

**MASTER OF SCIENCE IN
FINANCE**

**MASTERS FINAL WORK
PROJECT**

EQUITY RESEARCH:
NOVARTIS AG

BRUNO SOUSA

OCTOBER 2021

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SUPERVISOR:
TELMO VIEIRA

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Abstract

Novartis AG (“Novartis”) is one of the top market players in the pharmaceutical industry, with a 2020 market cap of \$215Bn and operations in 155 countries. The company is divided in two segments, Innovative Medicines which includes Gene Therapies and Oncology and Sandoz that focus on generic pharmaceuticals and biosimilars.

The motivation for choosing this company and industry was because we are in a pandemic (Covid-19) and the world’s attention is focused on the pharmaceutical industrial to produce the vaccine. As it becomes more evident that is one of the most important industries in the world, I was curious to know how these companies operate and what they are doing to overcome the current situation.

The main methods used for Novartis valuation were the DCF, APV and Market-Based Valuation Methods.

The company has a BUY Recommendation, with a 2022 YE price target of \$103,32, representing an upside potential of 21% from the Sep. 10th, 2021, closing price of \$85,43, with medium risk.

The current share price undervaluation is mainly due to some government-imposed industry-wide price reductions, some restrictions to access healthcare and to patent expiration, what can directly impact the business revenues.

In terms of the new trends in the industry, Novartis is already using technology and digitalization across its operations and is working hard to be a global ESG leader.

Moreover, the company has a dividend policy to increase the dividend every year, which is possible since the company has a solid CFO YoY.

The reference date for this equity research is 2021.

JEL classification: G10; G32; G34.

Keywords: Novartis AG; Pharmaceutical Industry; Medicines; Innovative Medicines; Sandoz; Equity Research; Valuation; Mergers & Acquisitions.

Resumo

A Novartis AG ("Novartis") é um dos principais intervenientes no mercado da indústria farmacêutica, com um valor de mercado em 2020 de \$215Bn e operações em 155 países. A empresa está dividida em dois segmentos, Medicamentos Inovadores que inclui as Terapias Genéticas e Oncologia e Sandoz, que se foca em medicamentos genéricos e biossimilares.

A motivação para escolher esta empresa e a indústria baseou-se no facto de estarmos numa pandemia (Covid-19) e a atenção mundial está centrada na indústria farmacêutica para a produção da vacina. Como se tornou mais evidente que é uma das indústrias mais importantes do mundo, fiquei curioso em saber como estas empresas operam e o que estão a fazer para ultrapassar a situação atual.

Os principais métodos utilizados para a avaliação da Novartis foram o DCF, o APV e os Métodos de Avaliação Baseados no Mercado.

A empresa tem uma Recomendação investimento de COMPRA, com um preço alvo de \$103,32 para o final de 2020, representando uma valorização potencial de 21% face ao preço de fecho de \$85,43 a 10 de Setembro de 2021, com risco médio.

A atual subvalorização do preço das ações deve-se principalmente a algumas reduções de preços impostas pelo governo a toda a indústria, a algumas restrições de acesso aos cuidados de saúde e à expiração de patentes, o que pode ter um impacto direto nas receitas da empresa.

Em termos das tendências futuras na indústria, a Novartis está investindo em tecnologias, já incorporou em todas as suas operações a digitalização e está a trabalhar arduamente para ser um líder global em temas como o meio ambiente, impacto na sociedade e estrutura corporativa.

Além disso, a empresa tem uma política de dividendos para aumentar os dividendos todos os anos, o que é possível uma vez que a empresa tem um sólido resultado operacional ano após ano.

A data de referência para este equity research é 2021.

Classificação JEL: G10; G32; G34

Palavras-Chave: Novartis AG; Indústria Farmacêutica; Medicamentos; Medicamentos Inovadores; Sandoz; Equity Research; Avaliação de Empresas; Fusões e Aquisições.

Acknowledgements

"The only limit is the one you set yourself".

Felix Baumgartner

My deepest thanks,

To the love of my life, Joana, for all the motivation and the time not spent with her;

To my grandfather Jorge, for the strength he has shown throughout his life;

To my family and friends;

To Professor Telmo Vieira, for all the availability and knowledge;

And to me, for all the resilience, hard-work and strength.

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Abbreviations

ADR: American depositary receipt

AI: Artificial Intelligence

API's: Active Pharmaceutical Ingredients

Bn: Billion

CAGR: Compound Annual Growth Rate

CAPM: Capital asset pricing model

CEO: Chief Executive Officer

CFO: Chief Financial Officer

CH: Switzerland

CN: China

CRP: Country risk premium

DCF: Discounted cash flow

DE: Germany

E: Expected

EBITDA: Earnings before interest, taxes and depreciation

EMA: European Medicines Agency

ERP: Equity risk premium

ESG: Environment, Social and Governance

F:

FCFE: Free Cash Flow to Equity

FCFF: Free Cash Flow to Firm

FDA: Food and Drug Administration

FED: Federal Reserve Board

FR: France

GDP: Gross Domestic Product

H1: First half

IMF: International Monetary Fund

JP: Japan

M&A: Mergers and acquisitions

OCDE: Organization for Economic Co-operation and Development

PT: Price Target

R&D: Research and Development

R&D: Research and Development

RFR: Risk-free rate

Sh.: Share

US: United States

WACC: Weighted cost of capital

YE: Year-end

YoY: Year-over-Year

Research Snapshot

NOVARTIS: Reimagine medicine to improve people's lives

I initiate a **BUY recommendation** for the **2022YE Novartis AG price target of \$103,32** using a **DCF model**, with an embedded **upside potential of 21%** from the September 10th, 2021, closing price of \$85,43, with **medium risk** (Figure 1). In a mature and difficult market environment, with lots of competitors and price pressure from the governments, Novartis can benefit from its strong and resilient segments, its constant investment in R&D and its attractive dividend policy that are the main drivers for the company to continue to be one of the top players in the market.

Innovative Medicines continue to be the key segment for growth

Although the company expects some challenges in the areas of dermatology, ophthalmology and oncology in 2021, the entire segment continues resilient and it's expected a growth of +5% in 2021 and a +6,25% 2021E-2026F CAGR (Table 1).

Sandoz to achieve Long-term goal

Long-term strategy of the company it's to become the most valuable generic and biosimilar company in the world. Although growth of previous years was approximately 0%, we estimate a +2% 2021E-2026F CAGR (Table 1) as the company acquired Aspen Global Incorporated, the world's fifth-largest supplier of generic pharmaceutical products.

R&D as a priority for development

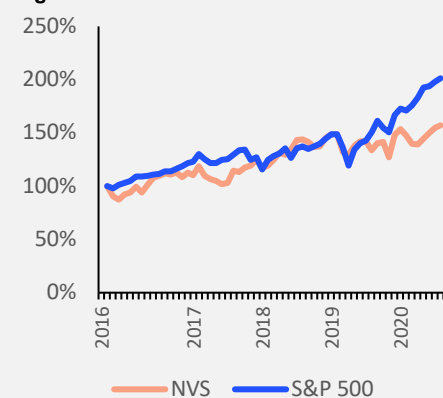
With the constant investing in R&D, +18-19% of sales investment, the company aims to continue the development of new blockbusters that will help it to achieve the targets. Medicines as Consentyx, Entresto and Zolgensma are some of the current key growth drivers, having just in 2021Q2 a 20-48% growth, driven by the increase in demand.

Attractive Shareholders returns remains a priority

Novartis Board of Directors reaffirm that the dividend payment is to increase every year (Table 2). With a strong and solid **YoY CFO - 2020-2026F CAGR +3,6%** (Table 1), it makes sense that the company aims to continue with this policy as it generates enough cash to support this increase.

Recommendation	BUY
Price at 2021/09/10	\$85,43
Price Target	\$103,32
Upside potential	↑ 21%
Annualized return	↑ 14%
Ticker	NVS
Industry	Health & Healthcare
Risk	Medium

Figure 1: Relative Share Performance



Source: Author Analysis

Table 1: Financial highlights

	2020	2022F	2026F
IM Revenues (\$Bn)	39,8	44,5	57,3
Sandoz Revenues (\$Bn)	9,84	10,0	10,86
IM GR (%)	3%	6,5%	6,50%
Sandoz GR (%)	0%	2%	2%
R&D (% sales)	18%	19%	19%
EBITDA (Bn)	15,3	16,9	21,1
EBITDA Mg. (%)	31%	31%	31%
Net Profit (\$Bn)	8,1	10,8	14,6
NPM (%)	16%	20%	21%
CFO (\$Bn)	13,7	14,0	16,8
D/E Ratio (%)	64%	60%	60%

Source: Author Analysis

Table 2: Shareholders return policy

	2020	2022F	2026F
DPS (\$/sh.)	3,00	3,14	3,44
Payout ratio	87%	77%	69%
Div. yield (%)	3,6%	2,7%	3,6%

Source: Author Analysis

Business Description

The Company

Novartis AG. (NVS) is a worldwide pharmaceutical company with headquarters in Basel, Switzerland, with the objective of **“reimagine medicine to improve and extend people’s lives”**.

The main goal of the company is, through innovative science and technology, to discover the most difficult healthcare issues of the human being, to develop their treatments and to deliver them to many people as possible.

History

Founded on December 20, 1996, Novartis AG was born from a merged between Ciba-Geigy and Sandoz AG and nowadays is one of the biggest pharmaceutical companies in the world with products being sold in around 155 countries (Figure 2), with USA being the most relevant market (Figure 3), and with approximately 106,000 full-time employers.

Company operations and structure

In 2020, Novartis had net sales of \$48.7B (vs. 2019 \$47.4B) and a Core operating income CAGR of 10% since 2017 (Figure 4). 2021 H1 net sales were +3% and core operating income +6%, driven by key growth brands like Cosentyx, Entresto and Zolgensma, the Oncology portfolio and launch of new products. 2021F net sales are expected to be +4% (vs. 2020) to \$50.7B and EBITDA +5%, with margin at 31%.

The company is divided in two divisions, the Innovative Medicines and Sandoz, with support of Novartis Institutes for BioMedical Research (NIBR), Global Drug Development (GDD), Novartis Technical Operations (NTO), Novartis Business Services (NBS) and corporate functions.

Divisions

Innovative Medicines is the main division of the company operations, representing 80% of total group’s net sales 2020, growing +8% YoY, pre-pandemic levels (Figure 5). 2021F sales are expected to be +5% (vs. 2020) to \$41.8B.

The division take care of all the selling process of innovative patent-protected prescription medicines, till the research to the sale, and it’s divided into Novartis Pharmaceuticals and Novartis Oncology business units.

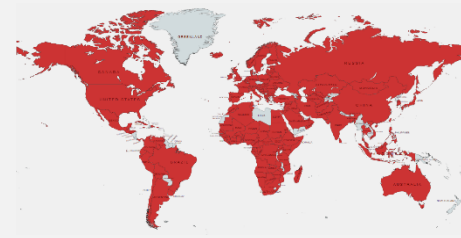
Novartis Pharmaceuticals business unit is present in various treatment areas, being Establish Medicines, the area that has more impact in the net sales of the business unit. (Figure 6).

Novartis Oncology business unit has operations in the areas of cancer and rare diseases.

Sandoz produces and sells finished and intermediaries’ pharmaceuticals and biosimilar products¹. The division is the global market leader in generic pharmaceutical and biosimilar and it is divided into Retail Generics, Anti-Infectives and Biopharmaceuticals franchises, representing Retail Generics 75% of 2020 sales (Figure 7). Sandoz 1H21 sales were \$4.7B and the company expect a 2021F

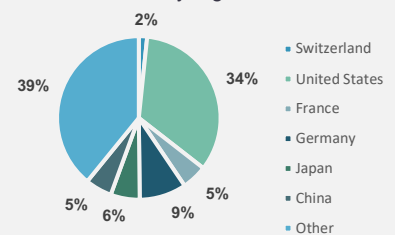
¹Including API’s

Figure 2: Global Coverage



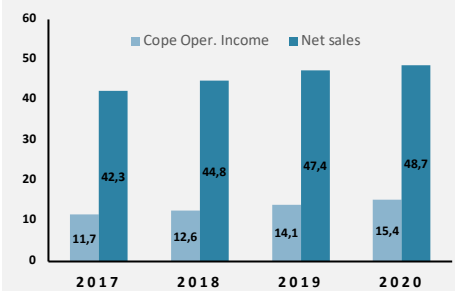
Source: Novartis AG Website

Figure 3: Net Sales by region



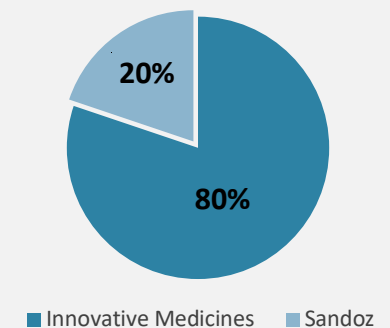
Source: Novartis AG Annual Report

Figure 4: Core oper Income and net sales



Source: Novartis AG Annual Report

Figure 5: Net Sales by division



Source: Novartis AG

sales growth of +0% (vs. 2020), mainly due to Covid-19 pandemic. In the long run, Novartis expects a CAGR of 2% (2022-2026), driven by acquisition of the Aspen Global Incorporated, a generic pharmaceutical company.

The main strategy of the division is to become the world's most valued generics and biosimilar company by focusing in developing a wide and consistent number of patents across key geographic and therapeutic areas, having competitive costs and a stable supply chain and install a generic mentality with focus in resource allocation.

Company Strategy

Outlined in 2018, Novartis strategy is to focus on certain geographies with the purpose to reimagine medicine and deliver, in the long run, a sustainable impact in the health care industry (Figure 8). The company is already making a good progress, being currently an 100% medicines company, having a leading digital and data science platform and continuing to improve his ESG scores, year by year. To fully implement this strategy, Novartis is focused on five priorities:

Unleash the power of our people, by creating a culture where people can expose their ideas, talents and energies.

Deliver transformative innovation, by trying to find, daily, new possibilities to cure diseases that can “improve and extend people’s life’s”.

Embrace operational excellence, by having more agile teams and investing in innovation to have a better productivity.

Go big on data and digital, by investing in digital technologies and in artificial intelligence.

Build trust with society, by, following high values and integrity, try that everyone can have access to all treatments.

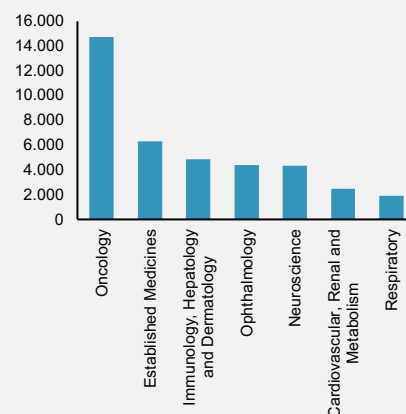
Dividend policy

Novartis Dividend Policy is to have an increasing annual dividend payment in Swiss francs² (Figure 9).

The dividend amount is proposed every financial year by the Board of Directors and it is approved by the shareholders. The dividend value of the ADR’s holders can vary due to the USD/CHF exchange rate.

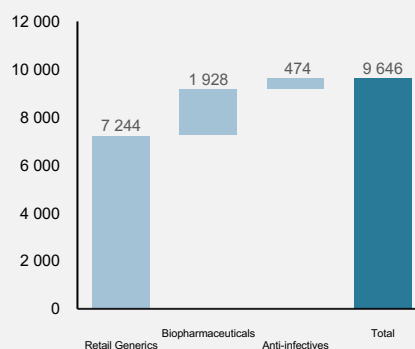
In 2021, a dividend of CHF 3.00/share (+1.69% vs. 2019) was proposed by the Board and approved in the 24th annual meeting.

Figure 6: Net sales by therapeutic area – Innovative Medicines



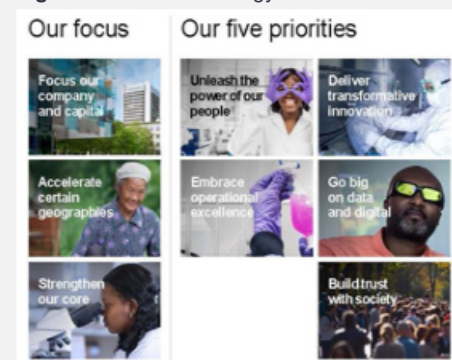
Source: Novartis AG Annual Report

Figure 7: 2020 Net Sales of Sandoz Division business franchises



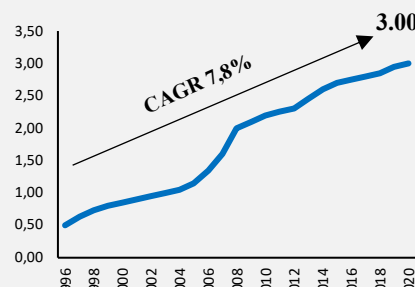
Source: Novartis AG Annual Report

Figure 8: Novartis Strategy



Source: Novartis AG Annual Report

Figure 9: Dividend payments in CHF



Source: Novartis AG Annual Report

² CHF

Environmental, Social and Governance (ESG)

Environmental and Social

Novartis, as one of the leading medicines companies in the world, is putting all his efforts into ESG factors by embed them into their core business strategies and operations, so it can deliver a long-term value to the stakeholders and “**build trust with society**” (Figure 10).

Mainly, the company wants to be the catalyst of a social positive change creation, by helping the world to overtake complex challenges such as Covid-19 or climate changes and to set them as an objective of its core business.

To do so, it is focusing into four key areas: embed high ethical standards into the company, be part of the medicines pricing and access solution, be part of the global health challenges solutions and embrace citizenship responsibility.

Due to the strong governance and focus on ESG factors, the company is improving year by year is rating agency scores, having a risk score of 17 in Sustainalytics agency and an ESG score of A in MSCI agency.³

Novartis, since 2013, release every year the “**Novartis in Society ESG report**”.

This report is divided into the four key areas that the company is focused and present the targets and the current year highlights achieved.

In terms of the targets defined in each area, some of the most important are:

Embed high ethical standards into the company:

- Make risk assessments for all the existent and new suppliers.
- Incorporate human rights into the risk assessment.

Be part of the medicines pricing and access solution:

- Try to give access to as much people as possible of the new products launches.
- Implement a price/rational income balance in all the Pharmaceuticals and Oncology launches.

Be part of the global health challenge solutions:

- Give access to health programs to more 50% of patients by 2025.
- Give access to the Africa sickle cell disease program to more 10 countries, by 2022.

Embrace citizenship responsibility:

- Have gender balance in management by 2023.
- Eliminate the gender pay gap by 2023.
- Have an active paper in world environment issues.

In terms of the **environmental** issues, Novartis is looking closed to this, as this is one of the most important issues that the world is currently facing.

To help the world be cleaner and to not fully spend the natural resource, Novartis wants to be carbon, water and plastic neutral till 2030 (Figure 11).

Figure 10: ESG Report



Source: Novartis in Society ESG

³ More information regarding ESG rating agencies scores in “**Novartis in Society ESG report**”

As an ambitious company, it is annually working with urgency to reach his targets and to become an **ESG leader worldwide**.

Being on the right path to reach its targets, the company have made in 2020 some progress in each area such as:

- Give access to medicine products to more than 66 million patients.
- Issued a first in class sustainability-linked bond.
- More than 3.4 million Ghana patients treated through Africa sickle cell disease program and extend this program to Uganda, Kenya and Tanzania.
- Include more 22 ethical commitments in the Code of Ethics.
- Reduce water, waste and carbon in the company (Figure 11) and,
- Have 45% women in management.

Corporate Governance

Novartis Corporate Governance, based on its values and behaviours, is devoted to being effective and creating a long-term value to all the stakeholders.

The company have annually at least one general meeting of shareholders where the financial statements⁴, operating and financial evaluation, earnings and dividends, compensation of the Board and Executive Committee, Board members, chairman and compensation committee members election, external auditors and others are approved (Appendix 23).

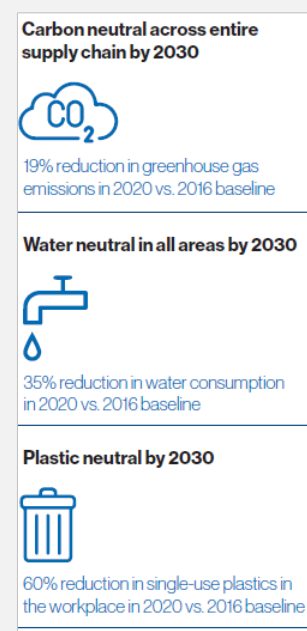
Board of Directors

The Board members⁵ are independent and non-executive and are led by the chairman, Joerg Reinhardt, to represent the interests of all stakeholders (Figure 12). Most of the members are men's and have American or Swiss nationality (Figure 13 and 14).

The Board of Directors is responsible for the strategy, structure and organization, culture, ethics and compliance, risk management, finance and people and it's constituted by:

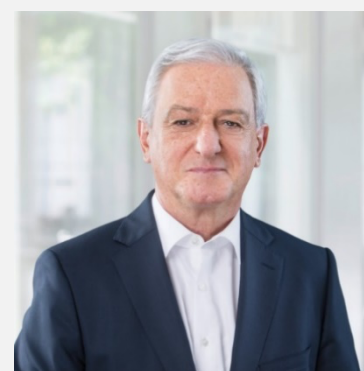
- **Audit and Compliance Committee:** supervise the accounting policies, internal audit and controls; review the annual financial statements and approves the first three quarters and supervise and selects the external auditor for selection.
- **Compensation committee:** Review, recommend, advises, decide and prepare all the reports and decisions related to the compensation of the board members and the compensation policies and programs (Appendix 24).
- **Governance, nomination and corporate responsibilities' committee:** Supervise the company ESG progress; recommend corporate governance best practices and review all the subjects related to the Board, be it his composition, size, plans or independence.

Figure 11: Environmental targets and 2020 achievements



Source: Novartis in Society ESG

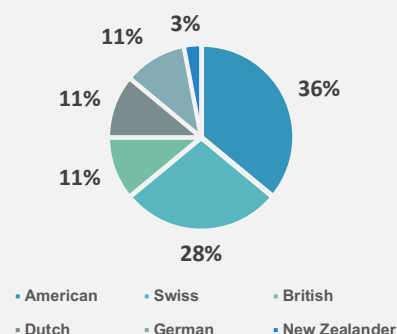
Figure 12: Novartis AG Chairman



Joerg Reinhardt
Chairman since 2013
Nationality: German
Year of birth: 1956

Source: Novartis AG annual report

Figure 13: Board Nationality



Source: Novartis AG annual report

⁴ Novartis Group and Novartis AG

⁵ Including the Chairman

- **Risk committee and Science and technology committee:** Supervise the risk management system and review and perform analysis of the risks of the company's portfolio and key areas.
- **Science and technology committee:** Supervise the new trends and problems in scientific and technological research; advise the board regarding the strategy, performance, targets and key success developments in these areas.

Executive Committee

The Executive Committee has the responsibility of dealing with all the operational management of Novartis and to ensure that the group have operational efficiency and are achieving his targets. It also submits to the Board different financial transactions for approval, such as investments and divestments and prepares quarterly and annual reports.

The Executive Committee is composed by 13 members, where Vasant Narasimhan is the CEO (Figure 15).

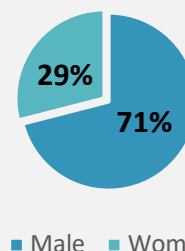
Share Ownership

Novartis AG, as of December 31, 2020, had 2,467,920 registered and listed shares on the SIX Swiss Exchange (SIX) with a nominal value of CHF 0.50 each and on the New York Stock Exchange (NYSE) in the form of American Depositary Receipts (ADRs) that represents the American Depositary Shares (ADSs).

Each ADR entitles the holder to one Novartis share and to receive his equivalent dividends and are kept by JP Morgan Chase Bank, the ADS depository of Novartis. Most of the shareholders are Individuals (96.61%), but, although nominees, fiduciaries and ADS depository represent 5% of the shareholders, they have the highest percentage of shares (51.49%).

The 2020YE share price was CHF 83.65 and the ADR price were USD 94.43 (Table 3).

Figure 14: Board Gender



Source: Novartis AG annual report

Figure 15: CEO



Vasant Narasimhan
CEO since 2018,
Nationality: American
Year of birth:1976

Source: Novartis AG annual report

Table 3: 2020 Share price

2020	Share price (CHF)	ADR price (USD)
Year-end price	83,65	94,43
Year-end market capitalization (Billions)	188,8	214,3

Source: Novartis AG annual report

Industry Overview and Competitive Positioning

Outlook of Pharmaceutical Industry

The pharmaceutical industry aims to discover, develop, produce and sell pharmaceutical drugs to the worldwide population with the objective to cure or alleviate the symptoms of the existent diseases.

Pharma companies can develop brand or generic medicines and medical devices. R&D and technology are holding hands with the pharma industry as with constants developments of the medicines, more investment in technology and research is required.

Evaluate Pharma forecast that the spend in R&D is expected to grow at a +4,2% CAGR till 2026, reaching \$254B (Figure 16). Even though the COVID-19 had a huge impact on the worldwide economy and industry sales, the prescription drug sales are expected to reach \$1.4trn by 2026. This, as the industry demand for innovative and effective therapies have a positive long-term growth.

Artificial Intelligence and machine learning are playing a key role in the industry, currently giving a great response to the COVID-19 pandemic and are expected to have more than \$2billion spending over the next 5 years.

Key Drivers of Industry Profitability

Key Drivers of Revenues

The main key drivers of the Industry Revenues are the worldwide population, as a human needs medicines in every stage of his life, and the increase of the life expectancy, focusing on persons with more than 60 years old, as an older human need more medicines than a younger.

Another key driver of revenues is the investment in R&D and technology (Figure 16). The industry is constantly changing and with the increase in the demand for personalized treatments and medicines, the companies have an opportunity to create new patents and have a huge opportunity to make more profits.

Another point to focus is the rise of the M&A activity and the demand from emerging markets. Revenues from markets as China, Brazil and India are expected to reach \$490 billion by 2025, according to BMI Research (Figure 17).

Key Drivers of Costs

Despite all the existent revenues opportunities, the industry is facing real challenges in terms of costs. Expenses in R&D, patent protection, government regulations and delays in the process of a medicine creation, can put in risk all the industry revenues.

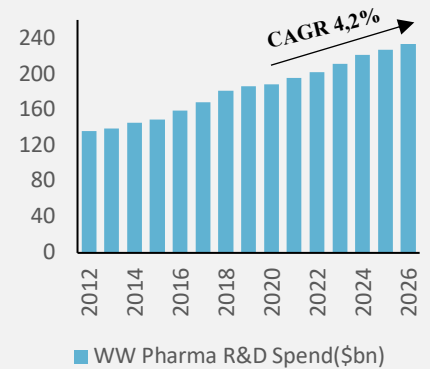
Due to Covid-19 and the change of the industry trends, expenses in technology are having a key weight in the industry costs.

Key Trends of the Industry

Due to Covid-19 pandemic, the industry is being partially reshaped, with some trends being reinforced and new ones appearing.

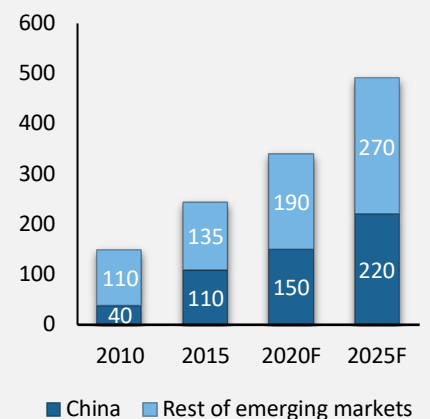
Trends as growth in medicine spending, focus on personalized medicines, treatments and in R&D value are some of the trends that are being reinforced as pharma companies are becoming more conscientious of the cost of the medicines and are bringing down the prices to support the demand. Also, digital processes and telehealth are being more used as this permits doctors to connect to patients remotely.

Figure 16: Worldwide Total Pharmaceutical R&D spent in 2012-2026



Source: EvaluatePharma, 2021

Figure 17: Pharma Emerging Markets \$bn



Source: McKinsey & Company

2020 was a game change for pharma industry as, due to the worldwide lockdowns and the existence of social distance, consequences of Covid-19, pharma companies realize that technology must have a key role in the industry.

Trends as the popularization of beyond the pill services⁶, more patient engagement and the use of AI and machine learning are some of those trends.

Covid-19 brought to the industry a great lesson regarding the supply of the vaccines. Due to high demand, supply did not match the demand and huge delays in vaccine delivery occurred. Being this, the integration of blockchain technology is one of the new trends in the market.

Competitive Environment of the Industry

Economic Global outlook

2020 was an atypical year for the global economy due to the Covid-19, with a global growth contraction of 4,4%, IMF projections.

For 2021F and 2022F, this projection is to be 6% and 4,4%, respectively. (Figure 18).

These projections are uncertain and depends on how well the vaccination of the population is made, the evolution of the financial conditions and path of the pandemic.

According to the OCDE database, the unemployment rate of the overall OCDE countries was around 7% in 2020YE and it is on the right path to reach pre-pandemic levels, expected to be 6,4% in April 2021. (Figure 19).

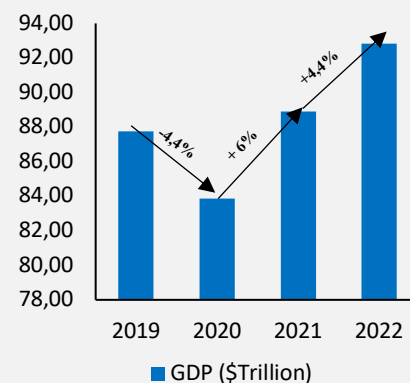
Europe Economic outlook

Europe's economy was by far the one that suffered more with this new pandemic, having the 2Q2020 a decrease in the GDP of 11,2%, the worst decrease of the last years. Although the Europe was closed at least 6 months in 2020 due to lockdowns, the economy was resilient and in the first quarter of 2021 it's almost at his pre-pandemic levels. (Figure 20).

According to IMF, the Europe will return to its pre-pandemic levels by 2022, having growth expectations of 4,5% and 3,9% in 2021F and 2022F.

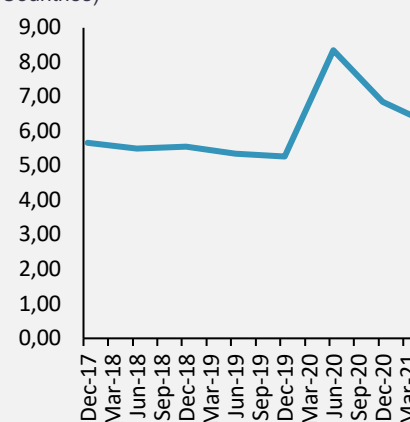
Unemployment increased and inflation rates went down, mainly due to the shutdown of all Europe economies. Unemployment rate it's 7,3% in the 1Q2021, having a long road to return to its pre-pandemic levels and inflation rates are at 1,7% (1Q2020), being already in its pre-pandemic levels.

Figure 18: GDP growth 2019-2022



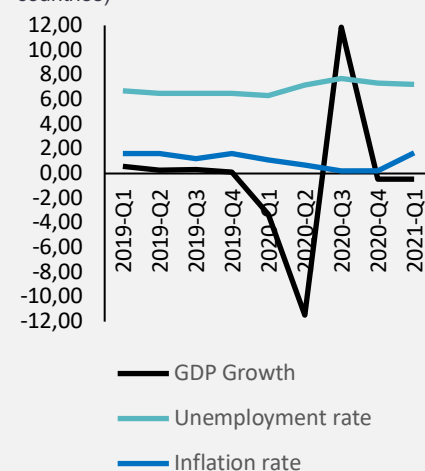
Source: International Monetary Fund and World Bank

Figure 19: Unemployment rate (%) (OCDE Countries)



Source: OECD database

Figure 20: Average Unemployment, GDP Growth and Inflation rates in Europe (%) (28 countries)



Source: Eurostat, OECD and Statistica database

⁶ New digital medical solutions in form of digital pills, sensors and apps to provide real-time information of treatments

USA economic outlook

The USA also suffered a huge impact in 2020 at all levels, having a decline of 31,4% in Q2. Although this huge economy contraction, in the Q3 the economy had a growth of 33,4%, mainly due to reopening efforts and a good government response to the pandemic. The economy had in 1Q2021 a 6,4% growth, beating the market expectations and being at a higher pre-pandemic level (Figure 21).

Unemployment also increased, but since April 2020 it's decreasing, having FED estimate that this rate will be 4,5% in 2021.

Inflation rates took a huge leap in 2021 from around 0% in April 2020 to 4,2% in April 2021, their highest since 2018. The cause of this increase was that due the reopening of the economy, demand and supply constraints increased, which led to an increase in commodity prices.

China economic outlook

Despite China being the epicenter of the pandemic, it was the only economy who knew how to control it. Due to this and other factors as prioritization of macroeconomic objectives, China was the only country to recover to pre-pandemic levels, even in 2020. In 2021, IMF expect that the GDP growth will be 8,4%. (Figure 22), inflation rates 1,2% and unemployment rate 3,6%.

Covid-19

Covid-19 reshaped all the healthcare industry and raised a huge importance to how companies are in terms of innovation efforts.

2020 was a year of changes, with this new pandemic forcing companies to rethink how they operate.

In a survey made by Mckinsey to more than 100 leaders in the industry, most of them affirm that this pandemic will change the way they do business and that the two most critical areas that the pandemic brought changes are the digital acceleration and workplace of the future.

In the digital side, there is now an urgency to embrace technologies, with the use of telehealth being a way to provide health and engage with patients and communities.

As a Chinese proverb said: "When the winds of change blow, some people build walls, others build windmills". This means that or companies embrace this new digitalization era or they will struggle to survive.

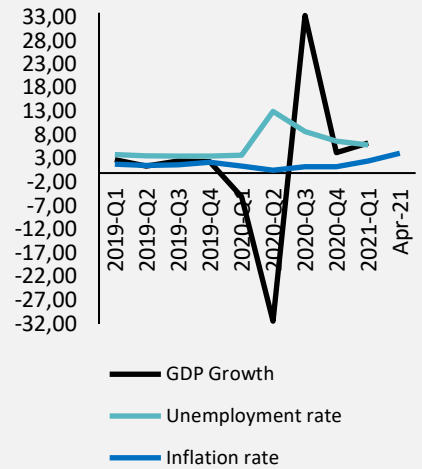
In terms of workplace, the pandemic showed that it's possible to deliver healthcare remotely. With this, now it's possible to attract talent everywhere, so companies have a wider range of possibilities to improve teams.

Two of the major problems of COVID-19 were that companies were facing stagnation in R&D returns and problems in supply. As the most important objective was to find the vaccine to the virus, most of the companies turn their eyes and operations to this target. Due to, other areas lost focus.

Also, with the huge demand for the vaccine, it occurred delays in the supply chains because of the non-existence of production capacity. The heavy dependence on China and India raw materials, intermediates, and APIs, showed that companies might need to diversify their suppliers and not be so dependent on just one.

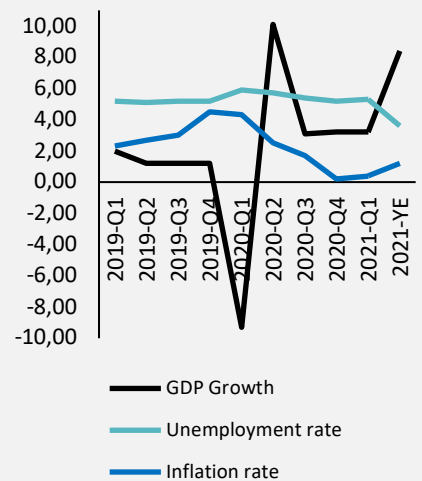
To conclude, people are now more opened to other ways of prevention and treatment of diseases, which can be an opportunity to companies to embrace technology and to connect to patients.

Figure 21: Unemployment, GDP Growth and Inflation rates in the USA (%)



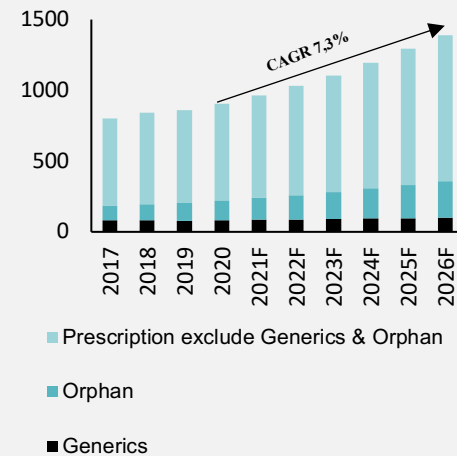
Source: Trading Economics and OECD database

Figure 22: Unemployment, GDP Growth and Inflation rates in China (%)



Source: Trading Economics database

Figure 23: Worldwide Total Prescription Drug Sales



Source: EvaluatePharma

Demand and supply

Demand in Pharmaceutical Industry can be measured by its prescription. Having a growth trend since 2012, the prescription of medicines is expected to reach \$1.4 trillion by 2026 with a 2020-2026 CAGR of +7,3% (Figure 23).

This growth rate depends on economic and demographic factors like the increase of chronic diseases due to the ageing population, the increase of life expectancy, higher government expenditures in healthcare and an increase in demand for more personalized treatments.

Population is constantly increasing and it's expected to be around 8,5 billion by 2030 (Figure 24).

Emerging markets in regions like Africa and Asia will have a more and more considerable slice of companies' revenues in the upcoming year as the population expectations for these markets is to be more than 30% and 8% by 2030, so there is a huge opportunity to increase sales revenues by pharmaceutical companies (Figure 25).

Also, it's expected that spending in medicine in China range between \$170 and \$200 billion by 2025, being this emerging market with most spending in medicines and the one that pharma companies want to direct part of its businesses.

Another important key driver of demand is the number of people that suffer from chronic diseases. It is expected that the population that suffers at least one chronic disease will be 171 million by 2030 (Figure 26).

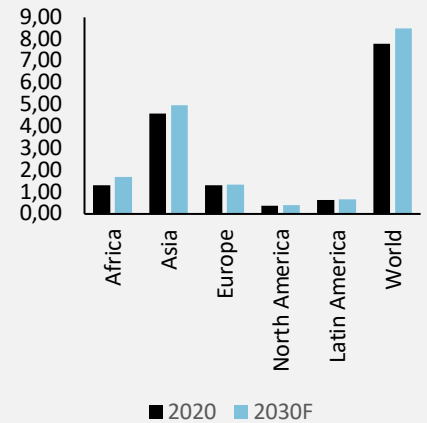
Covid-19 reinforced the growth trend that government expenditures are facing.

With the urgency to find a cure for this disease, they are investing heavily on this. Also, people are searching for more specialized treatments and other ways of medicine, key drivers of pharma companies' demand.

On the other side, the **supply** for medicines is affected by exchange rates and for expiration of patents.

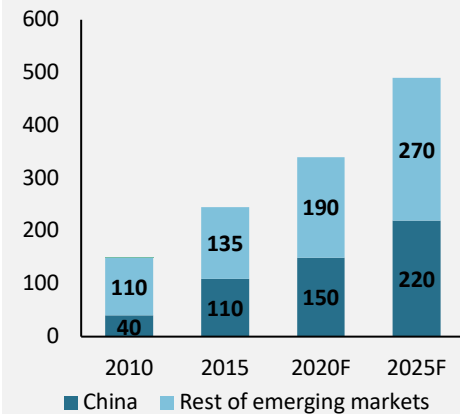
Exchange rates are extremely volatile and directly impact the company's revenues and costs. As they are unpredictable, companies can mitigate their risk by hedging. The only way that companies can protect their medicine exclusivity rights are patents. With the loss of them, the supply for generics and the price competition increase, which affect the company's revenues. Sales at risk due to patent lost are expected to be around +4% at 2026 (Figure 27).

Figure 24: World population forecast (bn persons)



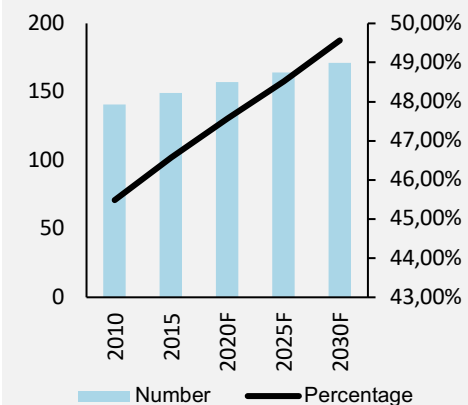
Source: Worldometers database

Figure 25: Pharma Emerging Markets (\$ bn)



Source: McKinsey & Company

Figure 26: Number of people with Chronic diseases (million)



Source: Statistica and American Hospital

PESTLE Analysis

World is constantly change and external factors tend to have a long-term impact, what requires more time and research from companies. **Table 4** specifies these factors.

Table 4: PESTLE Analysis

Political	Economic	Social
<ul style="list-style-type: none"> Political changes, focus and pressure on health industry Price regulation 	<ul style="list-style-type: none"> Worldwide crisis Changes in GDP, unemployment rate and tax environment Growth in healthcare investment per capita Reduction in consumer income Price pressure 	<ul style="list-style-type: none"> More social awareness and interest among consumers Growth in population and their age Culture changes Increase in obesity population
Technological	Legal	Environmental
<ul style="list-style-type: none"> More technological advancements and innovation will affect the services provisions, customized treatments and the marketing of products New digital opportunities (social media) Innovation in biotech Machine learning and AI evolution 	<ul style="list-style-type: none"> High regulatory and legislative restrictions Changes in advertising laws 	<ul style="list-style-type: none"> More conscientiously worldwide to environmental issues, like pollution and waste

Source: Author Analysis

Legal framework of the Industry

Patents are the most important asset in pharmaceutical industry, as they provide to companies' exclusivity on their products. Patent expiration can impact revenues of companies as generics companies can sell similar products at a lower price.

The process of launching and maintenance of a medicine in the market, as it is shown in the **Figure 28**, it's regulated differently in U.S. and Europe.

In U.S., it is strictly centralized and made by **FDA**, who has the crucial role to give the marketing authorization for the medicines.

In Europe, the process can be made by **EMA** or by **National authorities**, dependent of the territory that they will be sold, EU territory or nationally.

The principal criteria that all medicines must have when applying for marketing authorization are **quality, safety, efficacy** and a **positive-risk balance**.

Peer group

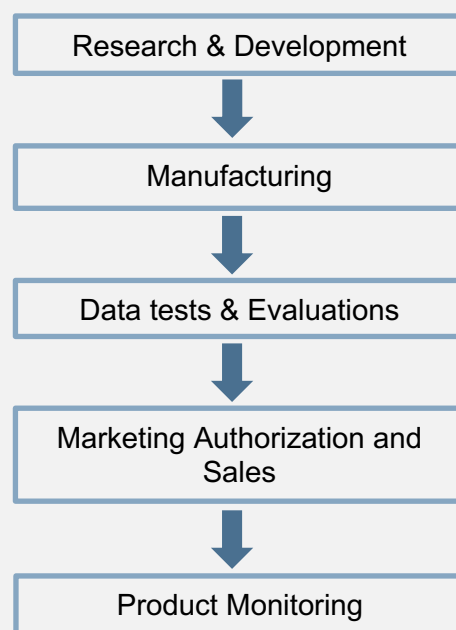
Pharmaceutical Industry is a highly competitive industry. As there exists lots of complex diseases and pharmaceutical companies are always searching for the best treatment and medicine for them, it's important to know which players are in the market (Appendix 21). **Table 5** and **Figure 29** shows the major competitors by market share, total revenues and market cap.

Figure 27: Worldwide Sales at Risk from Patent Expiration



Source: EvaluatePharma Association

Figure 28: Launching and Maintenance process of medicines in the market



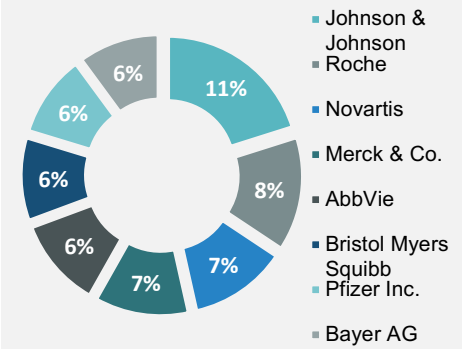
Source: Author Analysis

Table 5: Peer Group

Ticker	Company name	Market Cap (\$M)	Revenues (\$M)	Share (%)	Country
JNJ	Johnson & Johnson	449 125,70	82 584,00	11%	USA
RHHBY	Roche	272 212,50	58 323,00	8%	Switzerland
NVS	Novartis	218 078,20	49 898,00	7%	Switzerland
MRK	Merck & Co.	200 108,60	47 994,00	7%	USA
ABBV	AbbVie	204 722,80	45 804,00	6%	USA
BMJ	Bristol Myers Squibb	150 248,10	42 518,00	6%	USA
PFE	Pfizer Inc.	222 884,20	41 908,00	6%	USA
BAYN	Bayer AG	55 005,93	41 400,00	6%	Germany

Source: Thomson Reuters Database

Figure 29: Peer Group (%)



Source: Thomson Reuters Database

Swot Analysis

To understand how Novartis is positioned in the Market, a Swot Analysis must be performed. In **Table 6** we can highlight that one of the most important strengths of the company is the Strong Oncology portfolio, the area that is projected to have the higher growth in the next years.

Table 6: SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> • Global Company • Strong oncology and generics portfolio • High focus in ESG metrics • Strong supply chain • Strong Free Cash Flow 	<ul style="list-style-type: none"> • R&D investment is below the fastest growing companies in the industry. Nevertheless, Novartis is investing above the average of the industry • Unresolved issues regarding some treatments led to patent rejections and affected the brand image • Current ratio lower than the average of the industry, meaning a high risk of distress.
Opportunities	Threats
<ul style="list-style-type: none"> • Expansion through M&A • Expansion through Emerging Markets • Investments in Oncology 	<ul style="list-style-type: none"> • Exchange Rate Risks • Pricing pressure • Patent losses • Delayed R&D returns • High generics competitions • Counterfeit products • Economy slowdown

Source: Author Analysis

Porter's Five Forces

Threat of New Entrants: LOW

Threat of new entrants in the industry is low due to the high government restrictions and regulations and the high expenditures that a company will face in the early stages of their life.

New companies won't be able to use economies of scales as it will be difficult to fight again establishing products, so the sales will be low. This companies will be new to start from zero, as most of the drugs have patents.

Bargaining power of Buyers: MEDIUM

Bargaining power of buyers are medium in the way that they can choose between a medicine or its generic, when exists. Medicines have patents that last around 20 years. During that time, the supplier can set the price as there is no competition. Only when medicines lose their patents that generic companies start producing generics. With a lower price, this gives consumers power to choose.

On the other hand, hospitals, health care insurance companies and governments have significant bargaining power because they can choose to not subsidize certain medicines. Moreover, patients have a lower bargaining power as they must follow the medical prescriptions.

Bargaining Power of Suppliers: LOW

The bargaining power of suppliers are low due to the vast list of material providers. Companies, to discover new medicines, make higher investments in R&D. As there are multiple suppliers, they need to compete between them to be the chosen one. On the other hand, companies when discover new medicines have a high bargaining power as they have patents of the products.

Threat of Substitute Products: MEDIUM to HIGH

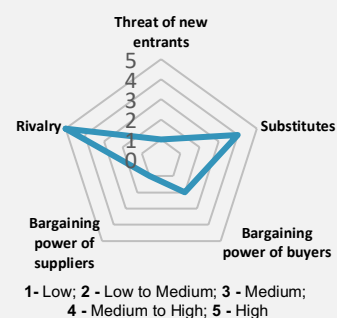
Threat of substitutes are medium to high in pharma industry. During the time of patents, the threat of substitutes can be medium in the way that alternative medicines as promotion of healthy lifestyle and alternative treatments can lead to consumers switch to them.

However, when the medicines lose their patents, generic drug production starts, decreasing the cost of the medicines and giving consumers alternatives with a lower price.

Industry Rivalry: HIGH

Pharmaceutical industry is highly competitive because the biggest companies have a good brand recognition. Factors as government pressures, higher investments in R&D, technology evolution, increase in M&A to develop new treatments and drugs, are the most important factors that turn this industry so competitive (Figure 30).

Figure 30: Porter's Five Forces



Source: Author Analysis

Investment Summary

My recommendation for Novartis AG stands at **BUY**, with a **2022 YE price target of \$103,32**, representing an **upside potential of 21%** from the Sep. 10th, 2021, closing price of \$85,43, with **medium risk** (Figure 31).

The current share price undervaluation is mainly due to some government-imposed industry-wide price reductions, some restrictions to access healthcare and to patent expiration, what can directly impact the business revenues.

With respect to Novartis core business, its worldwide business operations provide the top-class treatments in areas such Gene therapies and Oncology and is the pioneer in delivering novel approaches to help worldwide population to access high-quality generic medicines. The company is always investing in the development of new products and treatments and in the improvement of the current blockbusters that are bringing most of the company revenues. Indeed, with an investment in **R&D of 18-19% YoY**, the most recent **acquisitions of the Medicines Company and the Aspen Global Incorporated⁷**, makes reliable that the company wants to continue to be one of the top leaders in the market and to become the world's leading generic company with revenues growth of **+4,8% 2017-2020 CAGR** (Appendix 3 and 4) revenue growth expectation of **+5,4% 2020-2026 CAGR**. Also, and to expand its business, the company it's focusing on emerging markets, having projected that **China revenues will be 20% of total company revenues by 2026**.

In terms of environmental awareness, the company has incorporated ESG metrics in all its operations, having set numerous targets, as becoming **carbon, water and waste neutral till 2030**. This, together with the Novartis solid **CFO generation (+4% 2020-2026F CAGR)**, its constant and higher than the average industry **EBITDA margin (30%, 2020-2026F)** and its **attractive dividend policy**, gives Novartis investors' confidence to continue investing in the company.

Valuation Methods

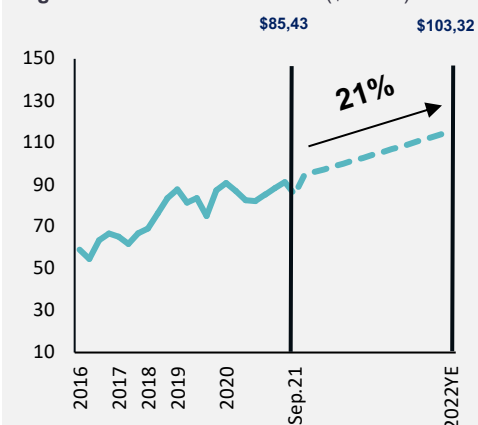
I have computed Novartis target price of \$103,32 using a DCF method (Figure 32). Additionally, different methods as FTE, APV and DDM were computed and similar price targets were achieved, with a range of \$105,31/sh. to \$112,60/sh.. Using the Market approach, the price target ranges from \$95,22/sh. to \$138,79/sh.. Therefore, the **BUY** investment recommendation stands as it is.

Investment Risks

Novartis faces significant risks and uncertainties and the business, reputation, financial condition, results and operations and share price can be materially affected by them, so investors must consider all the information before deciding to invest in Novartis securities.

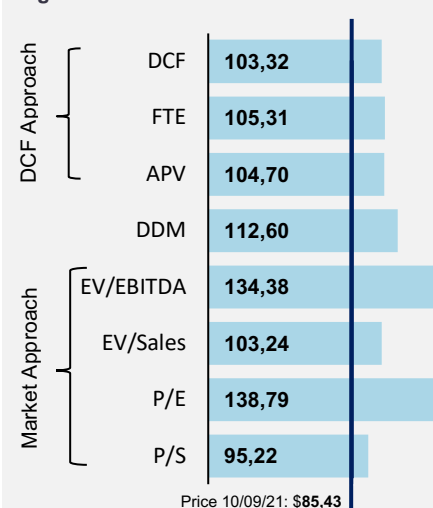
Increase **price pressure** from the governments, **patent expiration** and **R&D failure** are the most adverse risks that can hardly impact Novartis revenues and consequently share price. Additionally, as Novartis is a worldwide company, changes in exchange rates between US dollar⁸ and other currencies can impact Novartis sales, costs and earnings, as 66% of the sales are outside US.

Figure 31: Novartis 2022YE PT (\$ share)



Source: Author Analysis

Figure 32: Valuation Methods PT



Source: Author Analysis

⁷ Fifth-Largest supplier of generic pharmaceutical products in the world

⁸ Novartis reporting currency

Valuation

Valuation started in the middle of the 18th century in the Industrial Age, when big companies start to be forming due to technology evolution and start to be sold. With the pass of the years, methodologies for companies' valuation have been evolved and nowadays, the most common methods are DCF analysis and multiples valuation⁹, but there are some new methods, although not well explored¹⁰.

Discounted Cash Flow Method

The present value of parts approach

The first method used to evaluate the 2022 Novartis Price Target was the DCF method (Appendix 17). Using the FCFE forecast from 2022 to 2026 and a normalized FCFE for the long term (Appendix 16), I have estimated the price target of \$103,32/sh., having an upside potential of 21% from the current share price of \$85,43 and leading me to a **BUY** recommendation.

The key factors that influence this valuation are: **1) Segments revenues growth**, **2) WACC assumptions** and **3) terminal value assumptions**.

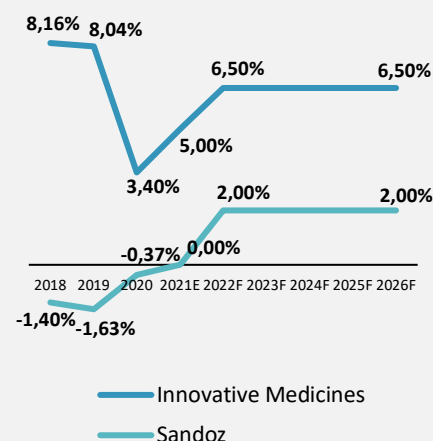
Segments revenues growth

As explained before, the strong growth ability of Novartis segments continues to be the key value factor for the company (Appendix 9). The most important key drivers for revenues have been the constant increasing and the ageing population. Although population from some western countries are forecasted to decline in the upcoming years, countries as India and China, the two most populated countries in the world, have a growth trend. To complement this, China, in 2021, announced that babies per family will increase from 2 to 3. Also, the population is getting older, so the need for medicines will increase. Based on these factors, the revenue outlook for the future seems optimistic.

For the last 2 years, the company has experienced a revenue growth of ~8.0% in **Innovative Medicines** segment due to significant investments in acquisitions (The Medicines company), development of new medicines and due to increase of the demand for some company key blockbusters. Also, it is forecasted an increase in medicines prescription of +7,3% 2020-2026F CAGR. Although the market is suffering significant price pressure and regulations from the governments and it is expected to increase in the incoming years, I anticipate a +6,5% growth target per year between 2020 and 2026F, as the company is managing and overcoming very well these factors. (Figure 33).

Regarding **Sandoz**, the generic and biosimilars segment, it is having negative growth since 2018 (~-1% 2018-2020 CAGR) due to high market competition and price pressure. Nevertheless, the company has the goal the to become the market leader in the upcoming years and it recently acquired the fifth-largest generic supplier in the world, Aspen Global Incorporated to have a higher presence in Japan's marketplace, the third-largest market for generics and off-patent medicines in the world. This acquisition will also enhance the Novartis' presence in the

Figure 33: Innovative Medicines and Sandoz segments revenue growth



Source: Author Analysis

Table 7: Novartis Cost of Equity and WACC

Risk Free Rate	1,80%
Beta	1,04
Equity Risk Premium	6,25%
Cost of Equity	8,31%
Weight of Equity	80%
Cost of Debt	2,41%
Tax Rate	15%
Weight of Debt	20%
WACC	7,06%

Source: Author Analysis

⁹ For more understanding of Valuation Methods see Damodaran, A., 2007. *Valuation approaches and metrics*.

¹⁰ Manu Sharma. Variant-Triggered Multiple-Based Probabilistic Valuation Model (VTMP) for Private Equity Investments.

hospital channels in Japan's. Due to these reasons, and as the worldwide generic sales is forecasted to be 3,5% CAGR till 2026, I forecasted a growth of +2% 2020-2026F to be aligned with the company strategy, yet conservative as the generic industry is facing some price pressure.

WACC assumptions

Using the CAPM¹¹ method, a **cost of equity** of 8,31% was reached (Table 7). **RFR** was based in the United States 10-Year Bond yields and ranges between 1,27% to 1,98%, using different methods, yet I used a 1,80% as it is aligned with the market future estimation (Appendix 10).

The **Beta** of 1,04 was calculated using an average of the leveraged beta in Damodaran and the leveraged beta adjusted for cash of the company, using the Pure Play Method, to account for the company debt structure and to be aligned with the industry beta (Appendix 11).

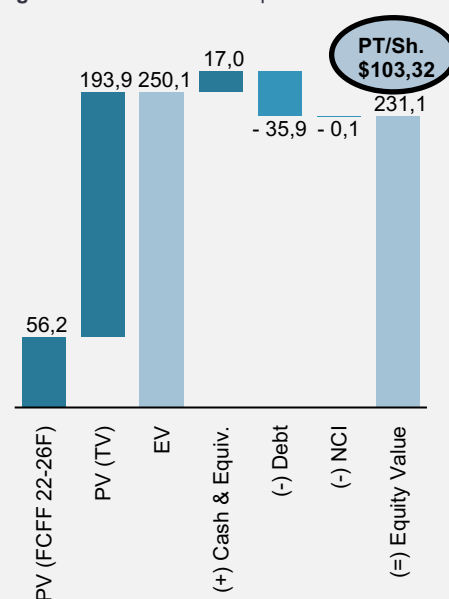
ERP of 6,25% was computed using a weighted average of the company's ERP by percentage of sales per region based on an operational based CRP approach (Appendix 12).

Cost of Debt of 2,41% was forecasted as a percentage of interest expenses in total debt, similar as using a Credit Default Spread (Appendix 13). Using a target market capital structure of 20% D/EV, as the company wants to continue to provide an attractive capital structure and I expect that it will be like the industry in the long run, a **WACC¹² of 7,06%** was estimated (Appendix 14) (Table 7).

Terminal Value assumptions

Novartis is a worldwide company with a strong brand recognition. His current acquisitions and expansion through emergency markets, makes me believe that the company will continue to growth and will met its long-term goals. I expect a sustainable long-term growth of 2%, consistent with the +2,2% 2020-2026F CAGR, yet conservative as the global economy is expected to increase at a +3,3% growth rate in the long run (Appendix 15). Using the Gordon Model¹³, the normalized terminal value represents 78% of the company total valuation (Appendix 16) (Figure 34).

Figure 34: 2022YE PT components



Source: Author Analysis

Figure 35: DPS vs Payout Ratio

¹¹ For more deep learning of the method history see Sharpe, W., 1964. Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk.

¹² For literature review regarding the usage of this rate for company valuation see Modigliani, F. and H. Miller, M., 1958. The Cost of Capital, Corporation Finance and the Theory of Investment.

¹³ Other methods can be used to calculate terminal value. See ten Beitel, T., 2016. Terminal value calculations with the Discounted Cash Flow model.

Adjusted Present Value Method

Considering that Novartis has a well-defined debt schedule, I compute an **Adjusted Present Value**¹⁴ as a method for the company valuation. Using the FCFF and an unlevered cost of equity of 7,05%, a 2022F PT of \$104,70 was reached (Appendix 19).

Free Cash Flow-to-Equity Method

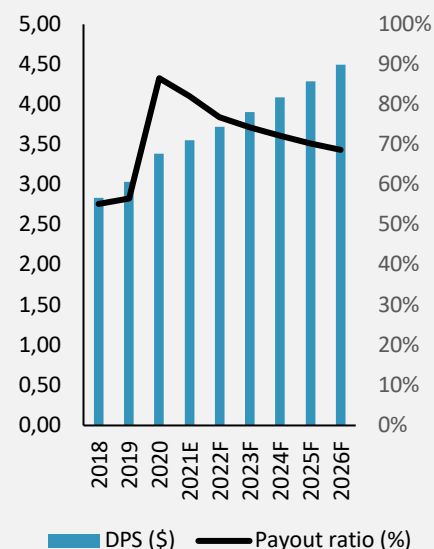
As I do not expect changes in the capital structure of the company, through FCFE and a cost of capital of 8,31%, a price target of \$105,31/sh. was computed (Appendix 18).

Dividend Discount Model

Novartis well established dividend policy is to continue to grow the dividend payment over time. In the forecasted years, the payout ratio is slightly decreasing and it might converge to historical values (~60%) and the dividend yield is ~5% (Figure 35). 2020 NI decrease of ~30% was an outlier due to coronavirus. However, the company increased the dividend payment from CHF2,95 to CHF3 (\$3,04 to \$3,39). Using the Gordon Model, a \$112,60 2022F/sh. PT was calculated. (Appendix 20).

Market-Based Valuation

A relative valuation method¹⁶ was performed in addition to all methods. Using the peers market multiples, a price target of \$95,22/sh. to \$138,79/sh. was achieved (Appendix 22).



¹⁴ The most flexible valuation model because it separates the value of operations as the company was all equity financed and the value of tax shields arise from debt financing (Koller, T., Goedhart, M. and Wessels, D., 2020. *Valuation workbook*)

¹⁶ Schueler, A., 2020. Valuation with Multiples: A Conceptual Analysis. *Journal of Business Valuation and Economic Loss Analysis*.

Financial Analysis

Strong Cash Generation leads to solid Liquidity

Novartis is continuously tracking and projecting his **liquidity position** to preserve liquidity and funding capability. In the past 2 years, cash ratio was severely hit, decreasing almost 50%, 0,29x in 2020 (Appendix 7), from 0,45x in 2018. This was mainly to dividend payments and purchase of treasury shares. Although the company as a dividend policy to increase dividends over time, the strong CFO of \$13.65B in 2020 (Appendix 5 and 6), aligned with 2019 and the growth expectation of +3,6% 2020-2026F CAGR, I expect that the cash ratio will achieve the value of 1x by 2026F. Current ratio and Quick ratio tell us a similar story. Despite the flat growth in inventories and receivables, the current ratio is pulled down (2018-2020) due to cash decrease. Current ratio increases from 0,96 in 2021E to 1,70 in 2026F with Quick Ratio following the same path, growing from 0,75 to 1,44 in the same period (Table 8).

Mature company means stable efficiency and profitability

Novartis is a mature company in a mature industry, so it is expected that **efficiency continues to be stable over time**. The company experienced in the past 2 years a slight improvement in the cash cycle (122,75x to 102,09x in the period of 2018-2020) due to a decrease in days in inventory and an increase in the payables period. I anticipate an increase in 2021 to 121,38 as there are delays in the supply chains due to Coronavirus, but in the long run it is expected a constant ratio (112,69x in 2021E compared to 105,86x in 2026F). Total assets turnover will barely move, ranging between 0,40x-0,45x (2020-2026F), meaning that company's assets will generate more revenues.

Novartis is showing a stable trend for **profitability** since 2018. Gross Profit margin and EBITDA margin improve ~3-4% between 2018 and 2020, and I expect constant margins (80% Gross margin and 31% EBITDA margin) in the forecasted period (Figure 36). NPM decrease from 27% to 16% (2018-2020) due to the decrease in income from associated companies caused by the divestiture of Alcon Eye Care division in 2019, but I expect an increase of this margin to 21% by 2026F, mainly driven by higher sales and productivity. ROE will stabilize at 17%-20% in the next 5 years, driven by the company's stability in generating profits.

Financial health

Gross debt is stable over time and combined with the growth in EBITDA (+5,6% CAGR from 2020-2026F) and the continued revenue growth expectation, I anticipate a Debt/EBITDA down from 2,36 to 2,05 (2020-2026F)(Figure 37).

Interest coverage ratio shows how strong Novartis can handle its outstanding debt (9,02 to 11,68 during 2018-2020 and an expected 19,13 by 2026F)(Figure 37).

Debt ratio increased from 22% to 27% (2018-2020) due to an increase of +8.0 billion intangibles assets (Medicines company and Aspen Global Incorporated acquisition) (Appendix 1 and 2), the issue of a \$5.9B euro-denominated sustainability-linked bond, a \$1.8Bn US dollar bonds and treasury share repurchase obligation and a decrease in Goodwill due to the divestiture of the Alcon Eye care division.

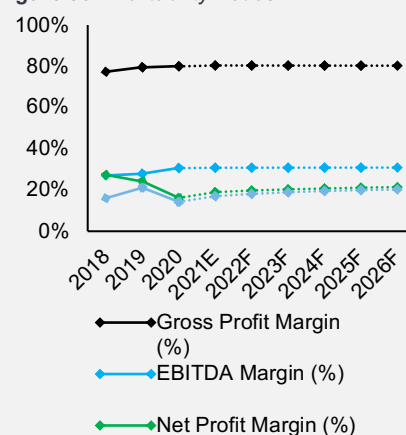
As the company aims to have an **attractive debt structure over time**, I forecast this ratio stable (+27% 2020-2026F) and a D/E ratio of ~60% during the forecasted period (Figure 38 and Appendix 8).

Table 8: Novartis Liquidity Ratios

Liquidity Ratios	2020	2022F	2026F
Current Ratio	0,90	1,08	1,70
Quick Ratio	0,68	0,86	1,44
Cash Ratio	0,27	0,49	1,00

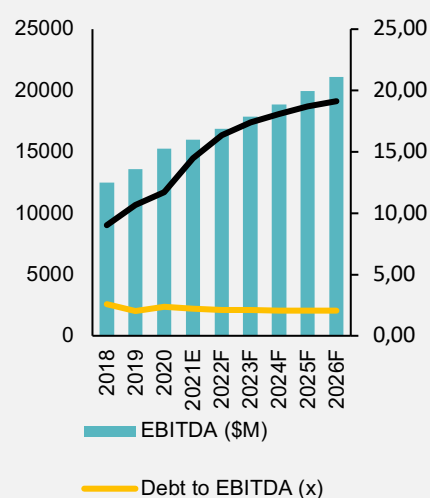
Source: Author Analysis

Figure 36: Profitability Ratios



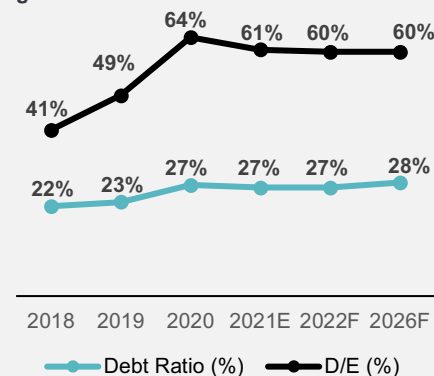
Source: Author Analysis

Figure 37: Interest Coverage Ratio and Debt vs EBITDA (in millions)



Source: Author Analysis

Figure 38: Debt Structure Ratios



Source: Author Analysis

Investment Risks

Novartis faces significant risks and uncertainties that could materially affect the company's business. The risks can be aggregate as Operational, Market, Regulatory and Legal and Global risks (Figure 39).

Operational Risks

R&D Risk [OP1]

The development of new medicines and improvement of the existing ones, be it internally or through collaborations, is a complex, time-consuming and costly procedure. Companies depend significantly on the success of R&D activities to grow business through the replacement of revenues due to generic or other competition, and to deliver to market products and therapies that can give advantage to them. Failure or delay on this procedure can be very harmful to companies.

Supply Chain Risk [OP2]

Novartis products' may require complex manufacturing processes and highly specialized raw materials and technologies, such as gene therapies. Therefore, some products might depend on a single source of supply, so the company plan his production well in advance to avoid the risk of production failures. Inability to maintain this supply complex processes may result in supply interruptions, what can be very harmful to the company.

Market Risks

Pricing and reimbursement pressure Risk [MR1]

The industry is facing constant pricing and reimbursement pressures from governments and overall payers giving the increase on healthcare costs as a percentage of gross domestic product and the demand for healthcare from the population. These pressures are generating public debates and controversies regarding pharmaceutical pricing, funding restrictions, investigations and legal proceedings, pressures that some consider excessive. This can negatively impact Novartis products and the ability to access the market.

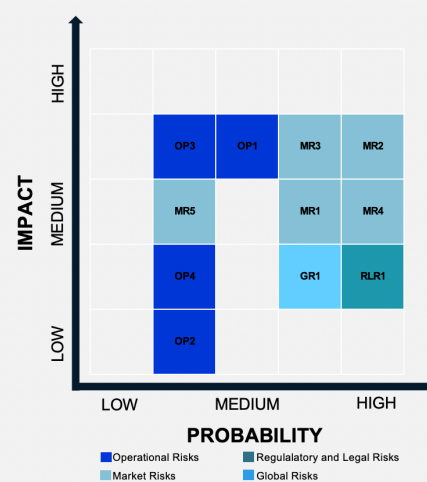
Intellectual Property Risk [MR2]

Although pharmaceutical products are protected by intellectual property rights, giving exclusivity on the market, the duration of each patent can vary and may be challenged by third parties or governmental authorities. The loss of intellectual protection and the introduction of a generic or biosimilar product for the same class of products in the market, can result in a sharp fall in Novartis sales. Therefore, the impact is high.

Generic Competition Risk [MR3]

Generic products pose a significant competition for generic medicines as they have a lower price, what can change drastically consumer preferences and consequently decrease sales. These factors could be extremely harmful for the company. Nevertheless, Novartis has a well-stable generic producer division and acquired in 2020 the Aspen Global Incorporated company, the fifth-largest supplier of generic medicine in the world, so the company can mitigate this risk.

Figure 39: Risk matrix



Source: Author Analysis

Foreign currency exchange rates risk [MR4]

Novartis is an international company with 66% sales out of the United States. Changes in exchange rates between the US dollar and other currencies can result in increases or decreases in all the financial statements items of Novartis (Figure 40).

Impose controls by countries on the exchange of foreign currencies and high inflation rates can be some of the causes that can lead to this exchange rate volatility. Although Novartis takes measures to mitigate this risk, any change can negatively and materially impact his financial condition and operational result.

Regulatory and Legal Risks

Legal and Compliance Risk [RLR1]

Novartis is required to comply with the laws of all countries it operates. These laws and regulations are complex, extensive and can change substantially, depending on the evolving government enforcements and private party litigation priorities. Pricing, bribery and corruption, trade regulations and healthcare fraud are some of the issues that can lead to governmental investigations and law enforcements. Failure to comply with these laws and regulations will lead to cost for companies, which can be extremely damaging and jeopardize their operations.

Global Risks

Pandemic Risk [GR1]

Covid-19 was an unusual event in the world that reshape how healthcare is being delivered. With worldwide lockdowns and the changing of focus to the virus vaccine, companies suffer a decrease in sales in areas not related to this. Also, the old ways of delivering medicines were not working, so companies needed to invest in technologies and digitalization that enable them to find other ways to continue delivering medicine to patients. Supply chain delays, cybersecurity breaches are other risks that comes attached with this pandemic. Therefore, the impact is high but will be of low probability in a near future.

Other relevant risks, see **Appendix 25**.

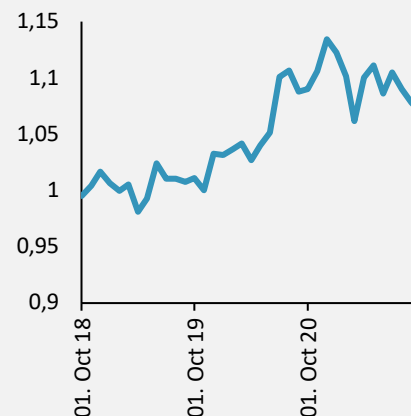
Sensitivity analysis to Price Target

As stated before, Novartis faces a broad range of risks that can jeopardize the investment recommendation. Therefore, it was performed a sensitivity analysis to assess the change in price target with variations in different variables.

Segments Revenues Growth

Due to the high competition in Pharma industry, Novartis segments growth were stressed in a sensitivity analysis (Table 9). In a very pessimistic scenario where Sandoz growth rate is 0% and Innovative Medicines is 4,5%, there is still room for an upside potential of +19% until 2022YE.

Figure 40: USD/CHF spot prices



Source: Yahoo Finance

Table 9: Sensitivity analysis for the Segments Revenues growth

		Innovative Medicines growth rate								
		4,50%	5,00%	5,50%	6,00%	6,50%	7,00%	7,50%	8,00%	8,50%
Sandoz growth rate	103,32									
	0,00%	101,61	101,96	102,31	102,67	103,03	103,39	103,76	104,14	104,52
	0,50%	101,68	102,03	102,38	102,74	103,10	103,47	103,84	104,21	104,59
	1,00%	101,76	102,10	102,46	102,81	103,17	103,54	103,91	104,28	104,66
	1,50%	101,83	102,18	102,53	102,89	103,25	103,61	103,98	104,36	104,74
	2,00%	101,91	102,26	102,61	102,96	103,32	103,69	104,06	104,43	104,81
	2,50%	101,98	102,33	102,68	103,04	103,40	103,77	104,14	104,51	104,89
	3,00%	102,06	102,41	102,76	103,12	103,48	103,84	104,21	104,59	104,97
	3,50%	102,14	102,49	102,84	103,20	103,56	103,92	104,29	104,67	105,05
	4,00%	102,22	102,57	102,92	103,28	103,64	104,00	104,37	104,75	105,13

Source: Author analysis

WACC vs Long-run sustainable growth rate (g)

WACC and the terminal growth rate are the most important variables in company valuation, so a variation on them will affect the recommendation. The base case is a 7,06% WACC and a 2% g. Each WACC decrease (increase) of 10bps will lead to a PT \$1,60-2,01/sh. decrease (increase) and each long-run sustainable growth rate decrease (increase) of 10bps will lead to a decrease (increase) of \$1,35-2,51/sh. in PT. Even in the worst-case scenario, there is room for a +5% PT upside potential (Table 10).

Table 10: WACC vs Long-run sustainable growth rate (g)

		Long-run sustainable growth rate (g)								
		1,60%	1,70%	1,80%	1,90%	2,00%	2,10%	2,20%	2,30%	2,40%
WACC	103,32									
	6,66%	104,41	106,27	108,20	110,21	112,31	114,50	116,79	119,18	121,68
	6,76%	102,35	104,13	105,97	107,90	109,91	112,00	114,18	116,46	118,85
	6,86%	100,36	102,07	103,84	105,68	107,60	109,60	111,69	113,87	116,14
	6,96%	98,45	100,08	101,78	103,55	105,39	107,30	109,30	111,38	113,55
	7,06%	96,60	98,18	99,81	101,50	103,27	105,10	107,01	109,00	111,07
	7,16%	94,83	96,34	97,91	99,53	101,23	102,98	104,81	106,71	108,70
	7,26%	93,11	94,57	96,07	97,64	99,26	100,95	102,70	104,52	106,42
	7,36%	91,46	92,86	94,31	95,81	97,37	98,99	100,67	102,42	104,24
	7,46%	89,86	91,21	92,60	94,05	95,55	97,10	98,72	100,39	102,14

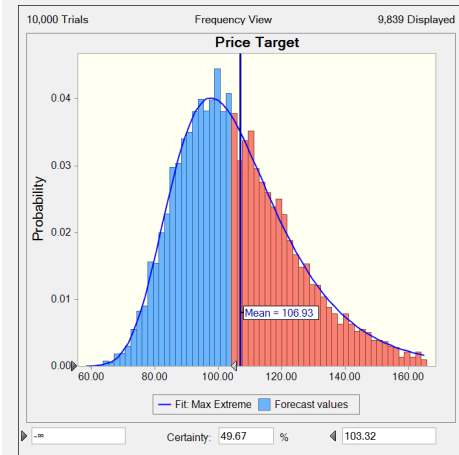
Source: Author analysis

Monte Carlo Simulation

I performed a Monte Carlo simulation (Figure 41) as an additional analysis for my valuation, assuming variations in both segments growth rates, WACC and long-run sustainable growth rate (g).

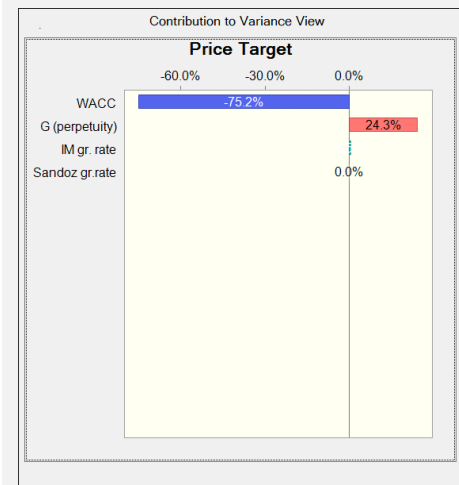
The mean of the analysis is \$106,93/sh. and the method provides a certainty of 49,67% to my BUY recommendation. Also, it is possible to verify that the PT is more sensitive to WACC variations (Figure 42).

Figure 41: Monte Carlo Simulation



Source: Author analysis

Figure 42: PT assumptions sensitivity



Source: Author analysis

Appendices

Appendix 1: Statement of Financial Position

BALANCE SHEET	Unit	2018	2019	2020	2021E	2022F	2023F	2024F	2025F	2026F	CAGR 21E-26F
Non-current assets											
Property, plant and equipment	\$m, nom.	15696	12069	12263	12435	12752	13121	13543	14019	14549	3,19%
Right-of-use assets	\$m, nom.	0	1677	1676	1346	1081	869	698	560	450	-19,68%
Goodwill	\$m, nom.	35294	26524	29999	29999	29999	29999	29999	29999	29999	0,00%
Intangible assets other than goodwill	\$m, nom.	38719	28787	36809	34543	33141	31925	30886	30016	29306	-3,23%
Investments in associated companies	\$m, nom.	8352	8644	9632	9632	9632	9632	9632	9632	9632	0,00%
Deferred tax assets	\$m, nom.	8699	7909	8214	8214	8214	8214	8214	8214	8214	0,00%
Financial assets	\$m, nom.	2345	2518	2901	2551	2551	2551	2551	2551	2551	0,00%
Other non-current assets	\$m, nom.	895	738	892	931	931	931	931	931	931	0,00%
Total non-current assets	\$m, nom.	110000	88866	102386	99652	98301	97242	96454	95923	95633	-0,82%
Current assets											
Inventories	\$m, nom.	6956	5982	7131	7256	7247	7663	8106	8580	9080	4,59%
Trade receivables	\$m, nom.	8727	8301	8217	8555	9030	9537	10077	10655	11264	5,66%
Income tax receivables	\$m, nom.	248	254	239	239	239	239	239	239	239	0,00%
Marketable securities, commodities, time deposits and derivative financial instruments	\$m, nom.	2693	334	1905	379	379	379	379	379	379	0,00%
Cash and cash equivalents	\$m, nom.	13271	11112	9658	13120	16574	20567	24863	29824	35341	21,92%
Other current assets	\$m, nom.	2861	2680	2523	2627	2773	2928	3094	3272	3459	5,66%
Total current assets without disposal group	\$m, nom.	34756	28663	29673	32176	36241	41314	46758	52949	59762	13,18%
Assets of disposal group held for sale	\$m, nom.	807	841	0	0	0	0	0	0	0	
Total current assets	\$m, nom.	35563	29504	29673	32176	36241	41314	46758	52949	59762	13,18%
Total assets	\$m, nom.	145563	118370	132059	131827	134542	138556	143213	148872	155394	3,34%
Equity											
Share capital	\$m, nom.	944	936	913	913	913	913	913	913	913	0,00%
Treasury shares	\$m, nom.	-69	-80	-53	-53	-53	-53	-53	-53	-53	0,00%
Reserves	\$m, nom.	65128	42886	47666	47180	48022	49443	51361	53771	56687	3,74%
Net income of the period	\$m, nom.	12611	11732	8072	9843	10826	11746	12681	13651	14642	8,27%
Equity attributable to Novartis AG shareholders	\$m, nom.	78614	55474	56598	57884	59708	62049	64902	68282	72189	4,52%
Non-controlling interests	\$m, nom.	78	77	68	72	77	82	87	93	99	6,58%
Total equity	\$m, nom.	78692	55551	56666	57956	59785	62131	64990	68376	72288	4,52%
Non-current liabilities											
Financial Debts	\$m, nom.	22470	20353	26259	24988	25769	27177	28759	30790	33138	5,81%
Lease liabilities	\$m, nom.	0	1703	1719	1512	1304	1166	1027	889	750	-13,08%
Deferred tax liabilities	\$m, nom.	7475	5867	7422	7422	7422	7422	7422	7422	7422	0,00%
Provisions and other non-current liabilities	\$m, nom.	7319	6632	6934	6558	6558	6558	6558	6558	6558	0,00%
Total non-current liabilities	\$m, nom.	37264	34555	42334	40480	41053	42323	43766	45659	47868	3,41%
Current liabilities											
Trade payables	\$m, nom.	5556	5424	5403	5498	5810	6144	6499	6879	7279	5,78%
Financial debts and derivative financial instruments	\$m, nom.	9678	7031	9785	10102	10102	10235	10235	10235	10235	0,26%
Lease liabilities	\$m, nom.	0	246	286	208	208	139	139	139	139	-7,77%
Current income tax liabilities	\$m, nom.	2038	2194	2458	2458	2458	2458	2458	2458	2458	0,00%
Provisions and other current liabilities	\$m, nom.	12284	13338	15127	15127	15127	15127	15127	15127	15127	0,00%
Total current liabilities without disposal group	\$m, nom.	29556	28233	33059	33392	33704	34102	34457	34837	35238	1,08%
Liabilities of disposal group held for sale	\$m, nom.	51	31	0	0	0	0	0	0	0	
Total current liabilities	\$m, nom.	29607	28264	33059	33392	33704	34102	34457	34837	35238	1,08%
Total liabilities	\$m, nom.	66871	62819	75393	73872	74757	76425	78223	80496	83106	2,38%
Total equity and liabilities	\$m, nom.	145563	118370	132059	131827	134542	138556	143213	148872	155394	3,34%

Appendix 2: Common size Statement of Financial Position

BALANCE SHEET (Common size)	2 018	2019	2020	2021E	2022F	2023F	2024F	2025F	2026F
Non-current assets									
Property, plant and equipment	10,78%	10,20%	9,29%	9,43%	9,48%	9,47%	9,46%	9,42%	9,36%
Right-of-use assets	0,00%	1,42%	1,27%	1,02%	0,80%	0,63%	0,49%	0,38%	0,29%
Goodwill	24,25%	22,41%	22,72%	22,76%	22,30%	21,65%	20,95%	20,15%	19,31%
Intangible assets other than goodwill	26,60%	24,32%	27,87%	26,20%	24,63%	23,04%	21,57%	20,16%	18,86%
Investments in associated companies	5,74%	7,30%	7,29%	7,31%	7,16%	6,95%	6,73%	6,47%	6,20%
Deferred tax assets	5,98%	6,68%	6,22%	6,23%	6,11%	5,93%	5,74%	5,52%	5,29%
Financial assets	1,61%	2,13%	2,20%	1,94%	1,90%	1,84%	1,78%	1,71%	1,64%
Other non-current assets	0,61%	0,62%	0,68%	0,71%	0,69%	0,67%	0,65%	0,63%	0,60%
Total non-current assets	75,57%	75,07%	77,53%	75,59%	73,06%	70,18%	67,35%	64,43%	61,54%
Current assets									
Inventories	4,78%	5,05%	5,40%	5,50%	5,39%	5,53%	5,66%	5,76%	5,84%
Trade receivables	6,00%	7,01%	6,22%	6,49%	6,71%	6,88%	7,04%	7,16%	7,25%
Income tax receivables	0,17%	0,21%	0,18%	0,18%	0,18%	0,17%	0,17%	0,16%	0,15%
Marketable securities, commodities, time deposits and derivative financial instruments	1,85%	0,28%	1,44%	0,29%	0,28%	0,27%	0,26%	0,25%	0,24%
Cash and cash equivalents	9,12%	9,39%	7,31%	9,95%	12,32%	14,84%	17,36%	20,03%	22,74%
Other current assets	1,97%	2,26%	1,91%	1,99%	2,06%	2,11%	2,16%	2,20%	2,23%
Total current assets without disposal group	23,88%	24,21%	22,47%	24,41%	26,94%	29,82%	32,65%	35,57%	38,46%
Assets of disposal group held for sale	0,55%	0,71%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Total current assets	24,43%	24,93%	22,47%	24,41%	26,94%	29,82%	32,65%	35,57%	38,46%
Total assets	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%
Equity									
Share capital	0,65%	0,79%	0,69%	0,69%	0,68%	0,66%	0,64%	0,61%	0,59%
Treasury shares	-0,05%	-0,07%	-0,04%	-0,04%	-0,04%	-0,04%	-0,04%	-0,04%	-0,03%
Reserves	44,74%	36,23%	36,09%	35,79%	35,69%	35,68%	35,86%	36,12%	36,48%
Net income of the period	8,66%	9,91%	6,11%	7,47%	8,05%	8,48%	8,85%	9,17%	9,42%
Equity attributable to Novartis AG shareholders	54,01%	46,86%	42,86%	43,91%	44,38%	44,78%	45,32%	45,87%	46,46%
Non-controlling interests	0,05%	0,07%	0,05%	0,05%	0,06%	0,06%	0,06%	0,06%	0,06%
Total equity	54,06%	46,93%	42,91%	43,96%	44,44%	44,84%	45,38%	45,93%	46,52%
Non-current liabilities									
Financial Debts	15,44%	17,19%	19,88%	18,96%	19,15%	19,61%	20,08%	20,68%	21,33%
Lease liabilities	0,00%	1,44%	1,30%	1,15%	0,97%	0,84%	0,72%	0,60%	0,48%
Deferred tax liabilities	5,14%	4,96%	5,62%	5,63%	5,52%	5,36%	5,18%	4,99%	4,78%
Provisions and other non-current liabilities	5,03%	5,60%	5,25%	4,97%	4,87%	4,73%	4,58%	4,41%	4,22%
Total non-current liabilities	25,60%	29,19%	32,06%	30,71%	30,51%	30,55%	30,56%	30,67%	30,80%
Current liabilities									
Trade payables	3,82%	4,58%	4,09%	4,17%	4,32%	4,43%	4,54%	4,62%	4,68%
Financial debts and derivative financial instruments	6,65%	5,94%	7,41%	7,66%	7,51%	7,39%	7,15%	6,88%	6,59%
Lease liabilities	0,00%	0,21%	0,22%	0,16%	0,15%	0,10%	0,10%	0,09%	0,09%
Current income tax liabilities	1,40%	1,85%	1,86%	1,86%	1,83%	1,77%	1,72%	1,65%	1,58%
Provisions and other current liabilities	8,44%	11,27%	11,45%	11,47%	11,24%	10,92%	10,56%	10,16%	9,73%
Total current liabilities without disposal group	20,30%	23,85%	25,03%	25,33%	25,05%	24,61%	24,06%	23,40%	22,68%
Liabilities of disposal group held for sale	0,04%	0,03%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Total current liabilities	20,34%	23,88%	25,03%	25,33%	25,05%	24,61%	24,06%	23,40%	22,68%
Total liabilities	45,94%	53,07%	57,09%	56,04%	55,56%	55,16%	54,62%	54,07%	53,48%
Total equity and liabilities	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%

Appendix 3: Income Statement

INCOME STATEMENT	Unit	2018	2019	2020	2021E	2022F	2023F	2024F	2025F	2026F	CAGR 21E-26F
Net Sales to third parties from continuous operations	\$m, nom.	44751	47445	48659	50773	53657	56739	60017	63527	67227	5,78%
Innovative Medicines	\$m, nom.	35633	38497	39805	41795	44512	47405	50487	53768	57263	6,50%
Sandoz	\$m, nom.	10036	9872	9835	9835	10032	10232	10437	10646	10859	2,00%
Corporate	\$m, nom.	-836	-871	-981	-858	-886	-899	-906	-887	-895	0,85%
Sales to discontinued segments	\$m, nom.	82	53	0	0	0	0	0	0	0	0,00%
Net Sales from continuing operations	\$m, nom.	44833	47498	48659	50773	53657	56739	60017	63527	67227	5,78%
Other revenues	\$m, nom.	1 266	1 179	1 239	1 177	1 177	1 177	1 177	1 177	1 177	0,00%
Cost of Goods Sold	\$m, nom.	10 441	9 939	10 011	10 186	10 765	11 383	12 041	12 745	13 488	5,78%
Gross profit from continuing operations	\$m, nom.	35 658	38 738	39 887	41 763	44 069	46 532	49 153	51 958	54 916	5,63%
Selling, General and administration	\$m, nom.	13 717	14 369	14 197	15 232	16 097	17 022	18 005	19 058	20 168	5,78%
Research and development	\$m, nom.	8 489	9 402	8 980	9 527	10 068	10 646	11 261	11 920	12 614	5,78%
Other income	\$m, nom.	1 629	2 031	1 742	1 831	1 831	1 831	1 831	1 831	1 831	0,00%
Other expense	\$m, nom.	2 609	3 426	3 190	2 841	2 841	2 841	2 841	2 841	2 841	0,00%
EBITDA	\$m, nom.	12 472	13 572	15 262	15 995	16 894	17 855	18 877	19 971	21 124	5,72%
Depreciations and Amortizations	\$m, nom.	4 069	4 486	5 110	4 369	4 139	4 003	3 898	3 819	3 766	2,93%
Operating income from continuing operations (EBIT)	\$m, nom.	8 403	9 086	10 152	11 626	12 755	13 851	14 979	16 152	17 359	8,35%
Income from associated companies	\$m, nom.	6 438	659	673	673	673	673	673	673	673	0,00%
Interest expense	\$m, nom.	932	850	869	803	780	797	828	863	908	2,47%
Other financial income and expense	\$m, nom.	186	45	-78	49	49	49	49	49	49	0,00%
Income before taxes from continuing operations	\$m, nom.	14 095	8 940	9 878	11 544	12 698	13 776	14 873	16 010	17 173	8,27%
Taxes	\$m, nom.	1 295	1 793	1 807	1 697	1 867	2 025	2 186	2 354	2 524	8,27%
Net income from continuing operations	\$m, nom.	12 800	7 147	8 071	9 847	10 831	11 751	12 686	13 657	14 648	8,27%
Net income/(loss) from discontinued operations	\$m, nom.	-186	4 590	0	0	0	0	0	0	0	0,00%
Net income attributed to:	\$m, nom.	12 614	11 737	8 071	9 847	10 831	11 751	12 686	13 657	14 648	8,27%
Shareholders of Novartis AG	\$m, nom.	12 611	11 732	8 072	9 843	10 826	11 746	12 681	13 651	14 642	8,27%
Non-Controlling Interests	\$m, nom.	3	5	-1	4	5	5	5	6	6	8,27%

Appendix 4: Common size Income Statement

INCOME STATEMENT (Common size)	2 018	2019	2020	2021E	2022F	2023F	2024F	2025F	2026F
Net Sales to third parties from continuous operations	97,08%	97,47%	97,52%	97,73%	97,85%	97,97%	98,08%	98,18%	98,28%
Innovative Medicines	77,30%	79,09%	79,77%	80,45%	81,18%	81,85%	82,50%	83,10%	83,71%
Sandoz	21,77%	20,28%	19,71%	18,93%	18,29%	17,67%	17,06%	16,45%	15,87%
Corporate	-1,81%	-1,79%	-1,97%	-1,65%	-1,62%	-1,55%	-1,48%	-1,37%	-1,31%
Sales to discontinued segments	0,18%	0,11%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Net Sales from continuing operations	97,25%	97,58%	97,52%	97,73%	97,85%	97,97%	98,08%	98,18%	98,28%
Other revenues	2,75%	2,42%	2,48%	2,27%	2,15%	2,03%	1,92%	1,82%	1,72%
Cost of Goods Sold	22,65%	20,42%	20,06%	19,61%	19,63%	19,66%	19,68%	19,70%	19,72%
Gross profit from continuing operations	77,35%	79,58%	79,94%	80,39%	80,37%	80,34%	80,32%	80,30%	80,28%
Selling, General and administration	29,76%	29,52%	28,45%	29,32%	29,36%	29,39%	29,42%	29,45%	29,48%
Research and development	18,41%	19,32%	18,00%	18,34%	18,36%	18,38%	18,40%	18,42%	18,44%
Other income	3,53%	4,17%	3,49%	3,52%	3,34%	3,16%	2,99%	2,83%	2,68%
Other expense	5,66%	7,04%	6,39%	5,47%	5,18%	4,90%	4,64%	4,39%	4,15%
EBITDA	27,05%	27,88%	30,59%	30,79%	30,81%	30,83%	30,85%	30,87%	30,88%
Depreciations and Amortizations	8,83%	9,22%	10,24%	8,41%	7,55%	6,91%	6,37%	5,90%	5,50%
Operating income from continuing operations (EBIT)	18,23%	18,67%	20,35%	22,38%	23,26%	23,92%	24,48%	24,96%	25,38%
Income from associated companies	13,97%	1,35%	1,35%	1,30%	1,23%	1,16%	1,10%	1,04%	0,98%
Interest expense	2,02%	1,75%	1,74%	1,55%	1,42%	1,38%	1,35%	1,33%	1,33%
Other financial income and expense	0,40%	0,09%	-0,16%	0,09%	0,09%	0,08%	0,08%	0,08%	0,07%
Income before taxes from continuing operations	30,58%	18,37%	19,80%	22,22%	23,16%	23,79%	24,30%	24,74%	25,11%
Taxes	2,81%	3,68%	3,62%	3,27%	3,40%	3,50%	3,57%	3,64%	3,69%
Net income from continuing operations	27,77%	14,68%	16,17%	18,96%	19,75%	20,29%	20,73%	21,11%	21,41%
Net income/(loss) from discontinued operations	-0,40%	9,43%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Net income attributed to:	27,36%	24,11%	16,17%	18,96%	19,75%	20,29%	20,73%	21,11%	21,41%
Shareholders of Novartis AG	27,36%	24,10%	16,18%	18,95%	19,74%	20,28%	20,72%	21,10%	21,41%
Non-Controlling Interests	0,01%	0,01%	0,00%	0,01%	0,01%	0,01%	0,01%	0,01%	0,01%

Appendix 5: Cash Flow Statement

CASH FLOW STATEMENT	Unit	2018	2019	2020	2021E	2022F	2023F	2024F	2025F	2026F	CAGR 21E-26F
Net income from continuing operations	\$m, nom.	12 800	7 147	8071	9847	10831	11751	12686	13657	14648	7,84%
Adjustments to reconcile net income from continuing operations to net cash flows from operating activities from continuing operations											
Reversal of non-cash items and other adjustments	\$m, nom.	1 344	8 563	9 881	3696	3466	3330	3225	3146	3093	-2,81%
Dividends received from associated companies and others	\$m, nom.	719	463	490	523	0	0	0	0	0	0,00%
Interest received	\$m, nom.	241	214	47	6	0	0	0	0	0	0,00%
Interest paid	\$m, nom.	-816	-793	-703	0	0	0	0	0	0	0,00%
Other financial receipts	\$m, nom.	218	28	464	0	0	0	0	0	0	0,00%
Other financial payments	\$m, nom.	-31	-33	-39	-322	0	0	0	0	0	0,00%
Taxes paid	\$m, nom.	-1 506	-1 876	-1 833	0	0	0	0	0	0	0,00%
Net cash flows from operating activities from continuing operations before working capital and provision changes	\$m, nom.	13 111	14 272	16 378	13750	14297	15082	15911	16803	17741	5,54%
Payments out of provisions and other net cash movements in non-current liabilities	\$m, nom.	-638	-924	-2 437	-376	0	0	0	0	0	0,00%
Change in net current assets and other operating cash flow items	\$m, nom.	576	199	-291	-472	-299	-746	-794	-849	-896	31,50%
Net cash flows from operating activities from continuing operations	\$m, nom.	13 049	13 547	13 650	12902	13997	14336	15118	15954	16845	4,74%
Net cash flows from operating activities from discontinued operations	\$m, nom.	1223	78	0	0	0	0	0	0	0	0,00%
Total net cash flows from operating activities	\$m, nom.	14 272	13 625	13 650	12902	13997	14336	15118	15954	16845	4,74%
Purchase of property, plant and equipment	\$m, nom.	-1 254	-1 379	-1 275	-1361	-1436	-1517	-1603	-1695	-1792	5,68%
Proceeds from sales of property, plant and equipment	\$m, nom.	102	857	88	85	0	0	0	0	0	0,00%
Purchase of intangible assets	\$m, nom.	-1 394	-878	-1 310	-1299	-1352	-1427	-1507	-1593	-1684	5,64%
Proceeds from sales of intangible assets	\$m, nom.	823	973	380	629	0	0	0	0	0	0,00%
Purchase of financial assets	\$m, nom.	-205	-302	-230	-78	0	0	0	0	0	0,00%
Proceeds from sales of financial assets	\$m, nom.	165	1 152	723	428	0	0	0	0	0	0,00%
Purchase of other non-current assets	\$m, nom.	-39	-60	-61	-42	0	0	0	0	0	0,00%
Proceeds from sales of other non-current assets	\$m, nom.	9	3	2	3	0	0	0	0	0	0,00%
Acquisitions and divestments of interests in associated companies, net	\$m, nom.	12 854	-6	-7	-4	0	0	0	0	0	0,00%
Acquisitions and divestments of businesses, net	\$m, nom.	-13 683	-3 760	-9 957	0	0	0	0	0	0	0,00%
Purchase of marketable securities and commodities	\$m, nom.	-2 440	-228	-1 900	-95	0	0	0	0	0	0,00%
Proceeds from sales of marketable securities and commodities	\$m, nom.	472	2561	492	1621	0	0	0	0	0	0,00%
Net cash flows used in investing activities from continuing operations	\$m, nom.	-4 590	-1 067	-13 055	-112	-2788	-2944	-3110	-3287	-3476	5,66%
Net cash flows used in investing activities from discontinued operations	\$m, nom.	-1 001	-1 159	-127	0	0	0	0	0	0	0,00%
Total net cash flows used in investing activities	\$m, nom.	-5 591	-2 226	-13 182	-112	-2788	-2944	-3110	-3287	-3476	5,66%
Dividends paid to shareholders of Novartis AG	\$m, nom.	-6 966	-6 645	-6 987	-8088	-8329	-8732	-9155	-9598	-10062	4,84%
Acquisition of treasury shares	\$m, nom.	-2 036	-5 533	-2 842	0	0	0	0	0	0	0,00%
Proceeds from exercise of options and other treasury share transactions	\$m, nom.	700	201	748	0	0	0	0	0	0	0,00%
Increase in non-current financial debts	\$m, nom.	2 856	93	7 126	1318	3369	4130	4304	4754	5070	10,75%
Repayment of non-current financial debts	\$m, nom.	-366	-3 195	-2 003	-2272	-2589	-2589	-2722	-2722	-2722	1,27%
Change in current financial debts	\$m, nom.	1687	-1582	2 261	0	0	0	0	0	0	0,00%
Payments of lease liabilities, net	\$m, nom.	-	-273	-312	-286	-208	-208	-139	-139	-139	-9,61%
Impact of change in ownership of consolidated entities	\$m, nom.	-	-	-2	0	0	0	0	0	0	0,00%
Other financing cash flows, net	\$m, nom.	67	56	-147	0	0	0	0	0	0	0,00%
Net cash flows used in financing activities from continuing operations	\$m, nom.	-4077	-16884	-2 158	-9328	-7756	-7398	-7712	-7705	-7853	0,31%
Net cash flows from/used in financing activities from discontinued operations	\$m, nom.	-167	3257	-50	0	0	0	0	0	0	0,00%
Total net cash flows used in financing activities	\$m, nom.	-4244	-13627	-2 208	-9328	-7756	-7398	-7712	-7705	-7853	0,31%
Net change in cash and cash equivalents before effect of exchange rate changes	\$m, nom.	4437	-2228	-1 740	3462	3453	3993	4296	4962	5517	12,42%
Effect of exchange rate changes on cash and cash equivalents	\$m, nom.	-26	69	286	0	0	0	0	0	0	0,00%
Total net change in cash and cash equivalents	\$m, nom.	4411	-2159	-1 454	3462	3453	3993	4296	4962	5517	12,42%
Cash and cash equivalents at January 1	\$m, nom.	8860	13271	11 112	9658	13120	16574	20567	24863	29824	22,79%
Cash and cash equivalents at December 31	\$m, nom.	13271	11112	9 658	13120	16574	20567	24863	29824	35341	20,84%

Appendix 6: Common size Cash Flow Statement

CASH FLOW STATEMENT (Common size)	2018	2019	2020	2021E	2022F	2023F	2024F	2025F	2026F
Net income from continuing operations	89,69%	52,46%	59,13%	76,32%	77,38%	81,97%	83,92%	85,60%	86,96%
Adjustments to reconcile net income from continuing operations to net cash flows from operating activities from continuing operations									
Reversal of non-cash items and other adjustments	9,42%	62,85%	72,39%	28,64%	24,76%	23,23%	21,33%	19,72%	18,36%
Dividends received from associated companies and others	5,04%	3,40%	3,59%	4,05%	0,00%	0,00%	0,00%	0,00%	0,00%
Interest received	1,69%	1,57%	0,34%	0,05%	0,00%	0,00%	0,00%	0,00%	0,00%
Interest paid	-5,72%	-5,82%	-5,15%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Other financial receipts	1,53%	0,21%	3,40%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Other financial payments	-0,22%	-0,24%	-0,29%	-2,50%	0,00%	0,00%	0,00%	0,00%	0,00%
Taxes paid	-10,55%	-13,77%	-13,43%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Net cash flows from operating activities from continuing operations before working capital and provision changes	91,87%	104,75%	119,99%	106,57%	102,14%	105,20%	105,25%	105,32%	105,32%
Payments out of provisions and other net cash movements in non-current liabilities	-4,47%	-6,78%	-17,85%	-2,91%	0,00%	0,00%	0,00%	0,00%	0,00%
Change in net current assets and other operating cash flow items	4,04%	1,46%	-2,13%	-3,66%	-2,14%	-5,20%	-5,25%	-5,32%	-5,32%
Net cash flows from operating activities from continuing operations	91,43%	99,43%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%
Net cash flows from operating activities from discontinued operations	8,57%	0,57%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Total net cash flows from operating activities	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%	100,00%
Purchase of property, plant and equipment	-8,79%	-10,12%	-9,34%	-10,55%	-10,26%	-10,58%	-10,60%	-10,62%	-10,64%
Proceeds from sales of property, plant and equipment	0,71%	6,29%	0,64%	0,66%	0,00%	0,00%	0,00%	0,00%	0,00%
Purchase of intangible assets	-9,77%	-6,44%	-9,60%	-10,06%	-9,66%	-9,95%	-9,97%	-9,98%	-10,00%
Proceeds from sales of intangible assets	5,77%	7,14%	2,78%	4,88%	0,00%	0,00%	0,00%	0,00%	0,00%
Purchase of financial assets	-1,44%	-2,22%	-1,68%	-0,60%	0,00%	0,00%	0,00%	0,00%	0,00%
Proceeds from sales of financial assets	1,16%	8,46%	5,30%	3,32%	0,00%	0,00%	0,00%	0,00%	0,00%
Purchase of other non-current assets	-0,27%	-0,44%	-0,45%	-0,33%	0,00%	0,00%	0,00%	0,00%	0,00%
Proceeds from sales of other non-current assets	0,06%	0,02%	0,01%	0,02%	0,00%	0,00%	0,00%	0,00%	0,00%
Acquisitions and divestments of interests in associated companies, net	90,06%	-0,04%	-0,05%	-0,03%	0,00%	0,00%	0,00%	0,00%	0,00%
Acquisitions and divestments of businesses, net	-95,87%	-27,60%	-72,95%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Purchase of marketable securities and commodities	-17,10%	-27,60%	-72,95%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Proceeds from sales of marketable securities and commodities	3,31%	18,80%	3,60%	12,56%	0,00%	0,00%	0,00%	0,00%	0,00%
Net cash flows used in investing activities from continuing operations	-32,16%	-7,83%	-95,64%	-0,87%	-19,92%	-20,54%	-20,57%	-20,61%	-20,63%
Net cash flows used in investing activities from discontinued operations	-7,01%	-8,51%	-0,93%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Total net cash flows used in investing activities	-39,17%	-16,34%	-96,57%	-0,87%	-19,92%	-20,54%	-20,57%	-20,61%	-20,63%
Dividends paid to shareholders of Novartis AG	-48,81%	-48,77%	-51,19%	-62,68%	-59,50%	-60,91%	-60,56%	-60,16%	-59,73%
Acquisition of treasury shares	-14,27%	-40,61%	-20,82%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Proceeds from exercise of options and other treasury share transactions	4,90%	1,48%	5,48%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Increase in non-current financial debts	20,01%	0,68%	52,21%	10,21%	24,07%	28,81%	28,47%	29,80%	30,10%
Repayment of non-current financial debts	-2,56%	-23,45%	-14,67%	-17,61%	-18,49%	-18,06%	-18,01%	-17,06%	-16,16%
Change in current financial debts	11,82%	-11,61%	16,56%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Payments of lease liabilities, net	-	-2,00%	-2,29%	-2,22%	-1,48%	-1,45%	-0,92%	-0,87%	-0,82%
Impact of change in ownership of consolidated entities	-	-	-0,01%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Other financing cash flows, net	0,47%	0,41%	-1,08%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Net cash flows used in financing activities from continuing operations	-28,57%	-123,92%	-15,81%	-72,29%	-55,41%	-51,61%	-51,01%	-48,29%	-46,62%
Net cash flows from/used in financing activities from discontinued operations	-1,17%	23,90%	-0,37%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Total net cash flows used in financing activities	-29,74%	-100,01%	-16,18%	-72,29%	-55,41%	-51,61%	-51,01%	-48,29%	-46,62%
Net change in cash and cash equivalents before effect of exchange rate changes	31,09%	-16,35%	-12,75%	26,84%	24,67%	27,86%	28,42%	31,10%	32,75%
Effect of exchange rate changes on cash and cash equivalents	-0,18%	0,51%	2,10%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Total net change in cash and cash equivalents	30,91%	-15,85%	-10,65%	26,84%	24,67%	27,86%	28,42%	31,10%	32,75%
Cash and cash equivalents at January 1	62,08%	97,40%	81,41%	74,85%	93,74%	115,61%	136,05%	155,84%	177,05%
Cash and cash equivalents at December 31	92,99%	81,56%	70,75%	101,69%	118,41%	143,47%	164,46%	186,94%	209,80%

Appendix 7: Key Financial Ratios

KEY FINANCIAL RATIOS	Units	2018	2019	2020	2021E	2022F	2023F	2024F	2025F	2026F
Liquidity Ratios										
Current Ratio	times	1,20	1,04	0,90	0,96	1,08	1,21	1,36	1,52	1,70
Quick Ratio	times	0,97	0,83	0,68	0,75	0,86	0,99	1,12	1,27	1,44
Cash Ratio	times	0,45	0,39	0,29	0,39	0,49	0,60	0,72	0,86	1,00
Efficiency Ratios										
Total Assets Turnover	times	0,33	0,37	0,40	0,39	0,41	0,42	0,43	0,44	0,45
Inventory Turnover	times	1,51	1,54	1,53	1,42	1,48	1,53	1,53	1,53	1,53
Days in Inventory (DIO)	days	241,61	237,57	239,05	257,76	245,86	239,04	239,00	238,92	238,95
Accounts Receivables Turnover	times	5,32	5,72	6,04	6,19	6,24	6,24	6,24	6,24	6,24
Days sales outstanding (DSO)	days	68,60	63,84	60,41	58,92	58,53	58,51	58,50	58,48	58,48
Accounts Payables Turnover	days	1,95	1,81	1,85	1,87	1,90	1,90	1,90	1,91	1,91
Payables Period (DPO)	times	187,46	201,61	197,38	195,30	191,70	191,64	191,61	191,55	191,57
Operating Cycle	days	310,21	301,41	299,46	316,68	304,39	297,55	297,50	297,40	297,43
Cash Cycle	days	122,75	99,79	102,09	121,38	112,69	105,90	105,88	105,85	105,86
Profitability Ratios										
Gross Profit Margin	%	77%	80%	80%	80%	80%	80%	80%	80%	80%
EBITDA Margin	%	27%	28%	31%	31%	31%	31%	31%	31%	31%
EBIT Margin	%	18%	19%	20%	22%	23%	24%	24%	25%	25%
Net Profit Margin	%	27%	24%	16%	19%	20%	20%	21%	21%	21%
ROA	%	9%	10%	6%	7%	8%	8%	9%	9%	9%
ROCE	%	9%	13%	12%	15%	16%	18%	19%	20%	22%
ROE	%	16%	21%	14%	17%	18%	19%	20%	20%	20%
ROE - Dupont Approach	%	16%	21%	14%	17%	18%	19%	20%	20%	20%
NI/S	%	27%	24%	16%	19%	20%	20%	21%	21%	21%
S/A	%	32%	41%	38%	39%	41%	42%	43%	43%	44%
A/E	%	185%	213%	233%	227%	225%	223%	220%	218%	215%
ROIC	%	7%	10%	10%	12%	14%	16%	19%	21%	25%
EPS	\$/unit	5,38	5,06	3,52	4,32	4,84	5,25	5,67	6,11	6,55
SG&A/Sales	%	30%	30%	28%	29%	29%	29%	29%	29%	29%
R&D/Sales	%	18%	19%	18%	18%	18%	18%	18%	18%	18%
Solvency Ratios										
Debt Ratio	%	22%	23%	27%	27%	27%	27%	27%	28%	28%
Long-term Debt Ratio	%	15%	17%	20%	19%	19%	20%	20%	21%	21%
Debt to Equity Ratio	%	41%	49%	64%	61%	60%	60%	60%	60%	60%
Equity Multiplier	times	1,85	2,13	2,33	2,27	2,25	2,23	2,20	2,18	2,15
Debt to EBITDA	times	2,58	2,02	2,36	2,19	2,12	2,10	2,07	2,05	2,05
Net Debt to EBITDA	times	1,30	1,17	1,60	1,35	1,12	0,92	0,73	0,54	0,36
Interest Coverage Ratio	times	9,02	10,69	11,68	14,47	16,36	17,39	18,09	18,72	19,13
Equity to Assets	%	54%	47%	43%	44%	44%	45%	45%	46%	47%

Appendix 8: Statement of Financial Position Assumptions

BALANCE SHEET		Unit	2021E	2022F	2023F	2024F	2025F	2026F	Assumptions
Non-Current Assets									
CAPEX in PP&E	% of total revenues of last year		3%	3%	3%	3%	3%	3%	Equal to last year, as this % is stable over time.
CAPEX in Intangible assets	% of total revenues		3%	3%	3%	3%	3%	3%	Average of last 3 years, as this value is more or less the same.
Goodwill	\$nom		29999	29999	29999	29999	29999	29999	Equal to last year, as no changes are expected.
Investments in associated companies	\$nom		9632	9632	9632	9632	9632	9632	Related to acquisitions of business, changes in tax reforms and adjustments in other comprehensive income. Assumed to be equal to last year.
Deferred tax assets	\$nom		8214	8214	8214	8214	8214	8214	Related mainly to defined benefit pension plans and other provisions. Management of the company believes that it wouldn't be any material impacts.
Financial assets	\$nom		2901	2901	2901	2901	2901	2901	Related to financial investments, long-term receivables and loans held for strategic purposes. Equal to last year.
Other non-current assets	\$nom		892	892	892	892	892	892	Related mainly to deferred compensation plans and prepaid post-employment benefit plans. Equal to last year.
Net Working Capital									
Inventories	Days, Cogs		260,00	245,71	245,71	245,71	245,71	245,71	Assuming 2021F equal to 2020 as coronavirus pandemic persist. For 2020F-2026F assuming an average of the last years.
Trade receivables	Days, Revenue		60,11	60,11	60,11	60,11	60,11	60,11	Equal to last year, as the company is decreasing this value since 2018 and I expect that this managing efficiency continues over time, despite covid-19 pandemic.
Income tax receivables	\$nom		239	239	239	239	239	239	Equal to last year, as this value is more or less the same every year.
Other current assets	% of total revenues		5%	5%	5%	5%	5%	5%	Equal to last year, as this percentage has been decreasing since 2017 and I expect that will stay constant after 2020
Trade payables	Days, Cogs		196,99	196,99	196,99	196,99	196,99	196,99	Equal to last year, as the company is efficiently managing this value since ever and I expect this in the long-term.
Current income tax liabilities	\$nom		2458	2458	2458	2458	2458	2458	Equal to last year, as no changes are expected.
Provisions and other current liabilities	\$nom		15127	15127	15127	15127	15127	15127	Equal to last year, as no changes are expected.
Current Assets									
Marketable securities, commodities, time deposits and derivative financial instruments	\$nom		379	379	379	379	379	379	Equal to H1 2021, as no changes are expected.
Equity									
Share capital	\$nom		913	913	913	913	913	913	Equal to last year, as no changes are expected.
Treasury shares	\$nom		0,00	0,00	0,00	0,00	0,00	0,00	Assuming 0 as this is used to offset the dilutive impact of the equity-based participation plans of associates.
Non-controlling interest	% of NI		0,04%	0,04%	0,04%	0,04%	0,04%	0,04%	As 2020 was an unusual year, I forecasted as a percentage of 2019 NI and assume a constant percentage afterwards.
Non-current liabilities									
Lease liabilities	\$nom		1433	1226	1018	880	741	603	Will decrease by the value changed in current lease liabilities.
Deferred tax liabilities	\$nom		7422	7422	7422	7422	7422	7422	Related to acquisitions of business, changes in tax reforms and adjustments in other comprehensive income. Assumed to be equal to last year.
Provisions and other non-current liabilities	\$nom		6934	6934	6934	6934	6934	6934	Related mainly to defined benefit pension plans and other provisions. Management of the company believes that it wouldn't be any material impacts.
Current liabilities									
Lease liabilities (initial amount)	\$nom		286	208	208	139	139	139	Will decrease by the amount of the lease payment and increase by the same amount changed from non-current lease liabilities.
Payment of lease liabilities	\$nom		286	208	208	139	139	139	Payment schedule defined by the company. For 2026F, I assume the same value that 2025F, as I assume that the company won't have 0 lease liabilities.
Debt									
Non-current financial debt payment Schedule	\$nom		-2272	-2589	-2589	-2722	-2722	-2722	Debt schedule defined by the company.
Debt to Equity ratio	ratio		60%	60%	60%	60%	60%	60%	Target D/E ratio to keep an attractive Debt Structure as the company wants.
Increase in non-current financial debts	\$nom		1318	3369	4130	4304	4754	5070	Debt will increase to maintain the target D/E ratio.
Current financial debt and derivative financial instruments payments	\$nom		9785	9785	9785	9785	9785	9785	Assuming no variations as it will increase by the same amount of the current debt payment.
Dividends									
Cash dividend per share (CHF)	Growth rate, (%)		2%	2%	2%	2%	2%	2%	CAGR of the last 3 years. Dividend policy of the company is to pay a growing annual dividend in Swiss Francs.
Cash dividend per share (CHF)	CHF nom		3,07	3,14	3,21	3,29	3,37	3,44	
Cash dividend per share (USD)	\$nom		3,55	3,72	3,90	4,09	4,29	4,50	Assuming a constant growth in USD.
Cash dividend per share (USD)	Growth rate, (%)		4,84%	4,84%	4,84%	4,84%	4,84%	4,84%	Average CAGR rate in USD of the last 4 years to offset the exchange rate effect.
Weighted Average Number of Shares outstanding	Unit		2237	2237	2237	2237	2237	2237	Shares outstanding as 30 June 2021.
Dividend paid	\$nom		8088	8329	8732	9155	9598	10062	
Exchange rate (USD/CHF)	CHF/USD		1,13	-	-	-	-	-	Investing data base - https://www.investing.com/currencies/chf-usd-historical-data . Data of 31/12/2020.

Appendix 9: Income Statement Assumptions

INCOME STATEMENT	Unit	2021E	2022F	2023F	2024F	2025F	2026F	Assumptions
Net Sales from continuing operations								
Innovative Medicines	Growth (%)	5,00%	6,50%	6,50%	6,50%	6,50%	6,50%	Company expects to have challenges in dermatology, ophthalmology and oncology in 2021. Nevertheless, it expects a grow of a mid-single digit in IM division by 2021 due to the great response in vaccination and the opening of economies and due to the acquisition of The Medicines company in 2019, a US-based pharmaceutical company focused on the development of inclisiran, a potentially first-in-class therapy. Revenues forecast till 2026 was based on Revenue's growth set on EvaluatePharma report between this period. Used a more conservative growth rate.
Sandoz	Growth (%)	0,00%	2,00%	2,00%	2,00%	2,00%	2,00%	Company expects that 2021 revenues will be aligned will prior year. EvaluatePharma predicts a CAGR of 3,5% till 2026. As Novartis wants to become the world's leading and most valued generics company (including biosimilars), and with the acquisition of Aspen Global Incorporated (subsidiary of Aspen Pharmacare Holdings, the world's fifth largest supplier of branded and generic pharmaceutical products) and the 2020 combined investment with Austrian government of €150M, I have used a more conservative approach (+2% YoY 2021-2026), as the company has historical negative growth rates and there is some pressure and high generic competition.
Corporate	\$m, nom	-858	-886	-899	-906	-887	-895	Related to the cost of the group headquarters, revenues of intellectual property rights, expenses of post-employment benefits, environmental remediation liabilities, charitable activities, donations and sponsorships. Based on the average of last 4 years.
Sales to discontinued segments	\$m, nom.	0	0	0	0	0	0	0 as this was related to the spin-off of Alcon Eye Care division, made in 2019.
Other revenues	\$m, nom	1177	1177	1177	1177	1177	1177	Related to profit-sharing income, royalty income, milestone income and others. Based on the average of the last years and expected to be constant over time.
COGS								
Cost of Goods Sold	% of total revenues	20%	20%	20%	20%	20%	20%	Company is showing more efficiency managing COGS as total revenues were increasing and COGS decreasing. I expect this efficiency remains over time, predicting COGS as the same % of Total revenues of 2020.
OPEX								
Selling, General and administration	% of total revenues	30%	30%	30%	30%	30%	30%	Suffered a decreased in 2020 due to Covid-19. Expected to return to its pre-pandemic levels.
Research and development	% of total revenues	19%	19%	19%	19%	19%	19%	Varies as a % of total revenues and expected to follow this pattern over time. I assume an average of the last 4 years.
Other expense	\$m, nom.	2841	2841	2841	2841	2841	2841	Related to changes in contingent considerations, impairments of business assets, restructuring changes, exchange rate losses, etc. Computed based on the average of last 4 years and expected to be constant over time.
Other income	\$m, nom.	1831	1831	1831	1831	1831	1831	Related to changes in contingent considerations, exchange rate gains, unrealized gains, etc. Computed based on the average of the last 4 years and expected to be constant over time.
D&A								
PP&E Depreciation	% PP&A of last year	9%	9%	9%	9%	9%	9%	Assuming a % equal to 2019 as the increase in 2020 was mostly due to the decrease of PP&A regarding Alcon divestment.
Right-of-use assets Depreciation	% Right-of-use assets of last year	20%	20%	20%	20%	20%	20%	Equal to 2020 as this % was constant over the year.
Intangible assets Amortization	% of intangibles assets of last year	8%	8%	8%	8%	8%	8%	Assuming an average of 2018 and 2019 percentage, as the amortizations of 2020 are an outlier due to the lower intangibles' assets in 2019, consequence of the Alcon Eye care division divestment.
Income from associated companies, interest expenses, other financial income and expenses and Taxes								
Income from associated companies	\$m, nom.	673	673	673	673	673	673	Mainly related to the investment in Roche Holding AG. Assuming equal to 2020.
Interest on Debt	% of Total Debt	2,20%	2,20%	2,20%	2,20%	2,20%	2,20%	Weighted average interest rate of 2020 on total debt. Assumed to be constant over time.
Interest on Lease liabilities	% of Lease liabilities	3,65%	3,65%	3,65%	3,65%	3,65%	3,65%	Weighted average interest rate of last two years on lease liabilities. Assumed to be constant over time.
Other financial income and expense	\$m, nom.	48,75	48,75	48,75	48,75	48,75	48,75	Related to changes in the fair value of derivative financial instruments, currency changes, etc. Assuming an average of last years and constant afterwards.
Taxes								
Corporate tax rate	%	15%	15%	15%	15%	15%	15%	Average of the core tax rates from continuing operations of last years.

Appendix 10: Risk-Free Rate

Government Bond Yields	2021F	Source
United States 10-Year Bond yields	1,27%	Bloomberg (29/07/2021)
Switzerland 10-Year Bond Yields	-0,41%	Bloomberg (29/07/2021)
United States 10-Year Bond yields	1,98%	Investing data base (Average 5 years)
Survey Estimates		
United States 10-Year Bond yields	1,80%	Fernandez (2021)
Switzerland 10-Year Bond Yields	0,10%	Fernandez (2021)

Appendix 11: Beta

Different methods to estimate beta were computed and different conclusions were obtained.

Method A: Beta of Financial Agencies are too low, so I considered that this method isn't the most accurate.

Method B: Although I have used the beta historical data of the company and a Blume Adjustment to obtain a more precise forecast, I assume that the beta value is still too low for the company.

Method C: Even using a Pure Play Method with a debt structure adjusted for cash, I obtained a beta of 1,17. I considered that the value was too high for the company.

Method D: An average of the Pure Play Method adjusted for cash and the Levered Beta of the industry was computed, reaching a value of 1,04. I assume that this value is more accurate for the company and more aligned with the industry.

A: Financial Agencies	2021F	Source	Comments
Reuters	0,58	Reuters	
Financial Times	0,58	Financial Times	
Yahoo Finance	0,51	Yahoo Finance	5Y Monthly avg.
B: Historical Beta			
Raw Beta (Regression vs SP&500)	0,628		Monthly data for 5 years (60 observations)
Blume adjusted beta	0,752		
C: Pure Play Method			
Unlevered Beta	0,84	Damodaran(2021)	Pharmaceuticals
D/E	0,64		Target D/E
D/E	0,47		Adjusted for cash
Corporate tax rate	15%		
Levered Beta	1,30		
Levered Beta	1,17		Adjusted for cash
D: Average Levered Beta			
Average Levered Beta - Pharmaceuticals	0,91	Damodaran (2021)	
Levered Beta	1,04		Average of Levered Beta adjusted for cash and Levered Beta (Damodaran)

Appendix 12: Equity Risk Premium

A: Location based CRP	2021F	Source
Moody's rating - US or Switzerland	Aaa	Damodaran (2021)
Market Premium - US or Switzerland	4,72%	Damodaran (2021)
Country Risk Premium - Default Spread	0,00%	Damodaran (2021)
Equity Risk Premium	4,72%	

B: Operation based CRP	US	CH	DE	FR	CN	JP	Rest of World	Source	Comments	
Market Premium - US or Switzerland	4,72%	4,72%	4,72%	4,72%	4,72%	4,72%	4,72%	Damodaran (2021)		
Country Risk Premium	0%	0%	0%	0,48%	0,68%	0,68%	3,66%	Damodaran (2021)	Rest of World is the Average of rest of the world countries Risk Premium	
Equity Risk Premium	4,72%	4,72%	4,72%	5,20%	5,40%	5,40%	8,38%			
Novartis AG Sales (%)	34%	2%	9%	5%	5%	6%	39%			
Weighted Average ERP								6,25%		
C: Survey Estimates							2021F			
MRP (Average) - US							5,50%	Fernandez (2021)		
MRP (Average) - Switzerland							5,20%	Fernandez (2021)		
MRP (Average) - countries with higher sales in company							5,62%	Fernandez (2021)	US, Switzerland, Germany, France, China and Japan	

Appendix 13: Cost of Debt

Novartis is a mature company with a solid cash flow generation and a high interest coverage ratio, so cost of debt is expected to be low. Two methods were computed and similar results were obtained. Market Data was extracted from Damodaran.

A: Historical interest rate	2021F
Interest expense	869
Debt (€M)	36044
Cost of Debt	2,41%

B: Credit default spread	2021F
Risk-Free Rate	1,80%
Country Default Spread	0%
Interest Coverage Ratio	14,47
Synthetic rating	Aaa/AAA
Company Default Spread	0,63%
Cost of Debt	2,43%

Appendix 14: WACC

For the WACC estimation, I have used a market average equity structure as a target for the company. This is broadly aligned with the current market capital structure of the company.

Cost of Capital - WACC	
Cost of Equity	8,31%
Weight of Equity	80%
Cost of Debt	2,41%
Tax Rate	15%
Weight of Debt	20%
WACC	7,06%

Appendix 15: Sustainable long-term growth rate (g)

Method A: In the past years, Novartis is showing a negative reinvestment rate, mainly because the company is growing through M&A and not through investment in CAPEX. With this method, a 1,23% growth rate was reached, too low for the type of company Novartis is.

Method B: It is not the most accurate, since I don't expect the company to outperform the GDP growth rate constantly in the long run.

Method C: Although it accounts for the inflation and the GDP growth by country where Novartis have operations, a 4,37% is too high for the terminal growth rate.

Since none of the methods were aligned with the long-term growth rate that I believe that fits better in the company, I used a 2% growth rate, yet conservative and below the GDP growth expectation.

A: Stable Growth Model: Reinvestment Rate x ROE											
	unit	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F	Terminal Period
CAPEX	\$M	2 648	2 257	2 585	2 659	2 788	2 944	3 110	3 287	3 476	3 476
D&A	\$M	4 069	4 486	5 110	4 369	4 139	4 003	3 898	3 819	3 766	3 476
Changes in NWC	\$M	-1 714	-2 653	-1 139	472	299	746	794	849	896	896
EBIT	\$M	8 403	9 086	10 152	11 626	12 755	13 851	14 979	16 152	17 359	17 359
Corporate tax rate	%	15%	15%	14%	15%	15%	15%	15%	15%	15%	15%
Reinvestment Rate	%	-44%	-63%	-42%	-12%	-10%	-3%	0%	2%	4%	6%
ROE	%	16%	21%	14%	17%	18%	19%	20%	20%	20%	20%
g	%	-7%	-13,29%	-5,94%	-2,12%	-1,75%	-0,50%	0,01%	0,46%	0,83%	1,23%
B: Dividend sustainable growth rate: PRAT Model (g = b x ROE)											
	unit	2018	2019	2020	2021F	2022F	2023F	2024F	2025F	2026F	Terminal Period
Net income	\$M	12 614	11 737	8 071	9 847	10 831	11 751	12 686	13 657	14 648	81 492
Dividends	\$M	6 966	6 645	6 987	8 088	8 329	8 732	9 155	9 598	10 062	60 951
Sales	\$M	46 099	48 677	49 898	51 949	54 834	57 915	61 194	64 703	68 404	408 898
Total Assets	\$M	145 563	118 370	132 059	131 827	134 542	138 556	143 213	148 872	155 394	984 463
Equity	\$M	78 692	55 551	56 666	57 956	59 785	62 131	64 990	68 376	72 288	442 191
(NI-D)/NI	%	45%	43%	13%	18%	23%	26%	28%	30%	31%	25%
ROE	%	16%	21%	14%	17%	18%	19%	20%	20%	20%	18%
NI/S	%	27%	24%	16%	19%	20%	20%	21%	21%	21%	20%
S/A	%	32%	41%	38%	39%	41%	42%	43%	43%	44%	42%
A/E	%	185%	213%	233%	227%	225%	223%	220%	218%	215%	223%
g	%	7,18%	9,17%	1,91%	3,04%	4,19%	4,86%	5,43%	5,94%	6,34%	4,65%
C: Fisher method											
	US	CH	DE	FR	CN	JP	Rest of World	Source			
GDP Growth	1,61%	1,80%	1,09%	1,24%	4,86%	0,49%	3,35%	Statistica data base			
Novartis AG Sales (%)	34%	2%	9%	5%	5%	6%	39%				
Weighted Average GDP Growth							2,32%				
Long-term weighted average inflation rate					2,00%	https://www.federalreserve.gov/monetarypolicy/fomcprojtabl20210616.htm					
Expected growth rate					4,37%						

Appendix 16: Normalized Terminal FCFF and FCFE

Terminal FCF is one of the most important items in valuation as it accounts for around 80% of the total company value. To properly compute this FCF, I normalized it. I used a 3% growth rate for the Innovative Medicines segment and a 1% for the Sandoz segment, as it is unexpected that the company will continue to have higher growth rates forever. Also, as it's not expected acquisitions, I assumed a 20% CAPEX higher than D&A to exist room for growth.

	unit	Terminal Period
EBIT	\$M	16 739
Corporate tax rate	%	15%
(+) Ebit*(1-t)	\$M	14 278
(+) D&A	\$M	3 766
(-) Changes in NWC	\$M	896
(-) CAPEX	\$M	4 519
(=) FCFF	\$M	12 630

	unit	Terminal Period
(+) NI	\$M	14 120
(+) D&A	\$M	3 766
(-) Changes in NWC	\$M	896
(-) CAPEX	\$M	4 519
(+) Net Borrowing	\$M	2 348
(=) FCFE	\$M	14 819

Appendix 17: Discounted Cash Flow Method (DCF)

	unit	2020	2021E	2022F	2023F	2024F	2025F	2026F	Terminal Value
EBIT	\$M	10 152	11 626	12 755	13 851	14 979	16 152	17 359	16 739
Corporate tax rate	%	14%	15%	15%	15%	15%	15%	15%	15%
(+) Ebit*(1-t)	\$M	8 781	9 917	10 880	11 815	12 777	13 777	14 807	14 278
(+) D&A	\$M	5 110	4 369	4 139	4 003	3 898	3 819	3 766	3 766
(-) Changes in NWC	\$M	-1 139	472	299	746	794	849	896	896
(-) CAPEX	\$M	2 585	2 659	2 788	2 944	3 110	3 287	3 476	4 519
(=) FCFF	\$M	12 445	11 155	11 931	12 129	12 771	13 460	14 201	254 729
WACC	%								7,06%
g	%								2,00%
(=) Enterprise Value	\$M	250 100							
(-) Debt	\$M	35 871							
(-) Non-controlling Interest	\$M	77							
(+) Cash and Cash Equivalents	\$M	16 953							
(=) Equity Value	\$M	231 105							
#Shares	M#	2236,70							
Price Target	\$	103,32							

Appendix 18: Flow-to-Equity Method (FTE)

	unit	2020	2021E	2022F	2023F	2024F	2025F	2026F	Terminal Value
(+) NI	\$M	8 071	9 847	10 831	11 751	12 686	13 657	14 648	14 120
(+) D&A	\$M	5 110	4 369	4 139	4 003	3 898	3 819	3 766	3 766
(-) Changes in NWC	\$M	-1 139	472	299	746	794	849	896	896
(-) CAPEX	\$M	2 585	2 659	2 788	2 944	3 110	3 287	3 476	4 519
(+) Net Borrowing	\$M	7 384	-954	781	1 541	1 582	2 032	2 348	2 348
(=) FCFE	\$M	19 119	10 131	12 663	13 606	14 262	15 371	16 391	239 646
Re	%								8,31%
g	%								2,00%
(=) Equity Value	\$M	235 549							
#Shares	%	2236,70							
Price Target	\$	105,31							

Appendix 19: Adjusted Present Value Method (APV)

APV is a valuation method that assumes the company is fully financed by equity plus the present value of any financing benefits. To do so, it uses an unlevered cost of equity to discount free cash flows. Using an unlevered beta of 0,84 (Damodaran), RFR of 1,80% and an ERP of 6,25%, a rate of 7,06% was reached.

	unit	2020	2021E	2022F	2023F	2024F	2025F	2026F	Terminal Value
EBIT	\$M	10 152	11 626	12 755	13 851	14 979	16 152	17 359	16 739
Corporate tax rate	%	14%	15%	15%	15%	15%	15%	15%	15%
(+) Ebit*(1-t)	\$M	8 781	9 917	10 880	11 815	12 777	13 777	14 807	14 278
(+) D&A	\$M	5 110	4 369	4 139	4 003	3 898	3 819	3 766	3 766
(-) Changes in NWC	\$M	-1 139	472	299	746	794	849	896	896
(-) CAPEX	\$M	2 585	2 659	2 788	2 944	3 110	3 287	3 476	4 519
(=) FCFF	\$M	12 445	11 155	11 931	12 129	12 771	13 460	14 201	255 256
Ru	%								7,05%
g	%								2,00%
(=) Enterprise Value	\$M	250 588							
Interest paid	\$M	869	803	780	797	828	863	908	18 344
Tax Shield	\$M	117	118	115	117	122	127	133	2 697
Rd	%	2,41%							
(+) VCD	\$M	2 589							
(-) Debt	\$M	35 871							
(-) Non-controlling Interest	\$M	77							
(+) Cash and Cash Equivalents	\$M	16 953							
(=) Equity Value	\$M	234 182							
#Shares	M#	2 236,70							
Price Target	\$	104,70							

Appendix 20: Dividend Discount Model (DDM)

	unit	2022F
ADR Price at 31/12/2020	\$	94,43
DPS 2022F	\$	3,72
g (Dividend Growth rate)	%	4,84%
Re	%	8,31%
Price Target	\$	112,60

Appendix 21: Peer Group

Novartis is a pharmaceutical company, so for the choice of peer group, I considered companies with the same business activity. The main criteria used were the sales and EBITDA values which, as shown below, are like the company's figures. Also, to complement this analysis, the market and enterprise value of them are also similar. Although Johnson & Johnson has almost the double of the Novartis' values, I still considered it as a peer because its multiples values are like the company's. Market and financial data were collected from Yahoo Finance and multiples were computed.

Company name	Market Data			Financial Data			EV Multiples		Price Multiples	
	Price (\$)	Market Cap (\$M)	EV (\$M)	Sales (\$M)	EBITDA (\$M)	EPS (\$)	EV/Sales	EV/EBITDA	P/E	P/S
Johnson & Johnson	155,43	409 171,34	379 750,00	82 584,00	24 040,00	5,51	4,60	15,80	28,21	5,03
Roche	42,52	294 238,40	311 980,00	58 323,00	24 640,00	2,20	5,35	12,66	19,33	5,04
Novartis	94,43	215 017,11	243 380,00	49 898,00	15 262,00	3,54	4,88	15,95	26,64	4,31
Merck & Co.	76,71	194 093,64	216 150,00	47 994,00	12 108,00	2,78	4,50	17,85	27,59	4,06
AbbVie	103,49	182 673,61	263 970,00	45 804,00	17 834,00	2,72	5,76	14,80	38,05	3,78
Bristol Myers Squibb	61,10	137 963,80	162 530,00	42 518,00	3 509,00	2,02	3,82	46,32	30,25	3,24
Pfizer Inc.	36,06	200 313,30	255 950,00	41 908,00	12 937,00	1,71	6,11	19,78	21,09	4,85
Bayer AG	46,48	45 662,88	59 580,00	41 400,00	11 461,00	1,17	1,44	5,20	39,73	4,41
Average							4,56	18,92	29,18	4,35

Appendix 22: Market-Based Valuation

To perform the market-based valuation, I just considered the most suitable EV and Price multiples to reach the price target.

	EV Multiples			Price Multiples	
	unit	EV/EBITDA	EV/SALES	P/E	P/S
Peers Average	times	18,92	4,56	29,18	4,35
Novartis denominator	\$M	16 894	54 834	10 831,06	49 898
Enterprise Value	\$M	319 569	249 912	-	-
(-) Debt	\$M	35 871	35 871	-	-
(-) Non-controlling Interest	\$M	77	77	-	-
(+) Cash and Cash Equivalents	\$M	16 953	16 953	-	-
(=) Equity Value	\$M	300 574	230 917	316 018	216 818
#Shares	M#	2 237	2 237	2277	2277
Price Target	\$	134	103	139	95
Average Price Target	\$	115		117	

Appendix 23: Governance structure¹⁷

GENERAL MEETING OF SHAREHOLDERS

BOARD OF DIRECTORS

Chairman: J. Reinhardt
Vice Chairman: E. Vanni

N. Andrews
T. Buechner
P. Bula
S. Datar

E. Doherty
A. Fudge
B. Heller
F. van Houten

S. Moroney
A. von Planta
C. Sawyers
W. Winters

AUDIT AND COMPLIANCE COMMITTEE

E. Doherty (Chair)
T. Buechner
S. Datar
A. von Planta
E. Vanni

COMPENSATION COMMITTEE

E. Vanni (Chair)
P. Bula
S. Datar
B. Heller
W. Winters

GOVERNANCE, NOMINATION AND CORPORATE RESPONSIBILITIES COMMITTEE

A. von Planta (Chair)
A. Fudge
C. Sawyers
E. Vanni
W. Winters

RISK COMMITTEE

S. Datar (Chair)
N. Andrews
T. Buechner
E. Doherty
A. von Planta

SCIENCE & TECHNOLOGY COMMITTEE

J. Reinhardt (Chair)
N. Andrews
A. Fudge
F. van Houten
S. Moroney
C. Sawyers

EXTERNAL AUDITOR

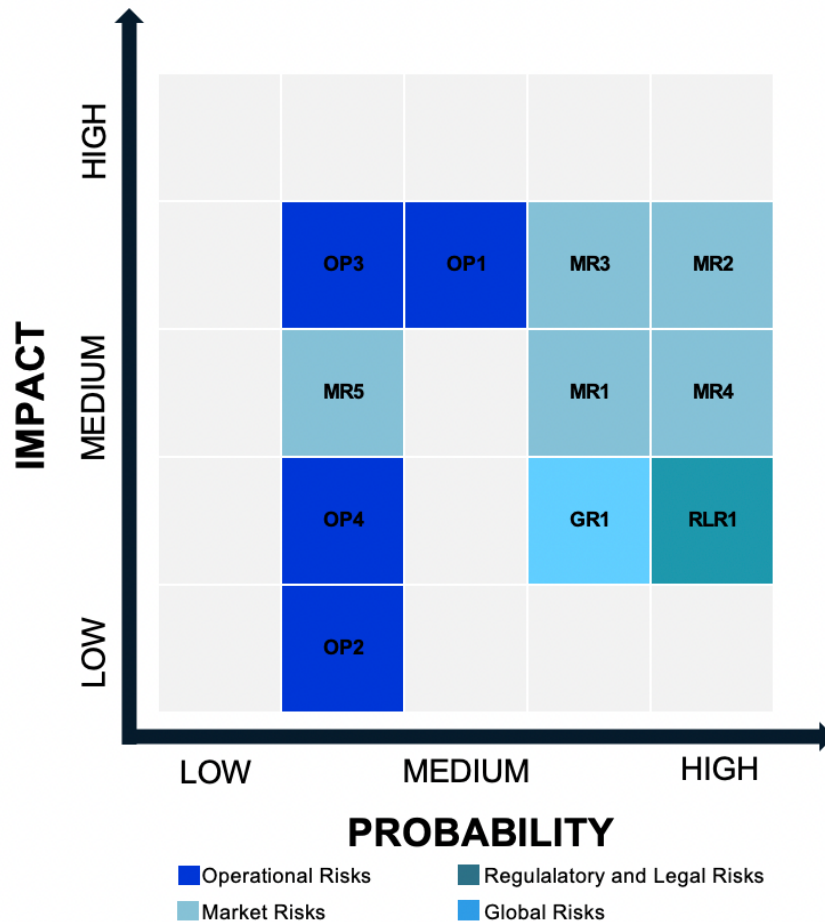
EXECUTIVE COMMITTEE

Appendix 24: Board Member Total Compensation earned for the financial year 2020

Board Member	N° of Shares	Cash (CHF)
Joerg Reinhardt	22 629	3 804 501
Enrico Vanni	3 156	533 614
Nancy C. Andrews	2 143	360 000
Ton Buechner	3 508	387 835
Patrice Bula	2 750	324 500
Srikant Datar	3 348	459 999
Elizabeth Doherty	3 424	450 000
Ann Fudge	2 249	366 666
Bridgette Heller	1 059	266 666
Frans van Houten	3 810	320 000
Simon Moroney	1 059	271 167
Andreas von Planta	2 739	464 501
Charles L. Sawyers	2 143	360 000
William T. Winters	4 287	360 000

¹⁷ As per December 31, 2020.

Appendix 25: Risk Matrix



Operational Risks

Cybersecurity and IT systems Risk [OP3]

Covid-19 pandemic brought to the market a new era of Digitalization, with companies investing more and more on this, as with lockdowns they needed to invest in new ways of delivering medicine. As virtual and remote working has become more used, with employees working in a less secure environment, cybersecurity threats and attacks increased, making companies systems more vulnerable to them. Novartis is heavily dependent on critical, complex and interdependent information technology systems, so cybersecurity breaches can create a huge impact.

ESG Risk [OP4]

Nowadays, companies are being judged not only on their financial result but also in Environmental, Social and Governance (ESG) actions that can contribute to the long-term sustainability of companies' performance. Investors are considering these metrics on their investments, so the incapacity of a successful performance can result in a negative impact in a company's value, reputation, financial results and price share. Novartis actively manage these ESG metrics and take them into consideration in all its operation to meet investors' expectations.

Market Risks

Manufacturing Delays Risk [MR5]

Macroeconomic factors could delay the manufacturing operation process. As most of the vital pharmaceutical's resources comes from China or India, with COVID-19 and the heavily dependent on these nations, companies struggle to obtain these products. Delays on deliveries and restrictions on imports can significantly reduce company sales. Novartis plan is production well in advance to mitigate this risk.

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Recommendation System

Level of Risk	SELL	REDUCE	HOLD/NEUTRAL	BUY	STRONG BUY
High Risk	0%≤	>0% & ≤10%	>10% & ≤20%	>20% & ≤45%	>45%
Medium Risk	-5%≤	>-5% & ≤5%	>5% & ≤15%	>15% & ≤30%	>30%
Low Risk	-10%≤	>-10% & ≤0%	>0% & ≤10%	>10% & ≤20%	>20%