, industry codes, or company policies. Competitors asserting patents against Novo Nordisk or challenging patents critical for protection of commercial product and pipeline candidates | <ul style="list-style-type: none"> ➤ Internal controls to minimise vulnerability to patent infringement and invalidity actions |



NOVO NORDISK

RECOMMENDATION

\$171.54 BUY

51%



Cases of Diabetes are Expected to Grow by 2050

54.9%



Market Leadership in GLP-1s Holding 54.9% Value in Market Share

31.9%



31.9% of Diabetes Care is captured by Novo Nordisk

38%



38% FCF to Margin Proving to be a Cash Flow Generator

Appendix

Base Case

Novo Nordisk A/S (NOVO-B)

Discounted Cash Flow Analysis

(Millions of Dollars)

Calculation of FCFF

| | Units | Historical | | | | | Projected | | | | | | | | | |
|-----------------------------------|--------|------------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Operating Scenario | 1 Base | | | | | | | | | | | | | | | |
| Revenue | | 17,701.0 | 18,292.1 | 19,412.9 | 22,377.7 | 24,998.0 | \$31,248 | \$38,434 | \$46,506 | \$54,744 | \$62,643 | \$69,623 | \$75,093 | \$78,526 | \$80,096 | \$81,698 |
| % Growth | | 5.8% | 3.3% | 6.1% | 15.3% | 11.7% | 25.0% | 23.0% | 21.0% | 17.7% | 14.4% | 11.1% | 7.9% | 4.6% | 2.0% | 2.0% |
| Cost of Goods Sold (Excl. D&A) | | 2,389.6 | 2,475.5 | 2,727.2 | 3,175.2 | 3,443.0 | 4,374.7 | 5,380.8 | 6,510.8 | 7,664.1 | 8,770.0 | 9,747.2 | 10,513.0 | 10,993.6 | 11,213.5 | 11,437.8 |
| Gross Profit | | 15,311.4 | 15,816.7 | 16,685.6 | 19,202.6 | 21,555.0 | 26,872.9 | 33,053.6 | 39,994.9 | 47,079.7 | 53,872.6 | 59,875.5 | 64,580.0 | 67,532.3 | 68,882.9 | 70,260.6 |
| % Margin | | 86.5% | 86.5% | 86.0% | 85.8% | 86.2% | 86.0% | 86.0% | 86.0% | 86.0% | 86.0% | 86.0% | 86.0% | 86.0% | 86.0% | 86.0% |
| Selling, General & Administrative | | 7,395.8 | 7,161.2 | 7,602.2 | 8,980.5 | 10,109.0 | 12,811.5 | 15,758.1 | 19,067.3 | 22,445.0 | 25,683.4 | 28,545.3 | 30,788.2 | 32,195.6 | 32,839.5 | 33,496.3 |
| EBITDA | | 7,916 | 8,655 | 9,083 | 10,222 | 11,446 | 14,061 | 17,295 | 20,928 | 24,635 | 28,189 | 31,330 | 33,792 | 35,337 | 36,043 | 36,764 |
| % Margin | | 44.7% | 47.3% | 46.8% | 45.7% | 45.8% | 45.0% | 45.0% | 45.0% | 45.0% | 45.0% | 45.0% | 45.0% | 45.0% | 45.0% | 45.0% |
| Depreciation & Amortization | | 602.9 | 701.4 | 806.8 | 844.1 | 933.0 | 1,156.2 | 1,402.9 | 1,697.5 | 1,998.1 | 2,286.5 | 2,541.2 | 2,740.9 | 2,866.2 | 2,923.5 | 2,982.0 |
| EBIT | | 7,313 | 7,954 | 8,277 | 9,378 | 10,513 | 12,905 | 15,893 | 19,230 | 22,637 | 25,903 | 28,789 | 31,051 | 32,470 | 33,120 | 33,782 |
| % Margin | | 41.3% | 43.5% | 42.6% | 41.9% | 42.1% | 41.3% | 41.4% | 41.4% | 41.4% | 41.4% | 41.4% | 41.4% | 41.4% | 41.4% | 41.4% |
| Income Taxes | | 620.3 | 2,335.9 | 514.9 | 602.2 | 1,001.7 | 1,549.2 | 1,907.8 | 2,308.4 | 2,717.4 | 3,109.4 | 3,455.9 | 3,727.4 | 3,897.8 | 3,975.8 | 4,055.3 |
| EBIAT | | 6,692 | 5,618 | 7,762 | 8,776 | 9,511 | 11,356 | 13,985 | 16,922 | 19,919 | 22,793 | 25,333 | 27,324 | 28,573 | 29,144 | 29,727 |
| Free Cash Flow Adjustments: | | | | | | | | | | | | | | | | |
| Plus: Depreciation & Amortization | | 602.9 | 701.4 | 806.8 | 844.1 | 933.0 | 1,156.2 | 1,402.9 | 1,697.5 | 1,998.1 | 2,286.5 | 2,541.2 | 2,740.9 | 2,866.2 | 2,923.5 | 2,982.0 |
| Less: Capital Expenditures | | (1,964.3) | (1,683.6) | (3,376.7) | (1,173.7) | (1,589.1) | (2,340) | (3,651) | (4,418) | (5,201) | (5,951) | (6,614) | (7,134) | (7,460) | (7,609) | (7,761) |
| Less: Increase in NWC | | 0 | 95 | 462 | 1,274 | 1,888 | 1,502 | 666 | 371 | 1,208 | 1,076 | 845 | 526 | 105 | (353) | 4,397 |
| Free Cash Flow to Firm | | 5,331.0 | 4,730.7 | 5,654.2 | 9,719.9 | 10,743.1 | 11,674.0 | 12,402.6 | 14,572.3 | 17,925.1 | 20,204.5 | 22,105.6 | 23,456.6 | 24,084.2 | 24,105.2 | 29,344.8 |
| Weighted Average Cost of Capital | | 7.48% | | | | | | | | | | | | | | |
| Discount Period | | | | | | | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 |
| Discount Factor | | | | | | | 0.93 | 0.87 | 0.81 | 0.75 | 0.70 | 0.65 | 0.60 | 0.56 | 0.52 | 0.49 |
| Present Value of FCFFs | | | | | | | \$10,861.7 | \$10,736.6 | \$11,737.1 | \$13,433.0 | \$14,087.7 | \$14,340.7 | \$14,158.4 | \$13,525.7 | \$12,595.5 | \$14,266.4 |

Appendix

Bull Case

Novo Nordisk A/S (NOVO-B)

Discounted Cash Flow Analysis

(Millions of Dollars)

Calculation of FCFF

| | Units | Historical | | | | | Projected | | | | | | | | | |
|-----------------------------------|--------|------------|-----------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Operating Scenario | 2 Bull | | | | | | | | | | | | | | | |
| Revenue | | 17,701.0 | 18,292.1 | 19,412.9 | 22,377.7 | 24,998.0 | \$31,497 | \$39,057 | \$47,649 | \$56,567 | \$65,294 | \$73,223 | \$79,708 | \$84,149 | \$86,673 | \$89,274 |
| % Growth | | 5.8% | 3.3% | 6.1% | 15.3% | 11.7% | 26.0% | 24.0% | 22.0% | 18.7% | 15.4% | 12.1% | 8.9% | 5.6% | 3.0% | 3.0% |
| Cost of Goods Sold (Excl. D&A) | | 2,389.6 | 2,475.5 | 2,727.2 | 3,175.2 | 3,443.0 | 4,252.2 | 5,272.7 | 6,432.7 | 7,636.5 | 8,814.7 | 9,885.1 | 10,760.6 | 11,360.1 | 11,700.9 | 12,051.9 |
| Gross Profit | | 15,311.4 | 15,816.7 | 16,685.6 | 19,202.6 | 21,555.0 | 27,245.3 | 33,784.2 | 41,216.7 | 48,930.1 | 56,479.4 | 63,337.6 | 68,947.5 | 72,788.8 | 74,972.5 | 77,221.7 |
| % Margin | | 86.5% | 86.5% | 86.0% | 85.8% | 86.2% | 86.5% | 86.5% | 86.5% | 86.5% | 86.5% | 86.5% | 86.5% | 86.5% | 86.5% | 86.5% |
| Selling, General & Administrative | | 7,395.8 | 7,161.2 | 7,602.2 | 8,980.5 | 10,109.0 | 12,599.0 | 15,622.8 | 19,059.8 | 22,626.7 | 26,117.6 | 29,289.0 | 31,883.2 | 33,659.6 | 34,669.4 | 35,709.4 |
| EBITDA | | 7,916 | 8,655 | 9,083 | 10,222 | 11,446 | 14,646 | 18,161 | 22,157 | 26,303 | 30,362 | 34,049 | 37,064 | 39,129 | 40,303 | 41,512 |
| % Margin | | 44.7% | 47.3% | 46.8% | 45.7% | 45.8% | 46.5% | 46.5% | 46.5% | 46.5% | 46.5% | 46.5% | 46.5% | 46.5% | 46.5% | 46.5% |
| Depreciation & Amortization | | 602.9 | 701.4 | 806.8 | 844.1 | 933.0 | 1,086.7 | 1,327.9 | 1,620.1 | 1,923.3 | 2,220.0 | 2,489.6 | 2,710.1 | 2,861.1 | 2,946.9 | 3,035.3 |
| EBIT | | 7,313 | 7,954 | 8,277 | 9,378 | 10,513 | 13,560 | 16,834 | 20,537 | 24,380 | 28,142 | 31,559 | 34,354 | 36,268 | 37,356 | 38,477 |
| % Margin | | 41.3% | 43.5% | 42.6% | 41.9% | 42.1% | 43.1% | 43.1% | 43.1% | 43.1% | 43.1% | 43.1% | 43.1% | 43.1% | 43.1% | 43.1% |
| Income Taxes | | 620.3 | 2,335.9 | 514.9 | 602.2 | 1,001.7 | 1,627.7 | 2,020.7 | 2,465.3 | 2,926.7 | 3,378.2 | 3,788.4 | 4,124.0 | 4,353.7 | 4,484.3 | 4,618.9 |
| EBIAT | | 6,692 | 5,618 | 7,762 | 8,776 | 9,511 | 11,932 | 14,813 | 18,072 | 21,454 | 24,764 | 27,771 | 30,230 | 31,914 | 32,872 | 33,858 |
| Free Cash Flow Adjustments: | | | | | | | | | | | | | | | | |
| Plus: Depreciation & Amortization | | 602.9 | 701.4 | 806.8 | 844.1 | 933.0 | 1,086.7 | 1,327.9 | 1,620.1 | 1,923.3 | 2,220.0 | 2,489.6 | 2,710.1 | 2,861.1 | 2,946.9 | 3,035.3 |
| Less: Capital Expenditures | | (1,964.3) | (1,683.6) | (3,376.7) | (1,173.7) | (1,589.1) | (2,340) | (3,315) | (4,288) | (5,091) | (5,876) | (6,590) | (7,174) | (7,573) | (7,801) | (8,035) |
| Less: Increase in NWC | | 0 | 95 | 462 | 1,274 | 1,888 | 574 | 550 | 258 | 1,075 | 972 | 781 | 508 | 135 | (291) | 4,651 |
| Free Cash Flow to Firm | | 5,331.0 | 4,730.7 | 5,654.2 | 9,719.9 | 10,743.1 | 11,252.2 | 13,175.4 | 15,661.6 | 19,360.9 | 22,078.9 | 24,450.8 | 26,274.1 | 27,337.3 | 27,727.4 | 33,509.3 |
| Weighted Average Cost of Capital | | 7.48% | | | | | | | | | | | | | | |
| Discount Period | | | | | | | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 |
| Discount Factor | | | | | | | 0.93 | 0.87 | 0.81 | 0.75 | 0.70 | 0.65 | 0.60 | 0.56 | 0.52 | 0.49 |
| Present Value of FCFFs | | | | | | | \$10,469.2 | \$11,405.7 | \$12,614.5 | \$14,509.1 | \$15,394.6 | \$15,862.2 | \$15,859.0 | \$15,352.6 | \$14,488.1 | \$16,291.0 |

Appendix

Bear Case

Novo Nordisk A/S (NOVO-B)

Discounted Cash Flow Analysis

(Millions of Dollars)

| Calculation of FCFF | Units | Historical | | | | | Projected | | | | | | | | | |
|-----------------------------------|--------|------------|-----------|-----------|-----------|-----------|------------|-----------|------------|------------|------------|------------|-----------|------------|------------|------------|
| | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
| Operating Scenario | 3 Bear | | | | | | | | | | | | | | | |
| Revenue | | 17,701.0 | 18,292.1 | 19,412.9 | 22,377.7 | 24,998.0 | \$30,748 | \$37,205 | \$44,273 | \$51,231 | \$57,598 | \$62,864 | \$66,546 | \$68,257 | \$68,940 | \$69,629 |
| % Growth | | 5.8% | 3.3% | 6.1% | 15.3% | 11.7% | 23.0% | 21.0% | 19.0% | 15.7% | 12.4% | 9.1% | 5.9% | 2.6% | 1.0% | 1.0% |
| Cost of Goods Sold (Excl. D&A) | | 2,389.6 | 2,475.5 | 2,727.2 | 3,175.2 | 3,443.0 | 4,458.4 | 5,394.7 | 6,419.6 | 7,428.4 | 8,351.7 | 9,115.3 | 9,649.2 | 9,897.3 | 9,996.3 | 10,096.2 |
| Gross Profit | | 15,311.4 | 15,816.7 | 16,685.6 | 19,202.6 | 21,555.0 | 26,289.1 | 31,809.9 | 37,853.7 | 43,802.2 | 49,246.2 | 53,748.7 | 56,896.8 | 58,359.9 | 58,943.5 | 59,532.9 |
| % Margin | | 86.5% | 86.5% | 86.0% | 85.8% | 86.2% | 85.5% | 85.5% | 85.5% | 85.5% | 85.5% | 85.5% | 85.5% | 85.5% | 85.5% | 85.5% |
| Selling, General & Administrative | | 7,395.8 | 7,161.2 | 7,602.2 | 8,980.5 | 10,109.0 | 12,914.0 | 15,625.9 | 18,594.8 | 21,516.9 | 24,191.1 | 26,402.9 | 27,949.3 | 28,668.0 | 28,954.7 | 29,244.2 |
| EBITDA | | 7,916 | 8,655 | 9,083 | 10,222 | 11,446 | 13,375 | 16,184 | 19,259 | 22,285 | 25,055 | 27,346 | 28,948 | 29,692 | 29,989 | 30,289 |
| % Margin | | 44.7% | 47.3% | 46.8% | 45.7% | 45.8% | 43.5% | 43.5% | 43.5% | 43.5% | 43.5% | 43.5% | 43.5% | 43.5% | 43.5% | 43.5% |
| Depreciation & Amortization | | 602.9 | 701.4 | 806.8 | 844.1 | 933.0 | 1,214.5 | 1,451.0 | 1,726.7 | 1,998.0 | 2,246.3 | 2,451.7 | 2,595.3 | 2,662.0 | 2,688.6 | 2,715.5 |
| EBIT | | 7,313 | 7,954 | 8,277 | 9,378 | 10,513 | 12,161 | 14,733 | 17,532 | 20,287 | 22,809 | 24,894 | 26,352 | 27,030 | 27,300 | 27,573 |
| % Margin | | 41.3% | 43.5% | 42.6% | 41.9% | 42.1% | 39.6% | 39.6% | 39.6% | 39.6% | 39.6% | 39.6% | 39.6% | 39.6% | 39.6% | 39.6% |
| Income Taxes | | 620.3 | 2,335.9 | 514.9 | 602.2 | 1,001.7 | 1,459.8 | 1,768.6 | 2,104.6 | 2,435.3 | 2,738.0 | 2,988.4 | 3,163.4 | 3,244.7 | 3,277.2 | 3,310.0 |
| EBIAT | | 6,692 | 5,618 | 7,762 | 8,776 | 9,511 | 10,701 | 12,964 | 15,428 | 17,852 | 20,071 | 21,906 | 23,189 | 23,785 | 24,023 | 24,263 |
| Free Cash Flow Adjustments: | | | | | | | | | | | | | | | | |
| Plus: Depreciation & Amortization | | 602.9 | 701.4 | 806.8 | 844.1 | 933.0 | 1,214.5 | 1,451.0 | 1,726.7 | 1,998.0 | 2,246.3 | 2,451.7 | 2,595.3 | 2,662.0 | 2,688.6 | 2,715.5 |
| Less: Capital Expenditures | | (1,964.3) | (1,683.6) | (3,376.7) | (1,173.7) | (1,589.1) | (2,340) | (3,720) | (4,427) | (5,123) | (5,760) | (6,286) | (6,655) | (6,826) | (6,894) | (6,963) |
| Less: Increase in NWC | | 0 | 95 | 462 | 1,274 | 1,888 | 2,377 | 692 | 383 | 1,196 | 1,012 | 730 | (4,823) | (281) | (576) | 9,342 |
| Free Cash Flow to Firm | | 5,331.0 | 4,730.7 | 5,654.2 | 9,719.9 | 10,743.1 | 11,952.7 | 11,386.7 | 13,110.2 | 15,922.9 | 17,569.0 | 18,801.4 | 14,306.1 | 19,340.6 | 19,241.8 | 29,357.7 |
| Weighted Average Cost of Capital | | 7.48% | | | | | | | | | | | | | | |
| Discount Period | | | | | | | 1.0 | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 |
| Discount Factor | | | | | | | 0.93 | 0.87 | 0.81 | 0.75 | 0.70 | 0.65 | 0.60 | 0.56 | 0.52 | 0.49 |
| Present Value of FCFFs | | | | | | | \$11,121.1 | \$9,857.2 | \$10,559.5 | \$11,932.6 | \$12,250.0 | \$12,197.2 | \$8,635.1 | \$10,861.6 | \$10,054.3 | \$14,272.6 |

Appendix

Assumptions: Income Statement

Assumptions Part 1 - Income Statement and Cash Flow Statement

| | Historical Period | | | | | Projection Period | | | | | | | | | | Historical Average | |
|---------------------------------------|-------------------|--------|--------|--------|--------|-------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------------------|--------|
| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | | |
| | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | | |
| Income Statement Assumptions | | | | | | | | | | | | | | | | | |
| Sales (% growth) | 5.8% | 3.3% | 6.1% | 15.3% | 11.7% | | 23.0% | 21.0% | 19.0% | 15.7% | 12.4% | 9.1% | 5.9% | 2.6% | 1.0% | 1.0% | 8.4% |
| Base | | | | | | 1 | 25.0% | 23.0% | 21.0% | 17.7% | 14.4% | 11.1% | 7.9% | 4.6% | 2.0% | 2.0% | |
| Upside | | | | | | 2 | 26.0% | 24.0% | 22.0% | 18.7% | 15.4% | 12.1% | 8.9% | 5.6% | 3.0% | 3.0% | |
| Downside | | | | | | 3 | 23.0% | 21.0% | 19.0% | 15.7% | 12.4% | 9.1% | 5.9% | 2.6% | 1.0% | 1.0% | |
| Cost of Goods Sold (% sales) | | | | | | | | | | | | | | | | | |
| | 13.5% | 13.5% | 14.0% | 14.2% | 13.8% | | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | 13.8% |
| Base | | | | | | 1 | 14.0% | 14.0% | 14.0% | 14.0% | 14.0% | 14.0% | 14.0% | 14.0% | 14.0% | 14.0% | |
| Upside | | | | | | 2 | 13.5% | 13.5% | 13.5% | 13.5% | 13.5% | 13.5% | 13.5% | 13.5% | 13.5% | 13.5% | |
| Downside | | | | | | 3 | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | 14.5% | |
| SG&A (% sales) | | | | | | | | | | | | | | | | | |
| | 41.8% | 39.1% | 39.2% | 40.1% | 40.4% | | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 40.1% |
| Base | | | | | | 1 | 41.0% | 41.0% | 41.0% | 41.0% | 41.0% | 41.0% | 41.0% | 41.0% | 41.0% | 41.0% | |
| Upside | | | | | | 2 | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% | 40.0% | |
| Downside | | | | | | 3 | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | 42.0% | |
| Depreciation & Amortization (% sales) | | | | | | | | | | | | | | | | | |
| | 3.4% | 3.8% | 4.2% | 3.8% | 3.7% | | 4.0% | 3.9% | 3.9% | 3.9% | 3.9% | 3.9% | 3.9% | 3.9% | 3.9% | 3.9% | 3.8% |
| Base | | | | | | 1 | 3.7% | 3.7% | 3.7% | 3.7% | 3.7% | 3.7% | 3.7% | 3.7% | 3.7% | 3.7% | |
| Upside | | | | | | 2 | 3.5% | 3.4% | 3.4% | 3.4% | 3.4% | 3.4% | 3.4% | 3.4% | 3.4% | 3.4% | |
| Downside | | | | | | 3 | 4.0% | 3.9% | 3.9% | 3.9% | 3.9% | 3.9% | 3.9% | 3.9% | 3.9% | 3.9% | |
| Cash Flow Statement Assumptions | | | | | | | | | | | | | | | | | |
| Capital Expenditures (% of sales) | -11.1% | -9.2% | -17.4% | -5.2% | -6.4% | | (11.5%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | (9.9%) |
| Base | | | | | | 1 | (11.0%) | (9.5%) | (9.5%) | (9.5%) | (9.5%) | (9.5%) | (9.5%) | (9.5%) | (9.5%) | (9.5%) | |
| Upside | | | | | | 2 | (10.5%) | (9.0%) | (9.0%) | (9.0%) | (9.0%) | (9.0%) | (9.0%) | (9.0%) | (9.0%) | (9.0%) | |
| Downside | | | | | | 3 | (11.5%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | (10.0%) | |

Appendix

Assumptions: Balance Sheet

| Assumptions Part 2 - Balance Sheet | | | | | | | | | | | | | | | | |
|---|-------------------|--------|--------|--------|--------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|
| | Historical Period | | | | | Projection Period | | | | | | | | | | |
| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | |
| | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | |
| Current Assets | | | | | | | | | | | | | | | | |
| Days Sales Outstanding (DSO) | 72.0 | 74.7 | 85.7 | 101.4 | 107.9 | 90.0 | 100.8 | 112.9 | 116.3 | 119.8 | 123.4 | 127.1 | 130.9 | 134.8 | 138.8 | 88.33 |
| Base | | | | | | 1 85.0 | 95.2 | 106.6 | 109.8 | 113.1 | 116.5 | 120.0 | 123.6 | 127.3 | 131.1 | |
| Upside | | | | | | 2 80.0 | 89.6 | 100.4 | 103.4 | 106.5 | 109.7 | 112.9 | 116.3 | 119.8 | 123.4 | |
| Downside | | | | | | 3 90.0 | 100.8 | 112.9 | 116.3 | 119.8 | 123.4 | 127.1 | 130.9 | 134.8 | 138.8 | |
| Days Inventory Held (DIH) | 382.2 | 390.7 | 407.8 | 344.9 | 371.0 | 390.0 | 386.1 | 382.2 | 378.4 | 374.6 | 370.9 | 367.2 | 363.5 | 359.9 | 356.3 | 379.34 |
| Base | | | | | | 1 380.0 | 376.2 | 372.4 | 368.7 | 365.0 | 361.4 | 357.8 | 354.2 | 350.6 | 347.1 | |
| Upside | | | | | | 2 370.0 | 366.3 | 362.6 | 359.0 | 355.4 | 351.9 | 348.3 | 344.9 | 341.4 | 338.0 | |
| Downside | | | | | | 3 390.0 | 386.1 | 382.2 | 378.4 | 374.6 | 370.9 | 367.2 | 363.5 | 359.9 | 356.3 | |
| Prepaid and Other Current Assets (% of sales) | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | - % | - % | - % | - % | - % | - | - | - % | - % | - % | - |
| Base | | | | | | 1 - % | - % | - % | - % | - % | - % | - % | - % | - % | - % | |
| Upside | | | | | | 2 - % | - % | - % | - % | - % | - % | - % | - % | - % | - % | |
| Downside | | | | | | 3 - % | - % | - % | - % | - % | - % | - % | - % | - % | - % | |
| Current Liabilities | | | | | | | | | | | | | | | | |
| Days Payable Outstanding (DPO) | 158.1 | 140.8 | 125.8 | 155.9 | 237.1 | 170.0 | 173.4 | 176.9 | 180.4 | 184.0 | 187.7 | - | - | - | - | 163.55 |
| Base | | | | | | 1 165.0 | 168.3 | 171.7 | 175.1 | 178.6 | 182.2 | 185.8 | 189.5 | 193.3 | 197.2 | |
| Upside | | | | | | 2 160.0 | 163.2 | 166.5 | 169.8 | 173.2 | 176.7 | 180.2 | 183.8 | 187.5 | 191.2 | |
| Downside | | | | | | 3 170.0 | 173.4 | 176.9 | 180.4 | 184.0 | 187.7 | 0.0 | 0.0 | 0.0 | 0.0 | |
| Accrued Liabilities (% of sales) | 5.7% | 0.0% | 0.0% | 0.0% | 0.0% | - % | - % | - % | - % | - % | - | - | - % | - % | - % | 1.1% |
| Base | | | | | | 1 - % | - % | - % | - % | - % | - % | - % | - % | - % | - % | |
| Upside | | | | | | 2 - % | - % | - % | - % | - % | - % | - % | - % | - % | - % | |
| Downside | | | | | | 3 - % | - % | - % | - % | - % | - % | - % | - % | - % | - % | |
| Other Current Liabilities (% of sales) | 30.9% | 38.5% | 45.0% | 50.1% | 55.6% | 60.00% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 0.60 | 60.0% | 60.0% | 44.0% |
| Base | | | | | | 1 55.0% | 55.0% | 55.0% | 55.0% | 55.0% | 55.0% | 55.0% | 55.0% | 55.0% | 55.0% | |
| Upside | | | | | | 2 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | 50.0% | |
| Downside | | | | | | 3 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | 60.0% | |

Appendix

WACC

Novo Nordisk A/S (NOVO-B)

Capital Structure

| | |
|--|-----------|
| <u>Common Equity</u> | |
| Share Price | \$144.90 |
| Common Shares | 950.2 |
| Market Capitalization | \$137,684 |
| <u>Debt</u> | |
| Short-Term Debt | \$210.0 |
| Long-Term Debt | \$3,490.0 |
| Total Debt | \$3,700 |
| <u>Preferred Equity</u> | |
| Preference Shares (\$ Millions) | \$0 |
| Debt-to-Total Capitalization | 2.6% |
| Common Equity-to-Total Capitalization | 97.4% |
| Preferred Equity-to-Total Capitalization | 0.0% |

Novo Nordisk A/S (NOVO-B)

WACC Calculation

| | |
|---------------------------------|--------------|
| <u>Cost of Debt</u> | |
| Pre-Tax Cost of Debt | 2.14% |
| Income Tax Rate | 8.48% |
| After Tax Cost of Debt | 1.95% |
| <u>Cost of Common Equity</u> | |
| Risk-Free Interest Rate | 3.73% |
| Levered Beta | 0.60 |
| Market Risk Premium | 6.50% |
| Cost of Common Equity | 7.63% |
| <u>Cost of Preferred Equity</u> | |
| Preferred Dividend | |
| Preferred Equity | |
| Cost of Preferred Equity | 0.00% |
| WACC | 7.48% |

Appendix

Sensitivity Analysis

| Implied Share Price | | | | | | |
|---------------------|------|---------------|----------|----------|----------|----------|
| | | Exit Multiple | | | | |
| | | 9.0x | 10.0x | 11.0x | 12.0x | 13.0x |
| WACC | 9.5% | \$133.66 | \$144.13 | \$154.60 | \$165.07 | \$175.53 |
| | 8.5% | \$141.81 | \$152.98 | \$164.14 | \$175.30 | \$186.46 |
| | 7.5% | \$150.56 | \$162.46 | \$174.37 | \$186.28 | \$198.19 |
| | 6.5% | \$159.93 | \$172.65 | \$185.36 | \$198.08 | \$210.79 |
| | 5.5% | \$170.01 | \$183.59 | \$197.17 | \$210.76 | \$224.34 |

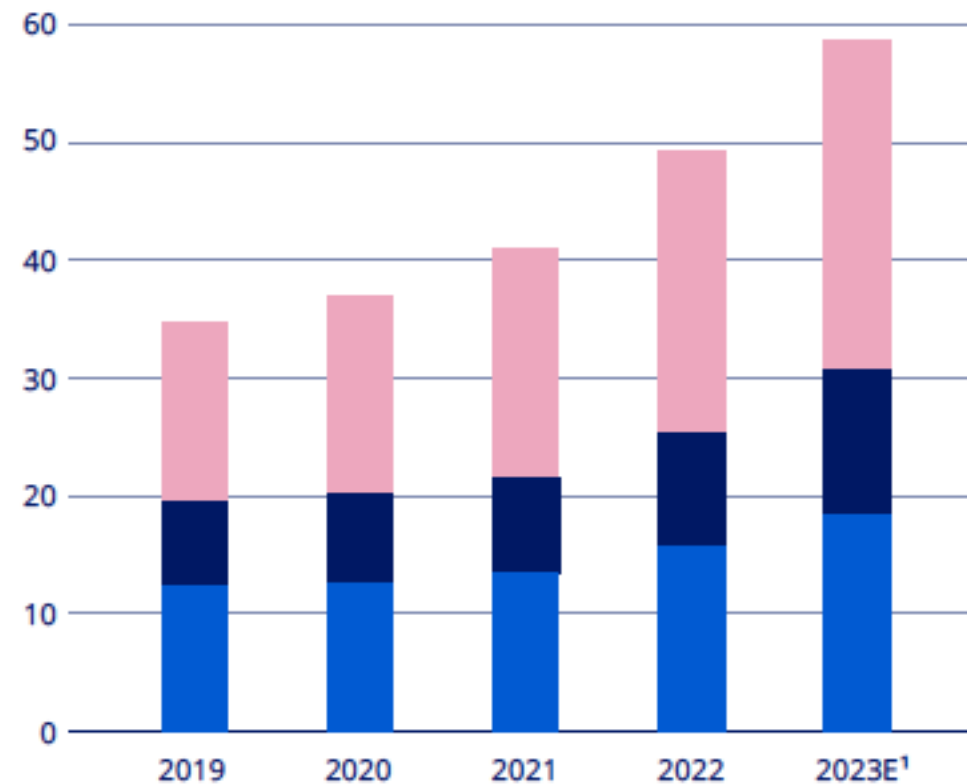
| Implied Share Price | | | | | |
|---------------------|---------------------------|----------|----------|----------|----------|
| | Long Term FCF Growth Rate | | | | |
| | 2.50% | 2.75% | 3.00% | 3.25% | 3.50% |
| 9.5% | \$107.95 | \$110.86 | \$114.00 | \$117.39 | \$121.07 |
| 8.5% | \$128.56 | \$132.82 | \$137.47 | \$142.56 | \$148.17 |
| 7.5% | \$157.52 | \$164.13 | \$171.48 | \$179.70 | \$188.95 |
| 6.5% | \$201.13 | \$212.33 | \$225.14 | \$239.93 | \$257.21 |
| 5.5% | \$274.13 | \$295.97 | \$322.21 | \$354.33 | \$394.56 |

Appendix

Cash flow and capital allocation

● Dividend for prior year ● Interim dividend ● Share repurchases

DKK billion



1. Expectations for 2023.

Appendix

Dicerna Acquisition Background



- Dicerna Pharmaceuticals was acquired by Novo Nordisk in 2021 for \$3.3 billion in cash at a 79.7% premium, financed by debt.
- Previous collaboration with other pharmaceutical companies in creating treatments for common and rare diseases.
- Novo Nordisk previously worked with Dicerna starting in 2019 with potential pharmaceuticals for chronic diseases including diabetes, obesity and rare diseases.

Dicerna's Research Synergies

- Dicerna researches ribonucleic acid interference (RNAi) which is a biotechnology allowing for inhibition or disruption of disease-causing genes.
- This technology can potentially benefit all Novo Nordisk segments in developing innovative pharmaceutical products.
- Access to the broader Novo Nordisk ecosystem with its immense research capabilities.

Current Pipeline

PHYOX – treatment for primary hyperoxaluria (PH is a rare condition causing frequent kidney stones)

Hepatitis B Infection (HBV) – collaboration with Roche

SHINE – treatment of alpha-1 antitrypsin deficiency associated liver disease (rare liver disease)

Alcohol Use Disorder (AUD) – inability to control alcohol use, despite adverse lifestyle consequences, such as compulsive drinking (common disorder affecting 14 million people in the US)



Appendix

| | | US | China | Japan | Europe |
|--------------|--|---------|------------|---------|---------|
| Diabetes car | Human insulin and Modern insulins ⁹ | Expired | Expired | Expired | Expired |
| | Victoza [®] ¹⁰ | 2023 | Expired | Expired | 2023 |
| | Tresiba [®] | 2029 | 2024 | 2027 | 2028 |
| | Ryzodeg [®] | 2029 | 2024 | 2024 11 | 2028 |
| | Xultophy [®] | 2029 | 2024 | 2024 11 | 2028 |
| | Fiasp [®] | 2030 12 | 2030 12 | 2030 12 | 2030 12 |
| | Ozempic [®] | 2032 | 2026 13 | 2031 | 2031 |
| | Rybelsus [®] | 2032 14 | 2026 14 13 | 2031 14 | 2031 14 |
| | Zegalogue [®] | 2035 | 2033 | 2033 | 2033 |

Appendix

| | | US | China | Japan | Europe |
|--------------|-----------------------------|-----------|-----------|-----------|-----------|
| Obesity Care | Saxenda® | 2023 | Expired | Expired | 2023 |
| | Wegovy® | 2032 | 2026 12 | 2031 | 2031 |
| | | US | China | Japan | Europe |
| Rare Disease | Norditropin® (SimpleXx®) | Expired | Expired | Expired | Expired |
| | Sogroya® | 2034 | 2031 | 2036 | 2036 |
| | NovoSeven® | Expired15 | Expired15 | Expired15 | Expired15 |
| | NovoEight® | No Patent | No Patent | No Patent | No Patent |
| | NovoThirteen® (TRETEN®) | Expired | No Patent | No Patent | No Patent |
| | Refixia® (REBINYN®) | 2028 | 2027 | 2032 | 2027 |
| | Esperoct® | 2032 | 2029 | 2034 | 2034 |
| | Vagifem® 10 mcg | Expired | No patent | Expired | Expired |

Appendix

Table 1 Insulin Manufacturers: Market Share and Products.¹⁵³

| Company | Global Market Share (by Volume) | Global Market Share (by Revenue) | Insulin Products | | | |
|--------------|---------------------------------|----------------------------------|--|--|------------------------------|--------------------------------|
| | | | Rapid-acting insulins | Short-acting insulins (Human recombinant insulins) | Intermediate-acting insulins | Long-acting insulins |
| Novo Nordisk | 52% | 41% | NovoLog (insulin aspart) | Novolin R | Novolin N (insulin NPH) | Levemir (insulin detemir) |
| Sanofi | 17% | 32% | Apidra (insulin glulisine); Admelog (follow-on of Humalog) | — | — | Lantus (insulin glargine) |
| Eli Lilly | 23% | 23% | Humalog (insulin lispro); authorized generic Humalog | Humulin R | Humulin N (insulin NPH) | Basaglar (follow-on of Lantus) |