



INTERDEPARTMENTAL POSTGRADUATE PROGRAM IN BUSINESS ADMINISTRATION

Diploma Thesis

**FINANCIAL PERFORMANCE ANALYSIS OF BIG PHARMACEUTICAL COMPANIES DURING THE  
COVID-19 PANDEMIC**

THEODORA MICHAIL KARAMANIDOU

SUPERVISOR: IOANNIS TAMPAKOUDIS, ASSISTANT PROFESSOR

Submitted to obtain the master's degree Diploma in Business Administration

September 2022



ΔΙΑΤΜΗΜΑΤΙΚΟ ΠΡΟΓΡΑΜΜΑ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ  
ΣΤΗ ΔΙΟΙΚΗΣΗ ΕΠΙΧΕΙΡΗΣΕΩΝ

Διπλωματική Εργασία

**ΑΞΙΟΛΟΓΗΣΗ ΤΗΣ ΟΙΚΟΝΟΜΙΚΗΣ ΑΠΟΔΟΣΗΣ ΜΕΓΑΛΩΝ ΦΑΡΜΑΚΕΥΤΙΚΩΝ ΕΤΑΙΡΕΙΩΝ ΕΝ  
ΜΕΣΩ ΤΗΣ ΠΑΝΔΗΜΙΑΣ COVID-19**

της

ΘΕΟΔΩΡΑΣ ΜΙΧΑΗΛ ΚΑΡΑΜΑΝΙΔΟΥ

ΕΠΙΒΛΕΠΟΝΤΑΣ: ΙΩΑΝΝΗΣ ΤΑΜΠΑΚΟΥΔΗΣ, ΕΠΙΚΟΥΡΟΣ ΚΑΘΗΓΗΤΗΣ

Υποβλήθηκε ως απαιτούμενο για την απόκτηση του μεταπτυχιακού  
διπλώματος στη Διοίκηση Επιχειρήσεων

Σεπτέμβριος 2022



*To my beloved parents  
Michali and Despoina  
and my brother Thanasi*

*Ask and it will be given to you;  
seek and you will find;  
knock and the door will be opened to you  
For everyone who asks receives;  
the one who seeks finds;  
and to the one who knocks, the door will be opened  
Matthew 7:7-8*

## **Acknowledgments**

I would like to thank my supervisor Assist. Professor Ioanni Tampakoudi, whose insight, knowledge and guidance into the subject steered me and helped me through this research. I would also like to express my deepest appreciation and gratitude to the members of my committee, Prof. Dimitrio Soubenioti and Prof. Ioanni Hajidimitriou. Finally, I would like to thank my family for all the unconditional support during the compilation and research of this diploma thesis.

## Abstract

In the era of COVID-19 crisis, the pharmaceutical sector has significantly contributed to patient's life and societies on a global level. Being at the forefront in the war against this pandemic, pharmaceutical companies and biotech have rapidly responded and adopted to new technologies, finding new ways of working as they adjust to this new reality. As a multi-billion-dollar global industry, this sector is not only responsible for saving millions of lives everyday but also is a key contributor of the global economy. In the framework of this diploma thesis, two pharmaceutical leaders (Roche and J&J) were carefully selected and evaluated, using ratio analysis during COVID-19 outbreak. Being the top two companies in respect of various financial indicators (e.g., revenue, market cap etc.), these firms were financially evaluated by assessing their performance in terms of liquidity, leverage, efficiency and profitability. One of the key findings of this research has shown that both companies do not maintain high values of liquidity. However, both J&J and Roche seem to follow a specific business strategy with a low liquidity risk, since they possess a strong cash generation ability, even in periods of severe health crisis. With respect to efficiency ratio analysis, both companies appear to have a strong bargaining power against their clients and suppliers, even though they do not seem to exploit their strength to the fullest, following a win-win strategy for both sides. In this context, J&J seems to utilize better its credits compared to Roche, presenting less time to convert its investments and other resources into cash (cash conversion cycle 68 vs 170 days on average). On the other hand, as part of the efficiency ratio analysis, using the asset turnover, Roche presents higher sales proportionally to its assets, even though J&J generates higher revenue during the years. Regarding leverage and debt, both companies maintain a low risk profile, using limited external funding and a conservative financial dependence, but at the same time, they maintain their borrowing capacity in case of future obligations. Only in 2021, this profile has changed for Roche, where it used external funding to repurchase its shares from Novartis in order to gain more flexibility and disentangle its operations from one of its most serious competitors. In respect of profitability, Roche seems to handle more effectively its expenses, presenting higher net profit- and operating-margin in comparison with J&J. In the same context, Roche appears to have higher ROA and ROE values, indicating a more effective handling of its expenses to generate profit by owing less resources and by using its shareholders' equity. Even though the profitability margins seem low compared to other sectors (i.e., ROE value of ~46% for Roche and ~25% for J&J on average), for the pharmaceutical industry are considered significant, indicating that both companies present a very healthy financial performance, which renders them a profitable investment for their stakeholder's even during difficult times. Finally, RORC analysis have shown that both companies generate profit through their R&D activities, a key indicator of competitiveness and future growth, especially for the pharma industry.

## Περίληψη

Ο φαρμακευτικός κλάδος έχει συνεισφέρει σημαντικά στον άνθρωπο και γενικότερα στις κοινωνίες σε παγκόσμιο επίπεδο, ειδικά στην εποχή της πανδημίας COVID-19. Οι φαρμακευτικές εταιρίες αντέδρασαν άμεσα σε αυτή την πρόκληση, υιοθετώντας νέες τεχνολογίες και εφευρίσκοντας νέους τρόπους δράσης προκειμένου να προσαρμοστούν στη νέα πραγματικότητα. Αυτός ο κλάδος δεν είναι μόνο υπεύθυνος για εκατομμύρια ζωές αλλά είναι καθοριστικός παράγοντας και της παγκόσμιας οικονομίας. Στα πλαίσια της συγκεκριμένης διπλωματικής, επιλέχθηκαν δύο από τις μεγαλύτερες φαρμακευτικές (Roche και J&J) και αξιολογήθηκαν, χρησιμοποιώντας ανάλυση αριθμοδεικτών κατά τη διάρκεια της πανδημίας. Πιο συγκεκριμένα, οι φαρμακευτικές αυτές αξιολογήθηκαν με βάση τη ρευστότητα, το χρέος, τις δραστηριότητες και την κερδοφορία τους. Όσον αφορά τη ρευστότητά τους, παρατηρήθηκε ότι και οι δύο εταιρίες δε διατηρούν υψηλές τιμές ρευστότητας. Ωστόσο, η Roche και η J&J ακολουθούν συγκεκριμένες στρατηγικές με χαμηλό ρίσκο μειωμένης ρευστότητας, καθώς και οι δύο διατηρούν υψηλή ικανότητα απόκτησης ρευστών στοιχείων ακόμα και σε περιόδους υγειονομικής κρίσης. Στα πλαίσια των δραστηριοτήτων τους, και οι δύο εταιρίες παρουσιάζουν υψηλή διαπραγματευτική δύναμη τόσο απέναντι στους πελάτες τους όσο και απέναντι στους προμηθευτές τους. Ωστόσο, από την έρευνα φαίνεται ότι δεν εκμεταλλεύονται πλήρως αυτή τους την ικανότητα, διατηρώντας μία αμοιβαία στρατηγική κέρδους και για τις δύο πλευρές. Η J&J φαίνεται ότι κάνει καλύτερη διαχείριση των πιστώσεων σε σχέση με τη Roche, παρουσιάζοντας λιγότερο χρόνο μετατροπής των επενδύσεων και άλλων πόρων τους σε ρευστά στοιχεία (ταμειακός κύκλος 68 vs 170 ημέρες κατά μέσο όρο). Από την άλλη μεριά, ο κύκλος εργασιών ενεργητικού δείχνει ότι η Roche δημιουργεί αναλογικά περισσότερες πωλήσεις σε σχέση με τα στοιχεία ενεργητικού της, αν και η J&J παρουσιάζει υψηλότερες τιμές πωλήσεων μέσα στα χρόνια. Όσον αφορά το χρέος και τη φερεγγυότητα των δύο εταιριών, και οι δύο φαρμακευτικές διατηρούν ένα χαμηλό προφίλ ρίσκου, χρησιμοποιώντας περιορισμένα κεφάλαια από εξωτερικές πηγές, διατηρώντας ωστόσο την ικανότητα δανεισμού σε περίπτωση μελλοντικών υποχρεώσεων. Μόνο το έτος 2021 η Roche φαίνεται να έχει μεγαλύτερη εξάρτηση από δανειακά κεφάλαια, το οποίο οφείλεται στην επαναγορά των μετοχών από τη Novartis προκειμένου να αποκτήσει περισσότερη ευελιξία και να απαγκιστρωθεί από έναν από τους πιο σοβαρούς ανταγωνιστές της. Σε όρους κερδοφορίας, η Roche φαίνεται να διαχειρίζεται αποτελεσματικότερα τα έξοδά της, παρουσιάζοντας υψηλότερους δείκτες καθαρού και λειτουργικού περιθωρίου κέρδους σε σχέση με την J&J. Στο ίδιο πλαίσιο, η Roche εμφανίζει υψηλότερες τιμές ROA και ROE, υποδεικνύοντας καλύτερη διαχείριση των εξόδων για τη δημιουργία πωλήσεων, έχοντας στην κατοχή της λιγότερους πόρους και χρησιμοποιώντας λιγότερα επενδυτικά κεφάλαια. Αν και τα περιθώρια κέρδους φαίνονται χαμηλά σε σχέση με άλλους κλάδους (ROE ~46% για τη Roche και ~25% για τη J&J κατά μέσο όρο), για τον φαρμακευτικό κλάδο θεωρούνται υψηλά, υποδεικνύοντας ότι και οι δύο φαρμακευτικές παρουσιάζουν οικονομική ευρωστία, καθιστώντας αυτές μια κερδοφόρα επένδυση ακόμα και

σε περιόδους κρίσης. Τέλος, οι τιμές του δείκτη RORC αποδεικνύουν ότι και οι δύο εταιρίες δημιουργούν κέρδος μέσα από της δραστηριότητές τους στην έρευνα και ανάπτυξη, το οποίο είναι δείκτης ανταγωνιστικότητας και μελλοντικής ανάπτυξης, ειδικά για τον φαρμακευτικό κλάδο.



# Table of Contents

<b>1. Introduction</b> .....	1
<b>2. The Pharmaceutical Sector</b> .....	3
<b>2.1 Pharmaceutical Industry and Leading Pharmaceutical Companies</b> .....	3
<b>2.2 COVID-19 and the Pharma Response</b> .....	4
<b>2.3 R&amp;D and Innovation in Pharma Industry</b> .....	6
<b>2.4 SWOT Analysis of Pharma Industry</b> .....	7
<b>3. Roche</b> .....	9
<b>3.1 Business Strategy of Roche</b> .....	10
<b>3.2 COVID-19 Pandemic and Roche's Contribution</b> .....	11
<b>3.3 New Collaborations to fight COVID-19</b> .....	12
<b>3.4 R&amp;D and Innovation of Roche</b> .....	12
<b>4. Johnson &amp; Johnson</b> .....	14
<b>4.1 Business Strategy of J&amp;J</b> .....	15
<b>4.2 COVID-19 Pandemic and J&amp;J's Contribution</b> .....	15
<b>4.3 R&amp;D and Innovation of J&amp;J</b> .....	16
<b>5. Financial Evaluation of Big Pharmaceutical Companies</b> .....	17
<b>5.1 Financial Ratio Analysis</b> .....	17
<b>5.2 Liquidity Ratios</b> .....	18
<b>5.3 Efficiency Ratios</b> .....	19
<b>5.4 Leverage Ratios</b> .....	20
<b>5.5 Profitability Ratios</b> .....	21
<b>5.6 Other Ratios - Return on Research Capital</b> .....	22
<b>5.7 DuPont Analysis</b> .....	22
<b>6. Financial Performance</b> .....	23
<b>6.1 Liquidity Ratios of Roche and J&amp;J</b> .....	23
<b>6.2 Efficiency Ratios of Roche and J&amp;J</b> .....	25
<b>6.3 Leverage Ratios of Roche and J&amp;J</b> .....	29

6.4 Profitability Ratios of Roche and J&J .....	33
6.5 Return on Research Capital of Roche and J&J .....	37
6.6 DuPont Analysis of Roche and J&J .....	38
7. Main Findings and Strategy Recommendations .....	40
7.1 Key Findings of the Research .....	40
7.2 Strategy Recommendations .....	43
8. Conclusions .....	44
Annex .....	46
References .....	53

## List of Tables

<b>Table 1:</b> Top 10 pharmaceutical leaders by market cap .....	5
<b>Table 2:</b> Key liquidity indicators .....	18
<b>Table 3:</b> Key efficiency indicators .....	19
<b>Table 4:</b> Key leverage indicators .....	20
<b>Table 5:</b> Key profitability indicators .....	21
<b>Table 6:</b> Additional key financial indicators (RORC) .....	22
<b>Table 7:</b> Liquidity ratios for 2019-2021 .....	24
<b>Table 8:</b> Efficiency ratios for 2019-2021 .....	26
<b>Table 9:</b> Leverage ratios for 2019-2021 .....	31
<b>Table 10:</b> Profitability ratios for 2019-2021 .....	34
<b>Table 11:</b> RORC for 2019-2021 .....	37
<b>Table 12:</b> DuPont analysis of Roche and J&J for 2019-2021 .....	38
<b>Table 13:</b> Income statement of Roche for 2019-2021 .....	46
<b>Table 14:</b> Balance sheet of Roche for 2019-2021 .....	47
<b>Table 15:</b> Income statement of J&J for 2019-2021 .....	49
<b>Table 16:</b> Balance sheet of J&J for 2019-2021 .....	50

## List of Figures

<b>Figure 1:</b> Worldwide pharmaceutical market revenue 2001-2020 .....	4
<b>Figure 2:</b> The leading companies by number of COVID-19 drugs and vaccines in development .....	6
<b>Figure 3:</b> Global top pharmaceutical companies based on R&D spending projections for 2026 .....	7
<b>Figure 4:</b> SWOT analysis of pharmaceutical industry .....	8
<b>Figure 5:</b> Roche's strategy and value .....	11
<b>Figure 6:</b> Roche's expenditures on R&D from 2011 to 2021 .....	13
<b>Figure 7:</b> Roche's expenditures by type from 2019 to 2021 .....	13
<b>Figure 8:</b> J&J's expenditures on R&D from 2011 to 2021 .....	16
<b>Figure 9:</b> Current ratio with (left) and without (right) including total current assets of Roche and J&J for 2019-2021 .....	25
<b>Figure 10:</b> Quick ratio (left) and cash ratio (right) of Roche and J&J for 2019-2021 .....	25
<b>Figure 11:</b> Accounts receivable turnover (left) and day's receivables (right) of Roche and J&J for 2019-2021 .....	27
<b>Figure 12:</b> Inventory turnover (left) and day's inventories (right) of Roche and J&J for 2019-2021 .....	27
<b>Figure 13:</b> Accounts payable turnover (left) and day's payables (right) of Roche and J&J for 2019-2021 .....	28
<b>Figure 14:</b> Cash conversion cycle of Roche and J&J for 2019-2021 .....	29
<b>Figure 15:</b> Asset turnover of Roche and J&J for 2019-2021 .....	29
<b>Figure 16:</b> Debt ratio, including total liabilities (left) and debt ratio, including short- and long-term debt (right) of Roche and J&J for 2019-2021 .....	31
<b>Figure 17:</b> Debt-to-equity ratio, including total liabilities (left) and debt-to-equity ratio, including short- and long-term debt (right) of Roche and J&J for 2019-2021 .....	32
<b>Figure 18:</b> Equity multiplier (left) and interest coverage ratio (right) of Roche and J&J for 2019-2021 .....	33
<b>Figure 19:</b> Net profit- (left) and operating-margin (right) of Roche and J&J for 2019-2021 .....	34
<b>Figure 20:</b> ROA (left) and ROE (right) of Roche and J&J for 2019-2021 .....	36
<b>Figure 21:</b> ROCE of Roche and J&J for 2019-2021 .....	36

# Chapter 1

## Introduction

---

The pharmaceutical industry is one of the most important industrial sectors with key contributions to patients' lives and society on a global level. The consistent demand for healthcare services, especially in the era of the COVID-19 pandemic, renders the pharmaceutical sector as one of the most important industries due to its significant role to mankind. Pharmaceuticals have contributed to the increase in life expectancy, to treat diseases and traumas, to eliminate and eradicate illnesses and overall to provide to patients and their families a better quality of life. On top of that, the pharmaceutical industry, being a multi-billion-dollar global industry, is responsible for millions of jobs around the world, establishing its importance not only through ground-breaking treatments and by saving millions of lives everyday but also by being a key asset and a significant booster in the global economy.

For all these key contributions and many more, big pharmaceutical companies are considered leaders of the global economy and human health, especially on difficult times, such as during the COVID-19 crisis, and the pharmaceutical sector is considered a very interesting area for investigation. In this context, the main goal of this study is to evaluate the financial performance of 2 big pharmaceutical companies by calculating various key economic indicators during the COVID-19 pandemic. Ratio analysis will be used as a methodological approach, using financial measures of efficiency, liquidity, leverage and profitability to assess the performance of the selected companies.

This study is conducted by taking into account secondary data for a three-year period (2019-2021) of the pharmaceutical companies' performance. The main data were originated by the published financial statements of the companies, such as balance sheets, income and cash flow statements and the economic indicators were calculated, using software tools, such as Microsoft Excel.

The main objectives of the current research are briefly outlined below in order to have a better overview of the present study:

- Financial evaluation of big pharmaceutical companies during COVID-19 pandemic, using ratio analysis approach by extrapolating data from published financial statements
- Strategic planning of the companies, possible strategic redirection due to COVID-19 (e.g. enhance product portfolio to fight pandemic) and correlation with the estimated financial indicators

The most essential questions, that this project aims to answer as a guide for this research, are the following:

- How did coronavirus disease affected the selected pharmaceutical companies and COVID-19 impact on their performance
- How did pandemic affected the strategic management of the companies
- How did the companies respond and in which way to fight the pandemic

This research as well as the main findings of this diploma were established by world's well-known leading sources of financial content and statistical analysis as well as the financial statements and the annual reports of the selected pharmaceutical companies (Investopedia, 2022; Johnson & Johnson, 2020; Johnson & Johnson, 2021a; Johnson & Johnson, 2021b; Johnson & Johnson, 2022a; Roche, 2019a; Roche, 2019b; Roche, 2020a; Roche, 2020b; Roche, 2021a; Roche, 2021b; Statista, 2022; Wall Street Journal, 2022a; Wall Street Journal, 2022b; Wall Street Journal, 2022c; Wall Street Journal, 2022d). The key findings of this study were found to be in accordance with the business strategy and strategic mindset of the two companies.

In the framework of this diploma thesis, the financial performance of Roche and Johnson & Johnson will be evaluated, using ratio analysis as a financial approach. These companies were selected after careful consideration and the main purposes are presented below in brief:

- Both companies are at the top of the list of the pharma sector, regarding key financial metrics in respect of revenue, market cap value and R&D expenditures
- Roche and Johnson & Johnson have both contributed significantly against the fight of COVID-19
- Roche have contributed against the fight of coronavirus, manufacturing and delivering products mostly in the area of diagnostics, whereas Johnson & Johnson in the area of vaccination (single-dose vaccine)
- Roche has its headquarters in Europe, whereas Johnson & Johnson in USA, making it an interesting geographical difference, even though they both are global leaders of their industry

# Chapter 2

## The Pharmaceutical Sector

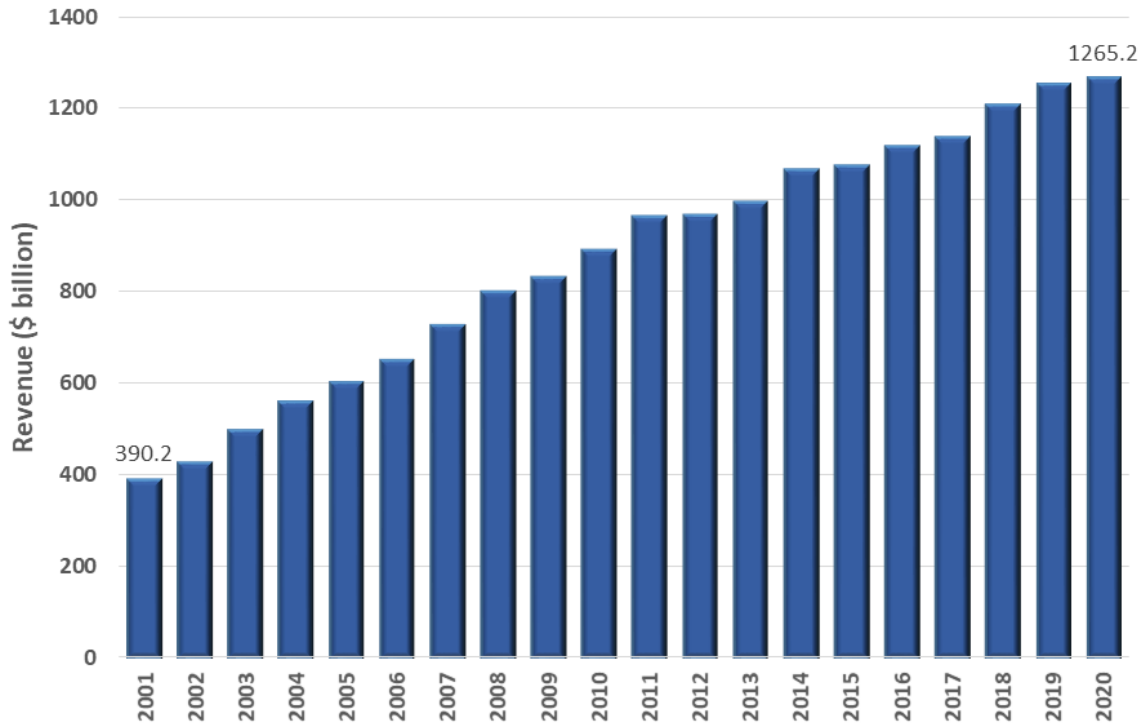
---

### 2.1 Pharmaceutical Industry and Leading Pharmaceutical Companies

The pharmaceutical sector is one of the most fast growing and important industries on a global level, especially in the era of COVID-19, where the top healthcare companies are at the forefront of the fight against this pandemic. Pharma industry includes pharmaceutical companies, biotech, clinical laboratories, pharmaceutical retailers and any healthcare company that is related with pharmaceuticals (Deshmukh, 2021).

Pharma industry has presented extensive growth the last two decades with \$1.27 trillion revenue value globally in 2020. This growing revenue trend is depicted in Figure 1, starting from 2001 where the market was only valued at \$390 billion (Mikulic, 2021a; Mikulic, 2022a).

The future of pharmaceutical companies is expected to have a positive growth in the following years with projections to show that the pharmaceutical market size will reach \$1.7 trillion in 2025 at a compound annual growth rate (CAGR) of 8% (Research and Markets, 2021). A patient-centered future, tailor-made medicinal approaches, disruptive technologies (e.g. 3D printed drugs, preventive medicines etc.) and digital revolution will have a significant impact in the global pharmaceutical market. In addition, the fast-growing markets of China, India and Brazil will significantly impact pharmaceutical ranking, since pharmaceutical leaders start to rely on new emerging economies, leading to a gradual migration of financial and R&D activities (Deshmukh, 2021; EFPIA, 2021).



**Figure 1:** Worldwide pharmaceutical market revenue 2001-2020 (Mikulic, 2022a)

Table 1 illustrates the global ranking of the top ten largest companies by market cap value. Johnson and Johnson is an American pharmaceutical and consumer products giant, which is worth \$463.12 billion in market cap, putting it at the top of the list of pharmaceutical leaders, while Roche, a Swiss pharmaceutical company active in diagnostics and pharmaceuticals (e.g., immunology, oncology, ophthalmology, neuroscience, infectious diseases), comes second with \$332.74 billion worth in market cap, followed by Pfizer, AbbVie and Eli Lilly.








All five companies have participated actively against the fight of COVID-19, making great efforts and providing their expertise in the areas of vaccines, diagnostics and antiviral treatments (Companies Market Cap, 2022; Deshmukh, 2021, EFPIA, 2021).

## 2.2 COVID-19 and the Pharma Response

COVID-19 outbreak was one of the most challenging situations that humanity have faced during the last two years. More than 450 million COVID-19 cases were confirmed and more than 6 million of deaths were recorded by Q1 of 2022 (Worldometer, 2022).



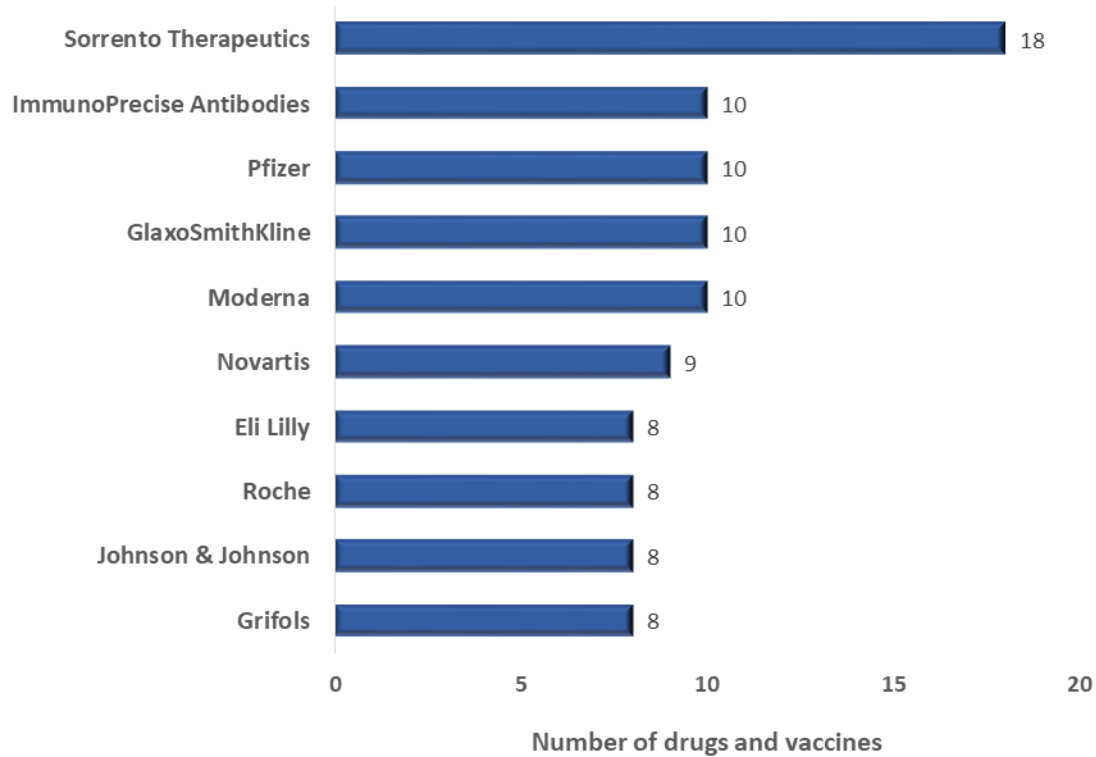
**Table 1:** Top 10 pharmaceutical leaders by market cap (Companies Market Cap, 2022)

Rank		Company	Market Cap (in Billions)	Country
1		Johnson & Johnson	\$463.12	United States
2		Roche	\$332.74	Switzerland
3		Pfizer	\$293.60	United States
4		AbbVie	\$275.71	United States
5		Eli Lilly	\$262.33	United States
6		Novo Nordisk	\$239.12	Denmark
7		Merck	\$200.01	United States
8		AstraZeneca	\$191.37	United Kingdom
9		Novartis	\$189.37	Switzerland
10		Bristol-Myers Squibb	\$152.03	United States

This health crisis disrupted our everyday lives and medicine and health products transport worldwide, exposing significant gaps in healthcare systems. The most affected areas from this pandemic was particularly the low- and middle- income countries. The latest years, access to medicine challenges to all corners of the world as well as the development of new products against coronavirus disease have become a priority for governments and pharmaceutical industry. As a result, pharma companies established essential partnerships and collaborations to overcome supply chain challenges and increased demand of particular medicinal products, such as vaccines against COVID-19. Stock management as well as stock planning were successfully managed through information sharing and essential collaborations by the leading pharmaceutical companies in order to provide medicines even in the most challenging situations. For instance, vaccines that are needed to be kept at low temperatures, should be stored at cold conditions and follow strict supply routes, securing they remain intact while delivered all over the world (Access to Medicine Foundation, 2021).

By the 1<sup>st</sup> of April of 2022, more than 1480 drugs/vaccines were developed from the pharmaceutical companies to target and fight coronavirus, showing the extensive pharma response in such difficult times. The leading companies by number of COVID-19 drugs and vaccines in development are depicted in Figure 2 (Mikulic, 2022b). However, pharmaceutical

companies have also contributed against coronavirus in many other ways, like manufacturing products in the area of diagnostics, which is a very important tool against the spread of the disease. A more detailed description will be presented in the following sectors, indicating the response of the selected pharmaceutical companies against the combat of coronavirus.



**Figure 2:** The leading companies by number of COVID-19 drugs and vaccines in development (Mikulic, 2022b)

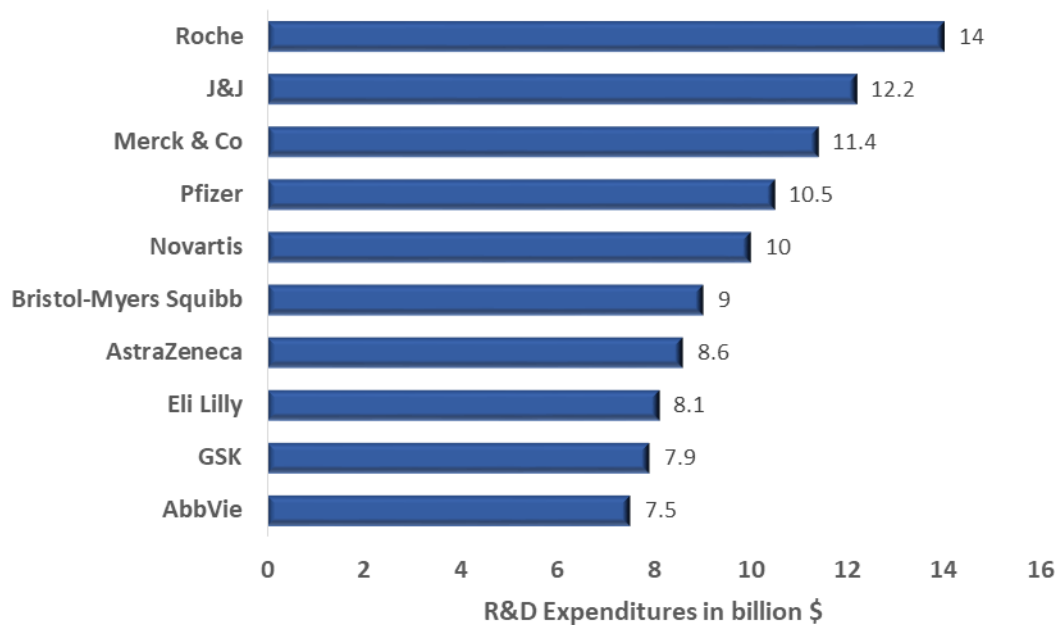
### 2.3 R&D and Innovation in Pharma Industry

Research and development (R&D) is considered as one of the most vital departments in pharmaceutical companies. R&D is associated with new product development, innovation, product portfolio enhancement etc., and is considered a key contributor to the success of the business. Thus, many pharmaceutical leaders tend to spend million dollars on R&D. R&D landscape involves all the steps from the initial research to pre-clinical and clinical stages of the compound testing. In 2020, pharmaceutical industry’s R&D expenditures have risen to roughly \$200 billion on a global level compared to \$137 billion in 2012 (Mikulic, 2021b).

R&D is the key to success in the pharma industry and therefore the leader companies tend to spend more than 25% of their revenue on R&D. Excluding the semiconductor industry, pharmaceutical industry is the largest spender on R&D, since their success depends on the discovery and development of new drugs (Investopedia Team 2022).

In 2020, the top pharmaceutical spenders on R&D were Johnson & Johnson (14.8% of revenue), Roche (24.1% of revenue), Novartis (18.5% of revenue), Merck (28.3% of revenue), Pfizer (22.4% of revenue), AstraZeneca (22.6% of revenue) and Eli Lilly (24.5% of revenue) (Investopedia Team, 2022).

According to Statista, the leader pharmaceutical companies are projected to continue spending a lot on R&D as illustrated in Figure 3 (Mikulic, 2021c).

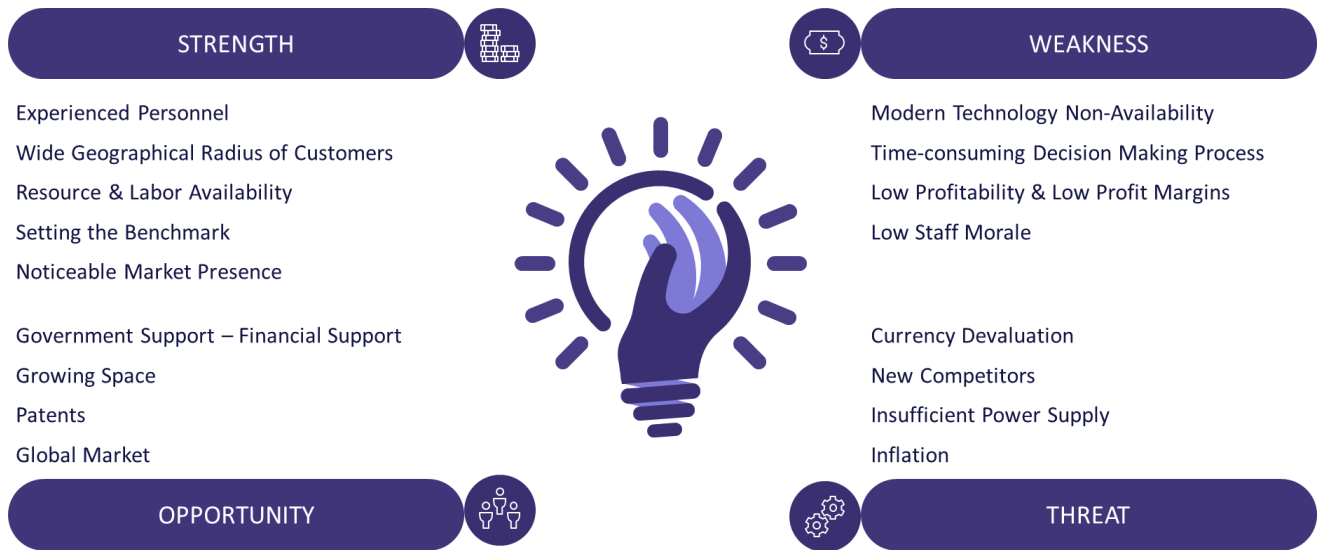


**Figure 3:** Global top pharmaceutical companies based on R&D spending projections for 2026 (Mikulic, 2021c)

However, the R&D approach in pharma sector has started to change as more and more manufacturers turn to third parties, outsourcing large parts of R&D process, mostly the ones associated with the clinical stage to reduce expenses (Mikulic, 2022b).

#### 2.4 SWOT Analysis of Pharma Industry

A SWOT analysis is considered a useful tool for the managers and other stakeholders to analyze the industry of interest and to improve their standing in the industrial sector. Therefore, in this subsection, a SWOT analysis of the pharmaceutical industry is briefly presented (Figure 4) to better understand either the companies of examination or the industry itself.



**Figure 4:** SWOT analysis of pharmaceutical industry (Davis, 2022)

# Chapter 3

## Roche

---

Hoffmann-La Roche is one of the largest biotech companies worldwide, working as a provider of *in vitro* diagnostics as well as a global medicine supplier, providing novel solutions to various disease areas. In 2021, Roche celebrated its 125 years anniversary and took advantage of this opportunity to state once again company's main purpose and vision, which is "doing now what patients need next". This 125 legacy is based on Roche's strong commitment to their employees, their collaborations, their stakeholders but most of all to their patients and the improvement of their quality of life (Roche, 2022a).

Roche's holistic approach is active in three main pillars to ensure sustainability as part of business' core strategy as well as part of everyone's contribution at Roche. These dimensions of sustainability are the following (Roche, 2021a):

- Environment: Roche is constantly trying to minimize its environmental footprint. The impact on nature has always been a top priority for Roche. The respect to the environment is reflected to their commitment to reduce gas emissions to zero by 2050 and to collaborate with suppliers that share the same vision.
- Society: the company is foremost contributing to society by providing longer and better lives and better treatment to patients. The same respect in human rights is also depicted to other stakeholders, such as their colleagues, business partners, suppliers and of course Roche's human force, by providing safety, health, development and by promoting ethical values, such as mutual respect and equal opportunities for everyone.
- Economy: Roche provides quality jobs for their employees to ensure secured livelihoods for them and their families, while at the same time is earning competitive returns for their investors by promoting innovation and by translating science into medicines.

### 3.1 Business Strategy of Roche

The major strategic principal of Roche is to find and provide integrated and innovative solutions in both medicine and diagnostic segments and to establish data-driven insights that improve patients' quality of life and evolve existing practice of medicine.

Business environment changes lead to new challenges due to health complexity and budget issues. Roche finds and exploits new opportunities that stem from advances in life sciences, digitalization era and new disease outbreaks, such as COVID-19 pandemic.

Roche's vision is to provide the right therapy to the right patient at the right time for the right value, combining company's expertise in diagnostics and pharmaceutical sector with data analysis for better therapeutic decisions.

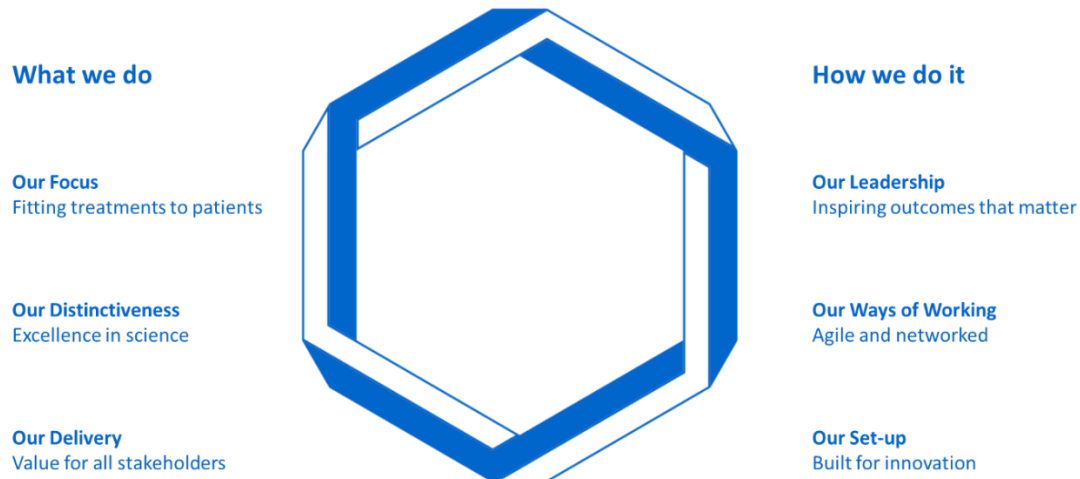
Four are the key elements for company's excellence: the rich expertise in disease biology, the right management of company's abilities in medicine and diagnostics, the out-of-the-box thinking to enhance innovation, and the long-term orientation.

One of the most important factors of Roche's success is the significant strategic alliances conducted with third party contractors in order to provide integrated solutions for better health and financial benefits. A diversity stakeholder approach (more than 250 external partners) is utilized to provide broader solutions to patients and establish a strong healthcare ecosystem.

In respect of product portfolio, Roche's main focus is *in vitro* diagnostics and prescription medicine rather than to expand to other pharmaceutical segments, such as biosimilars, generics or over-the-counter (OTC) medicines.

The driving force of Roche is to create value for all stakeholders that participate in company's environment, including, among others, third party collaborations, patients, doctors and employees, while at the same time contributes to society by delivering a sustainable environmental footprint and earns competitive returns of investments.

The core business principles of Roche of what they do and how they do it is summarized in Figure 5 (Roche, 2019a; Roche 2020a; Roche, 2021a; Roche, 2022b).



**Figure 5:** Roche’s strategy and value (Roche, 2021a)

### 3.2 COVID-19 Pandemic and Roche’s Contribution

Roche is a worldwide company that is active in two main pillars, diagnostics and pharmaceuticals. On the rise of COVID-19, diagnostics’ sector has played a key role in disease prevention, on time treatment and overall management. During pandemic years, Roche succeeded to enhance its product portfolio, by providing 22 COVID-19 solutions, thus actively contributing to the fight against COVID-19 (Roche, 2021a).

In March of 2020, FDA approved PCR-based cobas SARS-CoV-2 test of Roche to be used as a diagnostic tool to combat COVID-19 and since then millions of tests were distributed globally. In May of 2021, Elecsys Anti-SARS-CoV-2 antibody test received also FDA approval to assess if someone was previously infected by the virus and if the patient has developed antibodies, information that is important in the epidemiologic point of view (Roche, 2020a).

Cobas SARS-CoV-2 Set 1 variant test was launched by Roche in March 2021, which is a test for research purposes that detects and differentiates SARS-CoV-2 mutations in known variants. SARS-CoV-2 Antigen Self-Test Nasal was also launched in Q1 of 2021 as a diagnostic tool used at home, providing easy self-sample collection from the front area of the nose and rapid results within 15 minutes. Another addition to Roche’s portfolio against COVID-19 was also introduced in June of 2021 under the name of SARS-CoV-2 assay on the cobas Liat system, which was the first rapid PCR test, bringing results within 20 minutes. In December of 2021, Roche’s COVID-19 At-Home Test was approved by the FDA, developed for younger individuals (>2 years old). During 2021, three diagnostic test kits (VirSNIp variant kits) were launched and the Navify Pass was introduced as a digital solution to access COVID-19 health data, using a mobile application.

Roche focuses on a point-of-care strategy by developing specialized diagnostic tools, which provide diagnostic information not only on COVID-19 pandemic but also on diseases, like sepsis and influenza A/B (Roche, 2021a).

Regarding pharmaceutical sector, Roche collaborated with Gilead Sciences on the assessment of two medicines (Actemra/RoActemra and Veklury) for their use in hospitalized patients with severe COVID-19 related pneumonia. During 2021, Ronapreve, an antibody cocktail of casirivimab and imdevimab, was extensively studied in clinical trials and by the end of October of 2021 EU Commission included it as one of the ten most promising COVID-19 treatments. During 2021, Roche has also worked with Atea on the AT-527, an antiviral medicine for COVID-19, even though Roche ended this collaboration by the end of November to focus on other COVID-19 treatments (Roche, 2021a).

During pandemic years and especially at the beginning of the outbreak, Roche had faced significant challenges in respect of logistics, manufacturing capacity, and of course fight against other serious diseases in immunology, oncology, infectious diseases, neuroscience and ophthalmology. However, Roche's people have repeatedly proven their commitment to humanity, their rich expertise, excellence and agility, finding solutions to the most challenging situations (Roche, 2020a).

### **3.3 New Collaborations to fight COVID-19**

Despite Roche's contribution to the fight against COVID-19 in the area of diagnostics (testing solutions) and medicines, Roche acknowledged the great responsibility to society during the ongoing situation and worked tirelessly to become even more active to this worldwide war. As mentioned above, one of the main cornerstones of Roche's strategical route is to build partnerships and successful alliances with various stakeholders around the world in order to serve in the most efficient way the healthcare community. In the era of COVID-19 pandemic, Roche has built strong collaborations, even with competitors, and worked at accelerated conditions in order to develop and provide COVID-19 diagnostic tools and treatments.

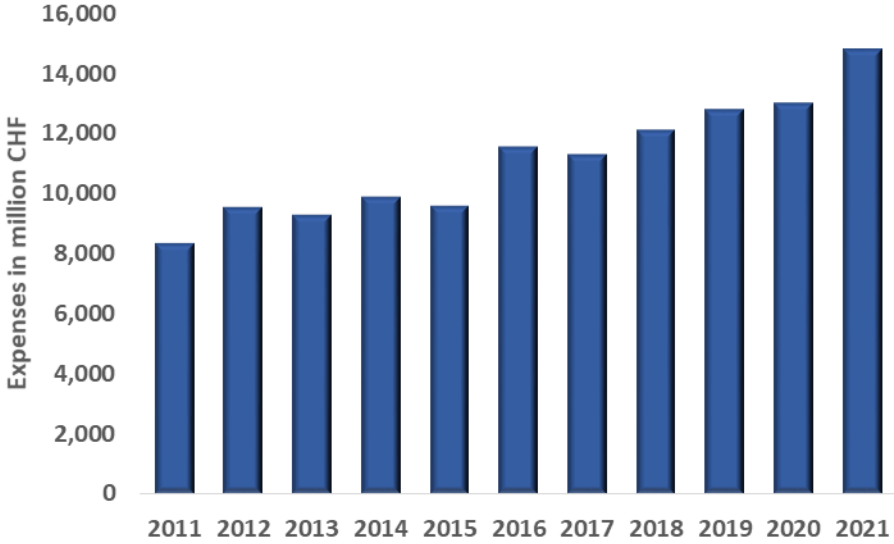
One of the most vital strategic alliances was the collaboration with Regeneron, a US biotech. This partnership embraced the combination of joint forces to develop and ensure global distribution of Regeneron's coronavirus antibody combination. This shared vision presented exceptional results. Within six months, the technology transfer was completed and the first delivery of the products started taking place to countries all around the world. Despite the risks and the feeling of uncertainty due to the challenging situations in supply chains both teams embraced the difficult situation and developed/manufactured jointly life-saving treatments (Roche, 2021a).

### **3.4 R&D and Innovation of Roche**

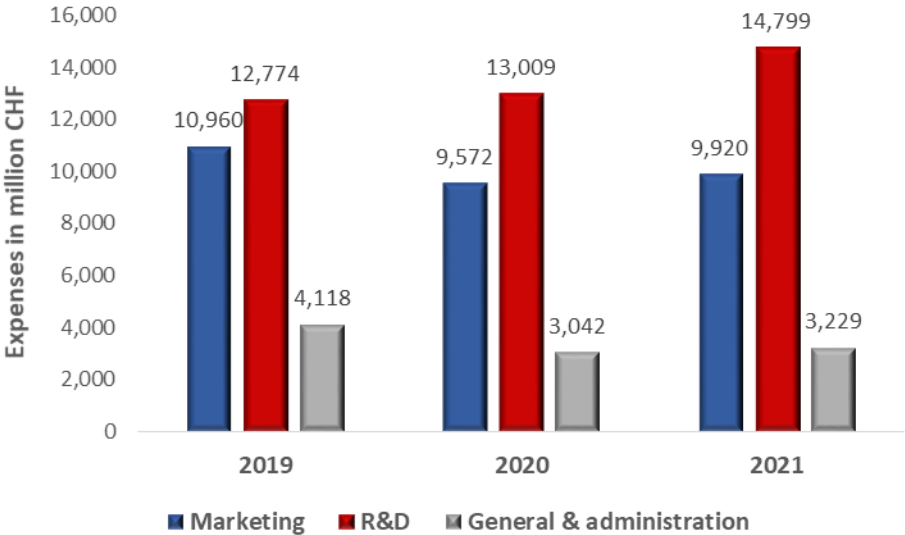
Being one of the largest pharma companies and a leader in oncology, which is the most revenue-generating therapeutic area on a global level, Roche presented total revenue of around \$68.6 billion in 2021 (Mikulic, 2022c).



Roche’s route to the top is anticipated to company’s innovation and R&D investments. Roche is considered one of the biggest spenders in R&D, which is clearly depicted in Figure 6, where company’s R&D expenditures are presented from 2011 to 2021, and in Figure 7, where company's expenses by type (marketing, R&D and general and administration) are presented from 2019 to 2021 (Elmhist, 2020; Mikulic, 2022d; Mikulic, 2022e). Both figures show that Roche is a company that has been boosting its R&D expenditures over the years, indicating that R&D investments can be key contributors to a company’s success.



**Figure 6:** Roche’s expenditures on R&D from 2011 to 2021 (Mikulic, 2022e)



**Figure 7:** Roche’s expenditures by type from 2019 to 2021 (Mikulic, 2022d)

# Chapter 4

## Johnson & Johnson

---

Johnson & Johnson (J&J) is an American company, being more than 130 years at the forefront of the fight against diseases with primary purpose to “keep people well at every age and every stage of life”. Active in three distinct business segments (medical devices and diagnostics, pharmaceuticals and consumer packaged goods), J&J’s vision is to create a healthier world without any access-, distribution- or cost-limitations for anyone. Their values are outlined in their credo, which is a guide of decision-making, putting as a top priority the needs and well-being of their patients. J&J commitments outline company’s responsibilities to its stakeholders and of course to society worldwide. J&J’s principles and values as stated in its credo are summarized below (Johnson & Johnson, 2022b):

- Humanity: company’s main responsibility is to provide products and services of high-quality to patients, families, health professionals (e.g., doctors, nurses) and anyone in need. This commitment is also depicted by company’s efforts to reduce expenses and maintain low prices for their customers as well as their business partners.
- Human resources: J&J is loyal to its employees all over the world, respecting values, such as equality, diversity and dignity. The company strives to provide, among others, security, a balanced environment, personal development, health and safety.
- Society: J&J supports education, makes charities and strives to succeed better access and health even in the most challenging situations.
- Environment: J&J is dedicated to the protection of environment by respecting and maintaining natural resources.
- Stockholders: J&J is constantly trying to efficiently manage and utilize its liabilities and assets to make a sound profit for the stockholders but at the same time it continues to invest in R&D, innovation, equipment, new premises and products, things that helped the business thrive over the years and reach the top.

#### **4.1 Business Strategy of J&J**

The board of directors has an active role and provides continuous guidance and support to the senior management to evaluate and oversee the short- and long-term strategies of the company. The Board consists of experts with a wide range of expertise, such as science, health, regulatory and ESG (Environmental, Societal and Governance) areas, which guide the management to develop practices that align with business strategy to execute the main responsibilities and strategic goals. Directors organize and participate on scheduled executive sessions to review Company's performance and long-term strategical goals. They also discuss and get feedback from senior managers and employees to deepen their understanding of the business and the corporate culture (Johnson & Johnson, 2021b; Johnson & Johnson, 2022a)

In this context, one of the key contributors of J&J success is its personnel. J&J follows a specific human capital management strategy with three main principles. To attract and recruit the best human capital, to develop and engage its employees and to empower and inspire its personnel. In this way, company's employees, being encouraged to develop both professionally and personally, are committed to company's values and strive to achieve business' goals (Johnson & Johnson, 2021a).

In 2019, J&J outlined its core business strategical goals that will follow for the next years to succeed a significant market growth. Differentiation strategy is employed by the company to deliver ground-breaking medicine to meet the needs of everyone around the globe. J&J has also set as a goal to get regulatory approval for more than 40 leading brand lines until 2023 to significantly enhance its market growth. At least 10 new differentiated medicines will be launched or get an approval by the end of 2023 to enhance the pipeline and product portfolio of J&J. The company embraces also a differentiated R&D strategy, forging new approaches to develop transformational medicines in the area of diseases and cell and gene therapy. As stated in subsection 2.3, J&J is one of the biggest spenders on R&D and innovation, following a disciplined capital allocation strategy (Johnson & Johnson, 2021c).

#### **4.2 COVID-19 Pandemic and J&J's Contribution**

J&J has actively participated against the fight of coronavirus. During this global public health crisis, J&J responded to this global call of action against the pandemic, by developing a single-dose COVID-19 vaccine. J&J had leveraged all its forces on science, operation and finances to accelerate the work on COVID-19 vaccine, which received an emergency authorization from FDA on February 2021. The same year, J&J built unprecedented partnerships with other leaders of healthcare industry to receive regulatory authorization in other countries around the world. One of the most remarkable contributions of J&J during this global crisis, was its commitment of accessibility, availability and affordability of the vaccine all over the world.

During these difficult times, J&J have served in the most efficient way its patients and customers, to meet their needs and to ensure medicine accessibility. Company's preparation on unforeseen events has helped its supply chain network to be unaffected in many processes, by maintaining critical inventory at major distribution centers and by collaborating with external suppliers for extra support.

J&J, despite being at the frontline of this health crisis, is also committed to its employees, helping them to adapt to the new working environment, to balance their responsibilities both in a professional and personal level and to support their physical, mental and emotional health.

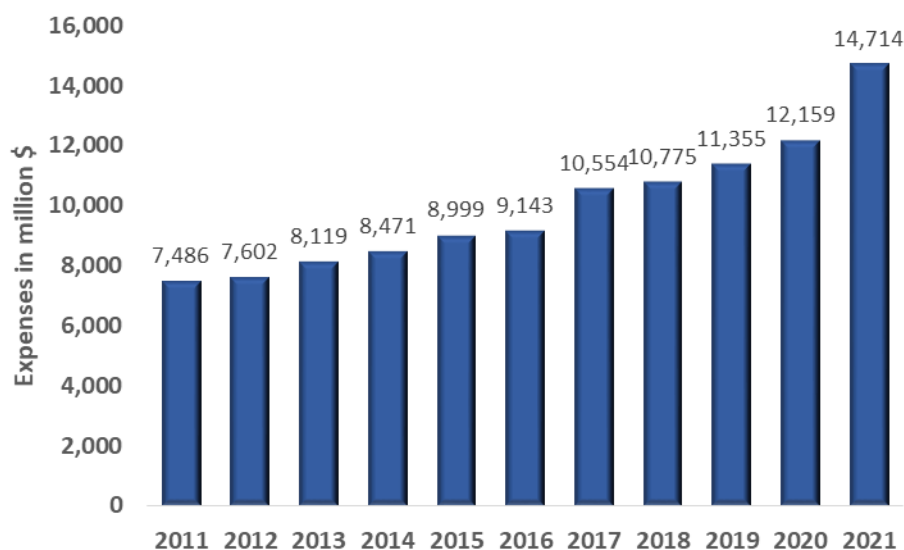
The company has also provided support to communities and health workers by providing \$50 million dollars in 2020, which was further expanded to \$250 million as a multi-year commitment.

Finally, J&J follows an established resilient business model, which enables the company to be effective even in these turbulent times and to remain committed to both its stakeholders and shareholders (Johnson & Johnson, 2021b, (Johnson & Johnson, 2022a).

#### 4.3 R&D and Innovation of J&J

R&D is being a top priority for J&J, which is reflected in its increasing investments over the years. As mentioned above, R&D is considered one of the most significant parts of a pharmaceutical company and there is no surprise that J&J is one of the top spenders on R&D expenditures.

As depicted in Figure 8, J&J have spent more than \$14.5 billion dollars on R&D programs in 2021 (\$93.8 billion revenue in 2021), a significant increase from 2011 when the company invested around \$7.5 billion dollars (Mikulic, 2022f).



**Figure 8:** J&J's expenditures on R&D from 2011 to 2021 (Mikulic, 2022f)

# Chapter 5

## Financial Evaluation of Big Pharmaceutical Companies

---

In an era of increased healthcare expenses, population's aging and the continuous need for new medicines, pharmaceutical companies are considered the key leaders of the healthcare sector. The pharmaceutical industry is one of the most promising areas for investments, and therefore investors have to consider key financial metrics to analyze and evaluate the equity of pharma companies.

Pharma firms tend to invest in capital expenditures (CapEx) on research and development (R&D) activities and are characterized of long periods of time between initial research and commercialization. Therefore, the key financial ratios to evaluate the return on investment are those associated with R&D expenses and company's ability to manage high levels of profitability and debt.

In the framework of this diploma thesis, the key economic indicators, used for the financial performance of big pharmaceutical companies, are presented below as a separate subsection (Maverick, 2021).

### **5.1 Financial Ratio Analysis**

Whether being a CEO, an executive or an investor, business evaluation is important to assess the financial health, the potential and the organizational performance of a company. One of the most useful data management tools is considered ratio analysis, which uses key financial indicators to measure performance, to relate data found in financial statements and to craft strategies that improve company's state. A deeper understanding of financial results leads to better strategies and business decisions and overall to increased business value.

Financial statements, such as income statement, balance sheet and cash flow, provide all the useful financial data related to business activities for a specific time period and is used by either external or internal auditors to evaluate business performance.

In the framework of this diploma thesis, a financial ratio analysis will be conducted to assess the status of 2 global pharmaceutical companies.

During ratio analysis, it is important and meaningful to establish some rules in order to obtain a reliable business financial assessment, like using accurate, consistent and reliable financial records, setting a benchmark for comparison and carefully interpreting the results by taking into account important factors in assessing performance.

Four are the main classes of ratios, as divided below:

- Liquidity
- Efficiency
- Leverage
- Profitability

In the following sections, the key financial indicators used in common business practice will be presented in brief as well as some additional ratios related to R&D activities, since pharmaceutical companies invest high amounts in capital expenditures on research and development (Planergy, n.d., Poznanski, 2013).

## 5.2 Liquidity Ratios

Liquidity ratios are financial indicators that determine whether a business have enough cash to meet its current debt obligations. As mentioned above, pharma companies tend to invest high CapEx on R&D, thus they have to efficiently maintain their liquidity and handle their debt levels, without obtaining external capital. Table 2 presents the basic key liquidity indicators that show company’s ability to pay off short-term obligations without receiving capital from external sources (Hayes, 2021a; Planergy, n.d., Poznanski, 2013).

**Table 2:** Key liquidity indicators (Hayes, 2021a; Planergy, n.d., Poznanski, 2013)

Liquidity Indicator	Key Points in Business
$\text{Current Ratio} = \frac{\text{Current Assets}^1}{\text{Current Liabilities}}$	<p>Effectiveness of a company to meet its payables (short-term obligations), using its current assets (cash, accounts receivables, inventories)</p> <p>A value lower than 1 implies that the business cannot pay off its payables with its current capital</p>

$$\text{Quick Ratio} = \frac{\text{Cash \& Cash Equivalents} + \text{Accounts Receivables}}{\text{Current Liabilities}}$$

Ability of a company to cover its short-term obligations without selling its inventory

High ratio values imply that the company has the capacity to meet its short-term debts, using its most liquid assets

A financial indicator of company's health and short-term liquidity

$$\text{Cash Ratio} = \frac{\text{Cash \& Cash Equivalents}}{\text{Current Liabilities}}$$

A more stringent liquidity indicator, which determines company's ability to meet current liabilities without liquidating other assets

<sup>1</sup> Current Assets = Cash & Cash Equivalents + Accounts Receivables + Inventories

### 5.3 Efficiency Ratios

Efficiency ratios or activity ratios are financial metrics used to evaluate how efficiently a business utilizes and manages its liabilities and assets. Table 3 illustrates the basic key efficiency indicators that depict company's ability to use its assets and liabilities to generate sales and profit (Kenton, 2021; Planergy, n.d., Poznanski, 2013).

**Table 3:** Key efficiency indicators (CFI, 2022a; Fernando, 2022a; Hayes, 2022a; Hayes, 2022b; Murphy, 2020; Murphy, 2021)

Efficiency Indicator	Key Points in Business
$\text{Accounts Receivable Turnover} = \frac{\text{Net Credit Sales}}{\text{Average Accounts Receivables}}$ $\text{Days' Receivables} = \frac{365}{\text{Accounts Receivable Turnover}}$	<p>Effectiveness of a company to collect its accounts receivables</p> <p>High ratio values are preferable</p> <p>Measurement of how efficiently a business manages its credits</p> <p>Days' receivables measure the days until receivable collection</p>
$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Value of Inventory}}$ $\text{Days' Inventories} = \frac{365}{\text{Inventory Turnover}}$	<p>Effectiveness of a company to replace its inventories during given time</p> <p>High inventory turnover value could imply either small/insufficient inventory or strong sales</p> <p>Days' inventories measure the days, needed to sell inventory</p>
$\text{Accounts Payable Turnover} = \frac{\text{Net Credit Purchases}^2}{\text{Average Accounts Payables}}$ $\text{Days' Payables} = \frac{365}{\text{Accounts Payable Turnover}}$	<p>Efficiency of a company to pay creditors and suppliers</p> <p>A value, small enough to use money for investments but high enough to pay accounts payables rather quickly</p>

	Days' payables measure the days that it takes to pay off suppliers
$CCC^3 = \text{Days' Inventories} + \text{Days' Receivables} - \text{Days' Payables}$	Measurement of time that a business needs to gather receivables, to pay its payables and to sell its inventory
$\text{Asset Turnover} = \frac{\text{Total Sales}}{\text{Average Total Assets}}$	Efficiency of a company to generate revenue, using its assets

<sup>1</sup> Net Working Capital = Current Assets – Current Liabilities; <sup>2</sup>Net Credit Purchases = Cost of Goods Sold + Ending Inventory – Starting Inventory; <sup>3</sup> Cash Conversion Cycle

## 5.4 Leverage Ratios

Leverage ratios are metrics that depict company's dependence on equity and debt to finance its operations and assesses company's efficiency to meet its financial obligations. Table 4 presents the basic key leverage metrics that are usually used by managers and investors to obtain a picture of how efficiently the firm is financing its operations in respect of debt management (Hayes, 2020; Planergy, n.d.; Poznanski, 2013).

**Table 4:** Key leverage indicators (Fernando, 2022b; Hayes, 2020; Hayes, 2021b; Hayes, 2021c; Planergy, n.d.)

Leverage Indicator	Key Points in Business
$\text{Debt Ratio} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$	Measurement of the extent of leverage possessed by a company Indicator of assets financed through debt Ability to manage obligations, translated to profitability and long-term viability of the company
$\text{Debt-to-Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Total Shareholders' Equity}}$	Critical indicator of whether a firm's capital structure is based on financing via equity or debt High values are related with high risks but can also be associated with aggressive strategies for growth
$\text{Equity Multiplier} = \frac{\text{Total Assets}}{\text{Total Shareholder's Equity}}$	An indicator similar to debt-to-equity ratio High values imply that assets are mostly financed by debt rather than equity
$\text{Interest Coverage} = \frac{\text{EBIT}^1}{\text{Interest Expense}}$	Metric of riskiness with respect to company's current or future debt Low values imply that the business is burdened by debt expenses

<sup>1</sup> Earnings before interest and taxes; <sup>2</sup>Net Operating Income = Revenue – Certain Operating Expenses



## 5.5 Profitability Ratios

In pharmaceutical industry, it is essential to evaluate company's ability to manage its profitability. Auditors, investors and other stakeholders use profitability ratios to evaluate the overall financial health and performance of a company. Table 5 depicts the basic key profitability indicators that provide a deeper view of the financial performance of a business (Planergy, n.d.; Poznanski, 2013).

**Table 5:** Key profitability indicators (CFI, 2022b; Fernando, 2021; Hargrave, 2022a; Hayes, 2021d; Hayes, 2022c; Maverick, 2021; Murphy, 2022; Planergy, n.d.)

Profitability Indicator	Key Points in Business
$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Revenue}} \times 100$	<p>One of the most important metrics of a company's performance</p> <p>Measurement of generated net income (profit) as a percentage of sales (revenue)</p> <p>Indicator for investors to assess the overall financial health of a company</p>
$\text{Operating Margin} = \frac{\text{Operating Income}}{\text{Revenue}} \times 100$	<p>Measurement of company's ability to turn sales into profits through its operations</p> <p>Efficiency of a company to generate profit after paying variable costs (i.e. raw materials, wages) before paying taxes or interest</p>
$\text{ROA}^1 = \frac{\text{Net Profit}}{\text{Total Assets}} \times 100$	<p>Efficiency of a company to deploy its assets to generate profit</p> <p>High values imply company's ability to manage its balance sheet to create sales</p>
$\text{ROE}^2 = \frac{\text{Net Income}}{\text{Shareholders' Equity}} \times 100$	<p>A key financial indicator of high importance for investors</p> <p>Measurement of how effectively a company make use of its equity capital</p> <p>A major factor for pharmaceutical companies' evaluation, since high amounts of capital must be spent prior to their products commercialization</p>
$\text{ROCE}^3 = \frac{\text{EBIT}}{\text{Capital Employed}} \times 100$	<p>Efficiency of a company to generate profit from its capital</p>

<sup>1</sup> Return on Assets; <sup>2</sup> Return on Equity; <sup>3</sup>Return on Capital Employed

## 5.6 Other Ratios – Return on Research Capital

As previously stated, one of the main expenses of pharma firms are the costs related to the R&D activities. The return on research capital ratio (RORC) is a fundamental financial metric that estimates the received revenue of a company generated from R&D expenditures. RORC is calculated by the current gross profits (income statement) divided by previous year's total R&D expenditures and examines company's efficiency by translating previous year's R&D costs into current year revenue (Frankenfield, 2019; Maverick, 2022).

**Table 6:** Additional key financial indicators (RORC) (Frankenfield, 2019; Carbon Collective, 2021)

Key Financial Indicator	Key Points in Business
$\text{RORC} = \frac{\text{Current Year Gross Profit}}{\text{Previous Year R\&D Expenditure}}$	Measurement of productivity and growth with respect to R&D activities Indicator of generated revenue as a result of R&D capital expenditures

## 5.7 DuPont Analysis

In order to avoid misleading situations, since ROE is vulnerable to certain parameters, DuPont analysis is employed to decompose ROE and gain a better understanding of the company's performance (Hargrave, 2022b).

To avoid mistaken assumptions, a three-step DuPont analysis has been created to break down the drivers of ROE, as depicted below:

$$\text{ROE} = \text{Net Profit Margin} \times \text{Asset Turnover} \times \text{Equity Multiplier}$$

# Chapter 6

## Financial Performance of Roche and J&J

---

As mentioned in chapter 5, ratio analysis is one of the most useful tools to evaluate the financial performance of a business. In this chapter, ratio analysis in respect of liquidity, profitability, efficiency and solvency, will be used as a quantitative method to gain insight into Roche's and J&J's economical position by using their financial statements (e.g., income statement, balance sheet) (Roche, 2021b; Wall Street Journal, 2022a; Wall Street Journal, 2022b, Wall Street Journal, 2022c; Wall Street Journal, 2022d).

The exchange rate of 31<sup>st</sup> of December 2021, was used to convert the CHF to USD (1 CHF= 1.0968 USD), since the reporting currency of Roche is in Swiss francs and J&J's in US dollars (Exchange Rates, 2021).

### 6.1 Liquidity Ratios of Roche and J&J

As stated in chapter 5, liquidity ratios constitute a significant classification of financial indicators, measuring a company's ability to pay its short-term obligations without receiving external capital. Two different approaches were followed to calculate the current ratios of the selected pharma companies. In the first approach, the total current assets were used to measure companies' ability to pay off their current liabilities, whereas in the second approach current assets equal to cash and cash equivalents, account receivables and inventory were used. In addition, quick and cash ratios were also calculated to evaluate the liquidity of Roche compared to J&J.

In general, the higher the liquidity ratios the better and values higher than 1.00 indicate that the company has the resources to pay off its liabilities. Based on Figure 9, the current ratios of Roche

seem to decrease during the years in contrast with J&J, which shows a fluctuation pattern. The same trends are also observed to quick and cash ratio from 2019 to 2021 (Figure 9).

As depicted on the balance sheet of Roche, the company presented similar values in respect of cash, account receivables and inventory for 2019-2021. However, Roche’s current liabilities has significantly risen in 2021, affecting the liquidity of the company (see balance sheet of Roche in Annex). This increase is mainly attributed to the short-term debt liability, which according to Roche’s financial report of 2021 is accredited to amounts due to banks and other financial institutions (Roche, 2021b). It is possible that COVID-19 situation has contributed to this short-term obligation as one of the strategic goals of Roche is the investment on new products against this pandemic as well as its decision to repurchase its shares from Novartis (see 6.3 subsection).

J&J presented higher values of liquidity ratios compared to Roche, indicating a higher ability to pay off its obligations. Total current liabilities increased from ~36 billion dollars in 2019 to ~45 in 2021, indicating the high bargaining power of J&J to get credit. In the same context, total current assets have also increased from ~45 billion dollars in 2019 to ~61 in 2021, a rise that is mainly affected by short-term investments (see balance sheet of J&J in Annex).

Both companies seem to follow different strategical approaches and both present significantly lower values of liquidity ratios in comparison with the median financial ratios of the industry in US (Table 7), but similar (especially J&J) to 5-year average ratios given by other sources (Investing.com, 2021; Ready Ratios, 2021). Even though liquidity ratios less than 1.00 may seem alarming for some companies, for these pharmaceutical leaders seem to be part of their business strategy. Both companies presented a low liquidity risk, even during COVID-19 pandemic, with a strong cash generation ability (Roche, 2021b; Johnson & Johnson, 2021a).

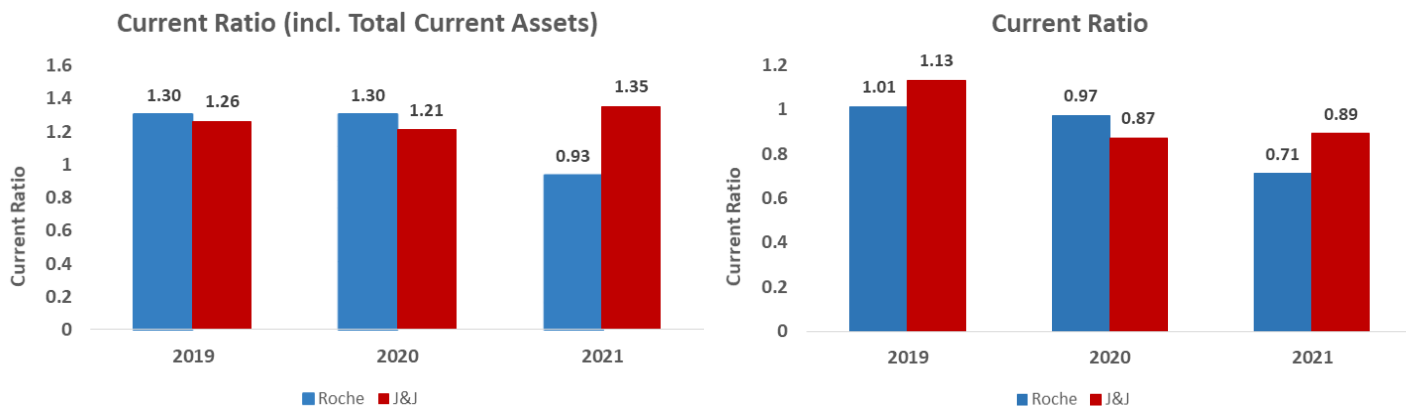
**Table 7:** Liquidity ratios for 2019-2021

Metric	Roche			J&J			Pharmaceutical Sector			5-year average <sup>4</sup>
	2021	2020	2019	2021	2020	2019	2021	2020	2019	
Current Ratio <sup>2</sup>	0.93	1.30	1.30	1.35	1.21	1.26	5.68 <sup>1</sup>	5.36 <sup>1</sup>	3.93 <sup>1</sup>	1.10
Current Ratio <sup>3</sup>	0.66	0.91	0.94	0.89	0.87	1.13				
Quick Ratio	0.46	0.63	0.68	0.66	0.65	0.88	3.73 <sup>5</sup>	3.72 <sup>5</sup>	2.96 <sup>5</sup>	0.89
Cash Ratio	0.18	0.23	0.25	0.32	0.33	0.48	4.77 <sup>6</sup>	4.59 <sup>6</sup>	3.17 <sup>6</sup>	-

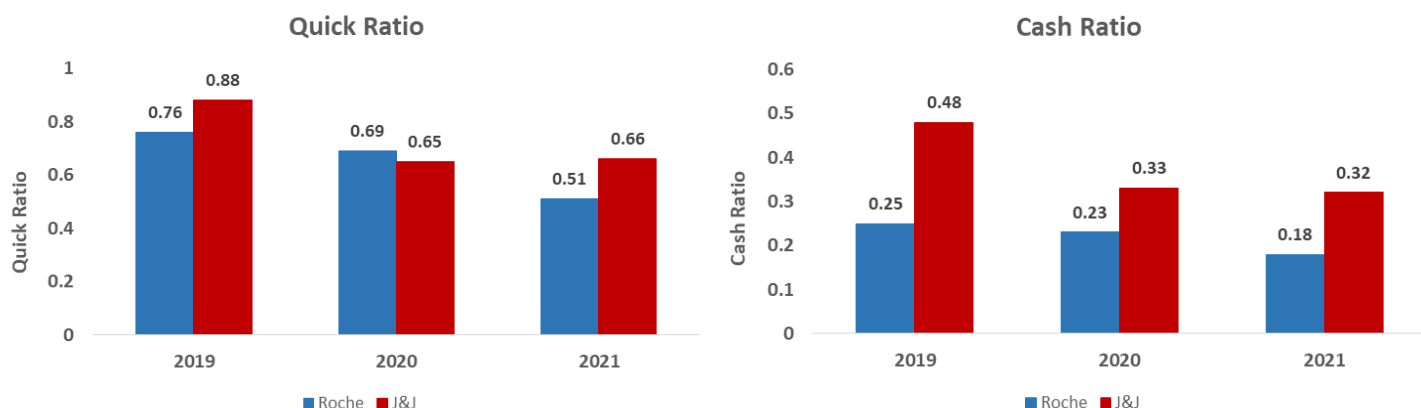
<sup>1</sup> Median industry financial ratios for US companies (number 4190 in 2021) (Ready Ratios, 2021); <sup>2</sup> Includes total current assets;

<sup>3</sup> Current assets equal to Cash and cash equivalents, account receivables, inventory; <sup>4</sup>5-year average estimation for the pharmaceutical industry (Investing.com, 2021); <sup>5</sup> Median industry financial ratios for US companies (number 3043 in 2021) (Ready Ratios, 2021);

<sup>6</sup> Median industry financial ratios for US companies (number 4087 in 2021) (Ready Ratios, 2021).



**Figure 9:** Current ratio with (left) and without (right) including total current assets of Roche and J&J for 2019-2021



**Figure 10:** Quick ratio (left) and cash ratio (right) of Roche and J&J for 2019-2021

## 6.2 Efficiency Ratios of Roche and J&J

As stated in chapter 5, efficiency or activity ratios measure the ability of a company to use its liabilities and assets efficiently, which is translated into sales, thus profit.

Net credit sales are not always clear from the financial statements of a company and as an alternative, the revenue of the companies was used to calculate accounts receivable turnover.

As illustrated in Table 8, Roche presented similar accounts receivable turnover ratios in 2019 and 2021, which could mainly be attributed to the generated sales of ~67.5 billion dollars and ~69 billion dollars, respectively. In 2020, revenue presented a significant decrease to ~64 billion dollars, a reduction that was reflected to accounts receivable turnover ratio and day's receivables. However, according to Roche's strategy, the counterparty credit risk is minimized by working with a large number of customers/suppliers, covering a wide geographical area. Roche continuously monitors the risk limits and exposures by country and by client, obtaining credit insurances to protect the collection of receivables or using other measures, such as

communication, negotiation, charging of interest for late payments or even legal actions. During COVID-19 pandemic, Roche ensured that overdue receivables and bad debt expenses remained at relatively low levels. Roche uses various indicators, such as overdue status, based on both internal data and external sources. Receivables past due more than 90 days are related only with public sector, which is considered to be of low risk (Roche, 2019b; Roche, 2020b; Roche, 2021b; Roche, 2021b). Thus, Roche’s accounts receivable turnover ratio and day’s receivables are considered to range between satisfactory levels.

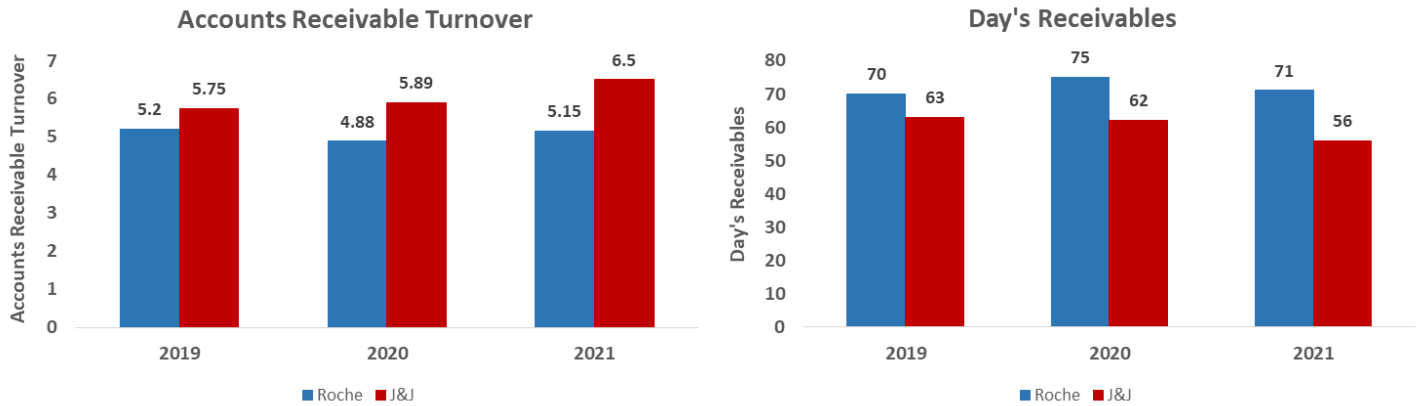
J&J presented higher values of accounts receivable turnover ratios and lower values of day’s receivables compared to Roche, indicating a slightly higher ability to collect its accounts receivables. The company follows a strict policy with its customers, working with counterparties under specific agreements. J&J enters into certain contracts with its stakeholders, establishing thresholds based on respective credit ratings and netting agreements (Johnson & Johnson, 2021b; Johnson & Johnson, 2022a).

Roche presented 5-10 accounts receivable days more compared to the median day’s receivables for US companies, whereas J&J presented 2-9 days less, indicating a better ability to collect cash from its customers in comparison with other peers (Table 8).

**Table 8:** Efficiency ratios for 2019-2021

Metrics	Roche			J&J			Pharmaceutical Sector		
	2021	2020	2019	2021	2020	2019	2021	2020	2019
Accounts Receivable Turnover	5.15	4.88	5.2	6.5	5.89	5.75	-	-	-
Day’s Receivables	71	75	70	56	62	63	65 <sup>1</sup>	65 <sup>1</sup>	65 <sup>1</sup>
Inventory Turnover	2.05	1.78	2.11	2.28	2.26	2.28	-	-	-
Day’s Inventories	178	205	173	160	162	160	179 <sup>2</sup>	170 <sup>2</sup>	164 <sup>2</sup>
Accounts Payable Turnover	4.41	3.98	4.25	2.29	2.34	2.56	-	-	-
Day’s Payables	83	92	86	159	156	143	-	-	-
Cash Conversion Cycle	166	188	157	57	68	80	-	-	-
Asset Turnover	0.7	0.69	0.76	0.53	0.5	0.53	-	-	-

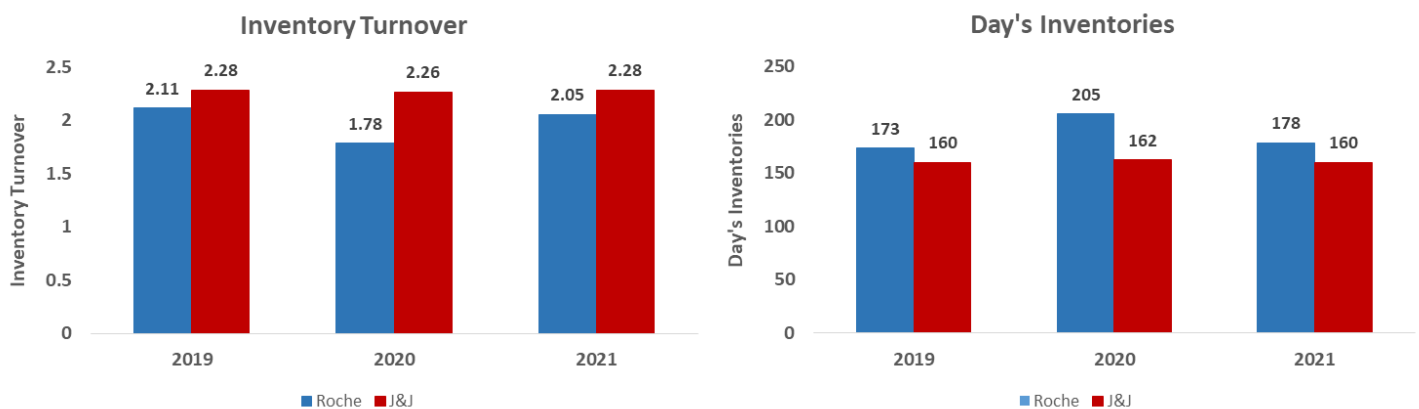
<sup>1</sup> Median industry financial ratios for US companies (number 2807 in 2021) (Ready Ratios, 2021); <sup>2</sup> Median industry financial ratios for US companies (number 1887 in 2021) (Ready Ratios, 2021).



**Figure 11:** Accounts receivable turnover (left) and day's receivables (right) of Roche and J&J for 2019-2021

Regarding the inventory turnover, both companies do not report any specific policies in their annual reports, except of J&J's statement to maintain a critical inventory level away from areas of high risk to ensure effective distribution even in unexpected circumstances (Johnson & Johnson, 2021b; Johnson & Johnson, 2022a). Roche have faced an increase in inventory in both the pharmaceutical and the diagnostic sector from 2020 to 2021, which was driven by the launching of new pharmaceutical and COVID-19 related products and to further ensure supply resilience (Roche, 2021b).

However, taking into account Figure 12, Table 8 and literature, it can be concluded that Roche, J&J and other pharma companies tend to maintain a lot of inventory for obvious reasons, since human lives can be threatened with irreversible results in case of medicine shortage (Investing.com, 2021; Ready Ratios, 2021).

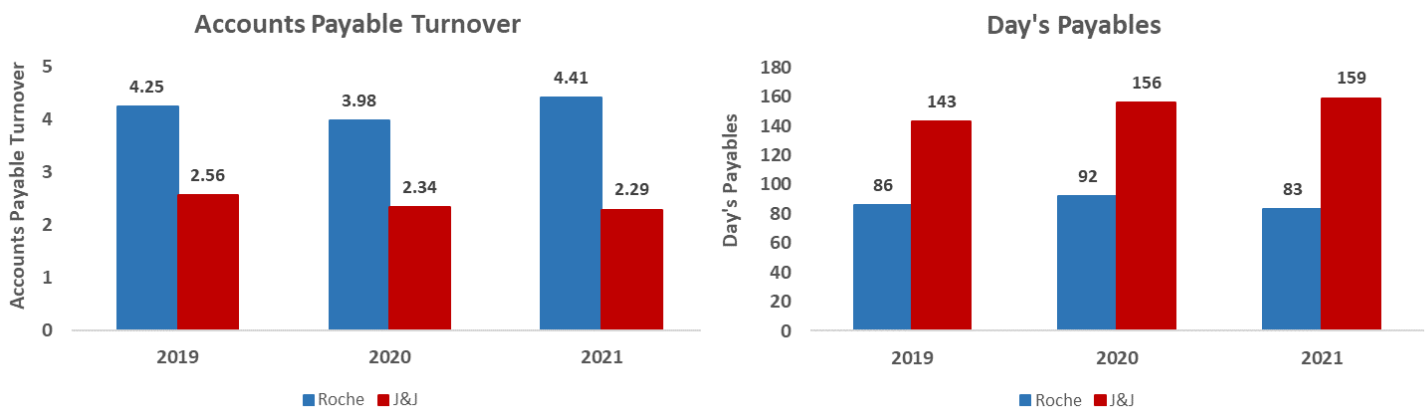


**Figure 12:** Inventory turnover (left) and day's inventories (right) of Roche and J&J for 2019-2021

In respect of accounts payable turnover, Roche has showed satisfactory value ranges, demonstrating its bargaining power to get credit from its suppliers for the examined 3-year period (Figure 13). Trade payables increased during the years (especially in 2021) due to higher manufacturing purchases to support and grow revenue. In 2021, trade receivables have partly increased due to an upfront payment of 150 million dollars (Roche, 2021b).

J&J presented significantly lower accounts payable turnover in 2021 and 2019 compared to Roche (Figure 13, Table 8). As part of J&J's business strategy is to keep high-quality credit ratings by maintaining credit support agreements with certain counterparties (Johnson & Johnson, 2022a).

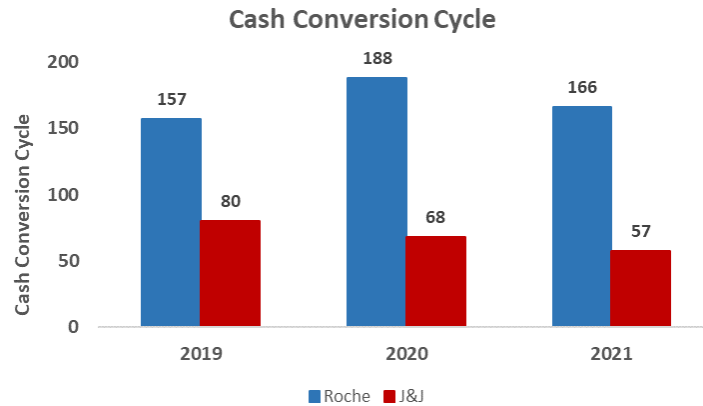
In conclusion, both companies, being the leaders of pharmaceutical industry, can get significant credit for their purchases (one of Porter Forces), helping them to maintain their liquidity and invest in other areas, such as R&D and equipment.



**Figure 13:** Accounts payable turnover (left) and day's payables (right) of Roche and J&J for 2019-2021

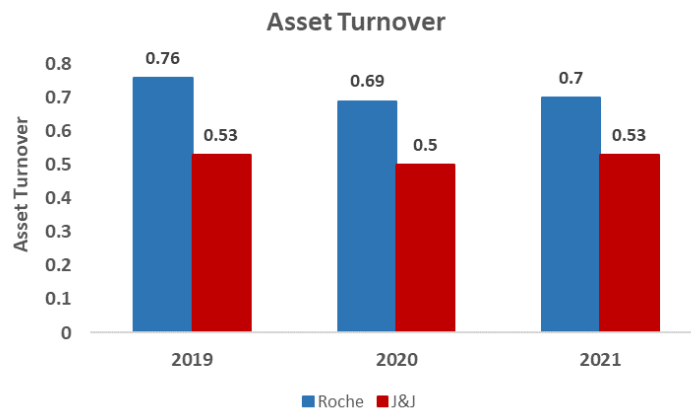
Cash conversion cycle is an important metric that expresses the days that a company needs to sell its inventory, collect its receivables and pay off its obligations. As depicted in Figure 14, J&J presented a lower cash conversion cycle in comparison with Roche, indicating that J&J needs less time to convert its investments and other resources into cash. This stems mainly from day's receivables and payables and not from day's inventories, which can be considered similar for both companies. In this context, J&J seems to have a greater bargaining power against both its customers and suppliers. However, it is according to each company's business strategy and strategic goals to follow specific policies and negotiations with their stakeholders to employ a win-win situation for both parties.





**Figure 14:** Cash conversion cycle of Roche and J&J for 2019-2021

Asset turnover measures how efficiently a company generates sales by using its assets. As illustrated in Figure 15, Roche seems to be more effective in driving sales with respect to its assets in comparison with J&J for the whole three-year period. Even though, J&J presents considerably higher sales than Roche, the latter seems to generate more sales proportionally to its assets. In general, J&J shows stability during the years, whereas Roche a decrease in the period 2020-2021 compared to 2019. This could be mainly attributed to the growth of total assets value in 2021, which is a result of various aspects of the balance sheet.



**Figure 15:** Asset turnover of Roche and J&J for 2019-2021

### 6.3 Leverage Ratios of Roche and J&J

As stated in chapter 5, leverage ratios indicate of how much a company relies on equity and debt (loans) to finance its obligations. Knowing the mixture of capital and debt held by a company is very important and thus, it is widely used to evaluate a company's performance.

Two different approaches were followed to calculate the debt ratios of the selected pharma companies. In the first approach, the total liabilities divided by total assets were used to measure

companies' ability to finance their assets through debt, while in the second approach total debt equals to short plus long-term debt was used.

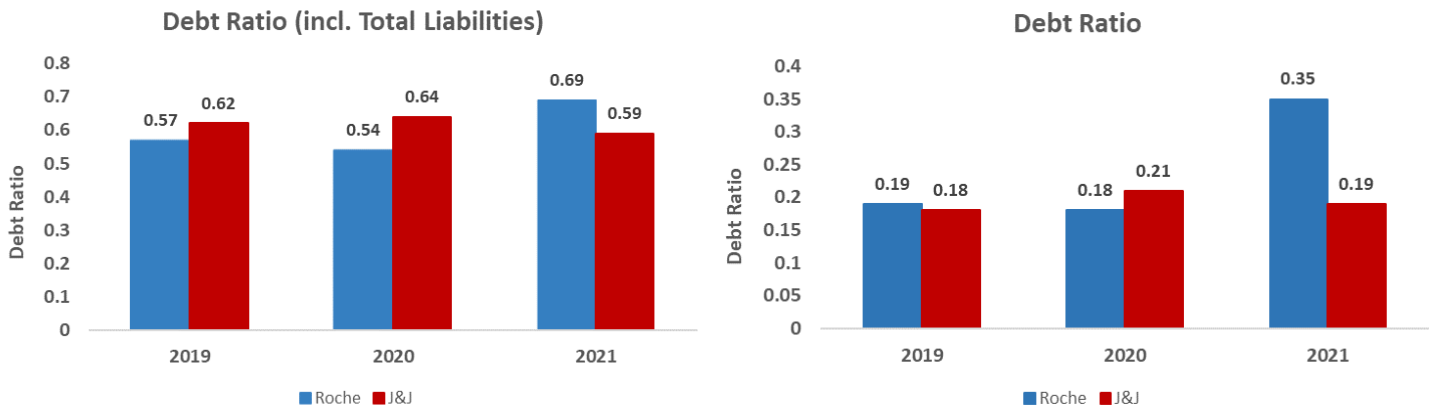
In both situations, Roche presented a significant increase of debt ratios in 2021 in comparison with the last two years. In 2021, Roche has agreed with Novartis to repurchase its shares held by the latter, since both companies have found themselves in rivalry positions due to their similar product portfolio in oncology, ophthalmology and neuroscience. This strategic move to eliminate the ownership of a competitor, gave Roche even more strategic flexibility. Dividend payments of around 8.9 billion dollars (8.1 billion CHF) were also distributed in 2021 and Roche continued to follow a Mergers and Acquisitions (M&A) strategy in targeted sectors (e.g., the acquisition of GenMark and TIB Molbiol). According to the financial reports of the latest three years, the company manages its assets in a conservative way, since Roche's main goal is to meet its obligations at all times. Roche meets its liabilities mainly by cash originated from its operations and by using liquid funds. In case of short-term requirements, Roche has a commercial paper program in the US, while for long-term obligations, it maintains high long-term investment grade credit ratings, ensuring efficient access to international capital markets (Roche, 2019b; Roche, 2020b; Roche, 2021a; Roche, 2021b). This strategic and economical perspective of Roche is also depicted by the calculated debt ratios (see Table 9, Figure 16), especially in the second approach, which outlines Roche's preference to maintain a conservative financial dependence from external sources (e.g., banks).

J&J seems to maintain considerably low debt ratio values (second approach) from 2019-2021, similar to Roche's metrics in 2020 and 2019 (see Table 9, Figure 16). Counting a lot more assets than Roche, J&J seems to follow a conservative financing from external sources to meet its obligations. However, according to the annual reports of J&J, the company retains the ability to acquire funds to meet the needs, associated with COVID-19 vaccine development, trust issues due to talc related liabilities and opioid litigation settlement, through its operations, external borrowing and access to commercial paper markets. One of the strategic objectives of J&J, is to raise capital when market conditions become favorable, which is succeeded through continuous monitoring of the global capital markets (Johnson & Johnson, 2020; Johnson & Johnson, 2021a). During COVID-19 years, both companies maintained a low risk profile, indicating once again the consolidation and strength of these two pharmaceutical leaders. Low debt ratios of Roche and J&J indicate increased borrowing capacity at low risk in case of future obligations. Both companies presented lower debt ratios compared to the median metrics of 4815 US companies, showing their limited need to raise funds from external sources. However, as mentioned above and as can be observed from Table 9, Roche's debt ratio increased considerably in 2021, reaching a value similar to the median debt ratio of US companies in 2020-2021. Despite this rise due to financing through a credit facility from banks, Roche's activities are not foreseen to be significantly affected and the company gained its strategic flexibility by removing the ownership of Novartis (Roche, 2021b).

**Table 9: Leverage ratios for 2019-2021**

Metrics	Roche			J&J			Pharmaceutical Sector		
	2021	2020	2019	2021	2020	2019	2021	2020	2019
Debt Ratio <sup>1</sup>	0.69	0.54	0.57	0.59	0.64	0.62	-	-	-
Debt Ratio <sup>2</sup>	0.35	0.18	0.19	0.19	0.21	0.18	0.29 <sup>3</sup>	0.34 <sup>3</sup>	0.40 <sup>3</sup>
Debt-to-Equity Ratio <sup>1</sup>	2.61	1.28	1.44	1.46	1.76	1.65	0.27 <sup>4</sup>	0.27 <sup>4</sup>	0.36 <sup>4</sup>
Debt-to-Equity Ratio <sup>2</sup>	1.33	0.42	0.48	0.47	0.57	0.48			
Equity Multiplier	3.77	2.37	2.54	2.46	2.76	2.65	-	-	-
Interest Coverage Ratio	50.55	40.48	30.49	32.25	28.27	28.02	-21.20 <sup>5</sup>	-20.50 <sup>5</sup>	-16.16 <sup>5</sup>

<sup>1</sup> Includes total liabilities; <sup>2</sup> Includes short- and long-term debt; <sup>3</sup> Median industry financial ratios for US companies (number 4815 in 2021) (Ready Ratios, 2021); <sup>4</sup> Median industry financial ratios for US companies (number 4818 in 2021) (Ready Ratios, 2021); <sup>5</sup> Median industry financial ratios for US companies (number 3719 in 2021) (Ready Ratios, 2021).

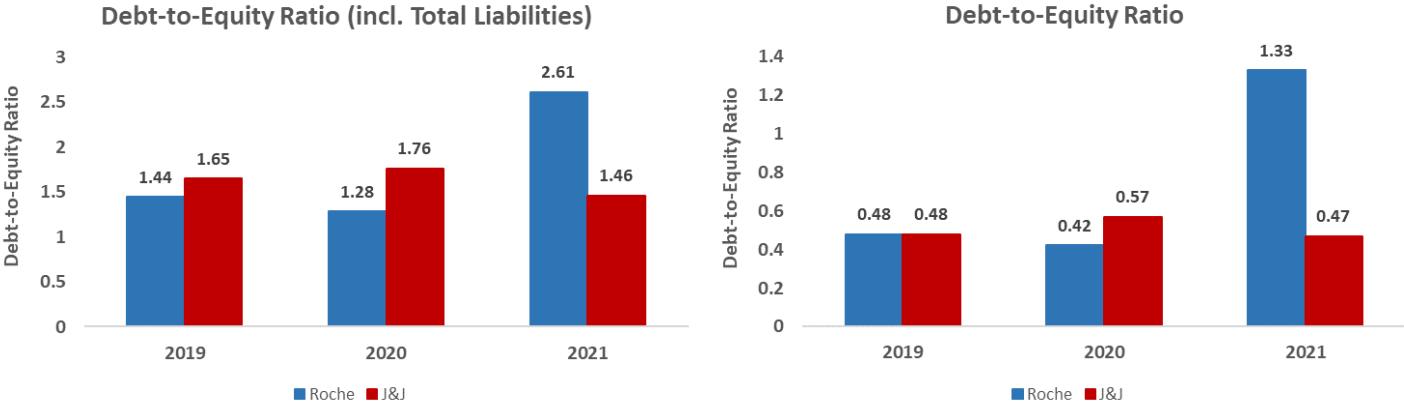


**Figure 16:** Debt ratio, including total liabilities (left) and debt ratio, including short- and long-term debt (right) of Roche and J&J for 2019-2021

Similarly to debt ratio's calculations, two different approaches were followed to calculate the debt-to-equity ratios of Roche and J&J. In the first approach, the total liabilities divided by total shareholder's equity were used, whereas in the second approach total debt equals to short plus long-term debt was used. This key financial indicator shows whether a firm's capital structure is based on financing via equity or debt. An increasing ratio indicates that a company is being financed by creditors rather than its internal sources which may show a difficulty of the company to generate enough cash to meet its debt obligations. However, financially healthy companies may present high debt-to-equity values if they follow aggressive strategies for their growth, using debt.

Both Roche and J&J seem to maintain low debt-to-equity ratios during the years, exhibiting a low risk profile for their investors. Roche presented a significant increase in 2021 by receiving loan to repurchase its shares from Novartis. However, this strategic move has led to the disentanglement of the two companies, which is projected to give a strategic advantage to Roche without risking its financial health. According to the median debt-to-equity ratios of 4818 US companies, pharmaceutical firms tend to maintain a lower lending profile compared to Roche and J&J.

Similarly to debt-to-equity ratio, equity multiplier is another critical indicator that reveals the amount of the total assets that are financed by issuing equity or debt, showing how leveraged a company is. An equity multiplier of 2 exhibits that half the company's assets are acquired by equity, while the other half by debt. The equity multiplier in combination with the debt ratio, including total liabilities, indicate that Roche and J&J finance their assets in a little higher percent using debt, whereas the rest of it by equity. Only Roche in 2021 seem to exhibit higher dependency of external financing, which constitutes a step forward to a better economical and strategic flexibility, as mentioned above. However, from the balance sheet of both companies it can be observed that a high percentage of total liabilities is attributed to accounts payables, other current liabilities and other liabilities, and not to short- and long-term obligations. This can partially show the bargaining power of the two pharmaceutical leaders as part of their general strategic approach (Wall Street Journal, 2022a; Wall Street Journal, 2022c).

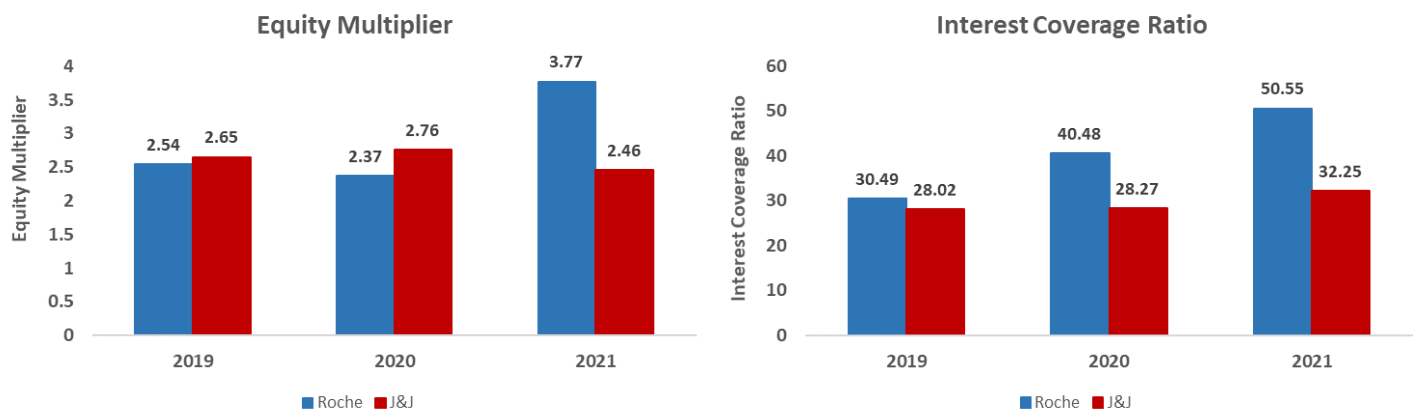


**Figure 17:** Debt-to-equity ratio, including total liabilities (left) and debt-to-equity ratio, including short- and long-term debt (right) of Roche and J&J for 2019-2021

Interest coverage ratio is another key financial indicator, which measures the capability of a company to satisfy its interest obligations from its operating earnings. Both Roche and J&J present significantly high values of interest coverage ratio, indicating that they are more than capable to meet their interest obligations from their operating earnings in contrast to the median ratio of US pharmaceutical industry (3719 companies), which presents negative values. As illustrated in Figure 18, Roche presents an increasing trend during the years, while J&J a rather

stable. Even though J&J presents higher revenue during the years (~\$94 billion in 2021) compared to Roche (~\$69 billion in 2021), the latter possess higher interest coverage ratio mostly due to lower SG&A (Selling, General, and Administrative) expenses. According to the income statement of both companies, SG&A expenses differ significantly due to other SG&A expenses and not due to R&D activities (similar R&D expenditures). This could be an indication of better handling of day-to-day business operations from the part of Roche (Wall Street Journal, 2022b; Wall Street Journal, 2022d).

According to Roche’s financial report, the company receives debt on a fixed rate basis for bonds and notes and follows a specific interest rate risk management strategy to optimize net interest results. In addition, Roche uses forward contracts, options and interest rate swaps to control possible exposures in interest rates and currency fluctuations (Roche, 2021b). In the same context, J&J uses interest rate swaps to minimize interest rate risk associated to fixed rate borrowings (Johnson & Johnson, 2021a).



**Figure 18:** Equity multiplier (left) and interest coverage ratio (right) of Roche and J&J for 2019-2021

#### 6.4 Profitability Ratios of Roche and J&J

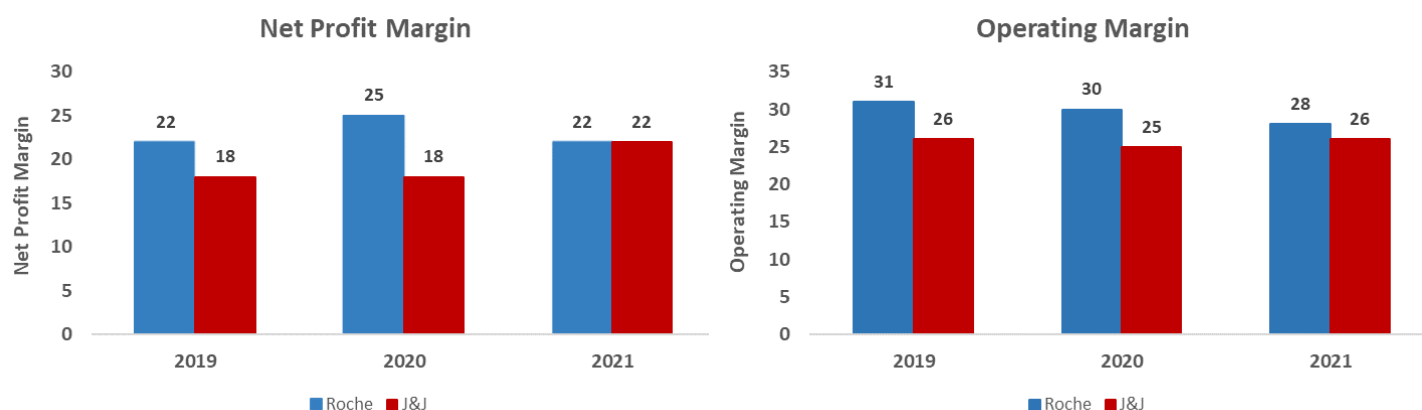
As mentioned in the previous chapter, profitability ratios are very essential financial metrics for the overall evaluation of a business’ performance. Beginning with net profit margin, as illustrated in Table 10, the median net profit margin of 4308 US companies appears to be significantly negative, indicating that these firms spend more money than they are generating (Ready Ratios, 2021). Interestingly, this is not a result of the pandemic, since the profit margin of 2018 presented similar negative values. On the other hand, both Roche and J&J show satisfactory profitability levels with respect to profit margin. Roche appears to have a little higher profitability ratio compared to J&J during the years, even though both companies presented the same profit margin in 2021. Although Roche presented higher sales in 2021 compared to 2019-2020, its net income slightly decreased, thus resulting to a 12% decrease of net profit margin from 2020 to 2021

2021. On the contrary, J&J have shown an increase in profit margin in 2021, which could be attributed to a significant increase in net income. The previous statements can also be reinforced by operating margin, since both companies tend to maintain high operating income levels. J&J showed a 13.6% increase in EBIT from 2019 to 2021, indicating a better handling of its operations during the years. Even though, J&J presents higher sales compared to Roche, the latter seems to handle more effectively its operation expenses during 2019-2021, with respect to net profit- and operating-margin.

**Table 10:** Profitability ratios for 2019-2021

Metrics [%]	Roche			J&J			Pharmaceutical Sector		
	2021	2020	2019	2021	2020	2019	2021	2020	2019
Net Profit Margin	22	25	22	22	18	18	-239.9 <sup>1</sup>	-268.3 <sup>1</sup>	-263.4 <sup>1</sup>
Operating Margin	28	30	31	26	25	26	-160.4 <sup>2</sup>	-160.4 <sup>2</sup>	-139.1 <sup>2</sup>
ROA	15	17	16	11	8	10	-39.2	-46.3	-48.6
ROE	57	39	41	28	23	25	-61.6	-73	-78.1
ROCE	22	22	23	14	12	14	-	-	-

<sup>1</sup> Median industry financial ratios for US companies (number 4308 in 2021) (Ready Ratios, 2021); <sup>2</sup> Median industry financial ratios for US companies (number 3486 in 2021) (Ready Ratios, 2021); <sup>3</sup> Median industry financial ratios for US companies (number 4648 in 2021) (Ready Ratios, 2021); <sup>4</sup> Median industry financial ratios for US companies (number 4661 in 2021) (Ready Ratios, 2021).



**Figure 19:** Net profit- (left) and operating-margin (right) of Roche and J&J for 2019-2021

ROA is one of the most important key financial indicators, which shows the percentage of profit of a company in respect of its total assets. Both Roche and J&J have presented a profit during the years compared to the pharmaceutical sector, which presents high negative values (Table 10). Roche showed a fluctuated pattern during 2019-2021 with a slight decrease on 2021, whereas J&J has presented a reverse fluctuated pattern, with a slight increase on last year's results (Figure

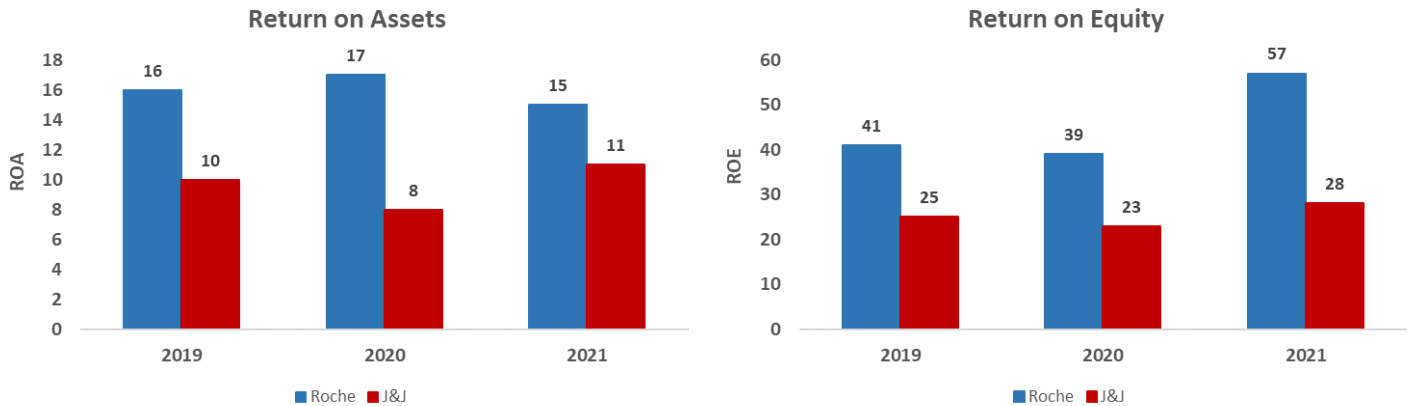
20). Indicatively for 2021, Roche generates 15% of profits for each dollar of its assets, while J&J earns 11% profit. These values may seem low for some industrial sectors (e.g., personal services business), yet for pharmaceutical companies, these results are considered satisfactory, since they must possess valuable assets (e.g., premises, equipment) to grow their business (capital-intensive industries). Considering the two examined companies, even though J&J possess more total assets than Roche (three-year avg. \$171,547 million vs \$95621 million), the latter appears to be more effective in generating profit by owning less resources. J&J presents higher values compared to Roche in terms of current assets in many aspects of its balance sheet, such as inventories, accounts receivables and other current assets, though the most significant difference appears to be in cash and short-term investments. Interestingly, Roche shows higher asset value compared to J&J in respect of tangible assets (property, plants, equipment), in contrast to intangible assets, where J&J possess \$81,638 million while Roche \$22,926 million in 2021 (Wall Street Journal, 2022a; Wall Street Journal, 2022c).

The calculation of intangible assets, such as patents, trademarks, goodwill, copyrights, proprietary technology, clients list, licenses etc., can be quite challenging and critical in certain situations (Brown, 2021). In this context, both companies may follow different approaches that may enhance their significant difference in intangible assets. According to the financial report of Roche (2021), the company estimates its intangible assets, including its patents, trademarks, commercial software, in-process R&D assets, acquired through in-licensing arrangements, business combinations, asset acquisition and separate purchases, and goodwill (Roche, 2021b). Similarly, J&J classifies its intangible assets in resources with definite lives, such as patents and customer relationships and in assets with indefinite lives, such as trademarks and purchased in-process R&D (Johnson & Johnson, 2021a).

In conclusion, both companies appear to have a good profit in respect of their assets and Roche presented better results during the three-year period compared to J&J. However, this difference is mostly allocated in intangible assets value, which calculation is a challenging and complex process.

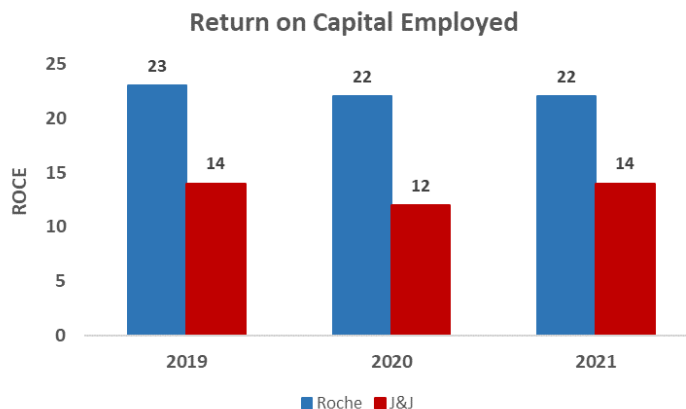
ROE is another very important financial profitability ratio, often called as the ultimate ratio, indicating how profitable is a business for its investors. ROE values of Roche and J&J were found to be quite high during the years with Roche generating 57% profit for every dollar of its shareholder's equity in 2021, while J&J presented a 28% profit. As illustrated in Figure 20, Roche presented a ~40% increase from 2019 to 2021. This significant increase is attributed mainly to the decrease in shareholders equity, which was affected by the repurchased shares from Novartis, that are reported as treasury shares in Roche's financial report of 2021 and are scheduled to be cancelled in early 2022. According to the financial report, own equity instruments, including treasury shares, are deducted from shareholder's equity, leading to a significant decrease of the latter. As mentioned earlier, this strategic move will lead to better strategic flexibility due to the elimination of the ownership of a big competitor (Roche, 2021b).

From the part of J&J, the company presented the highest ROE value in 2021 due to the growth of net income despite the concomitant rise in shareholder’s equity (Johnson & Johnson, 2021a). Both companies present a very healthy financial performance, which renders them a profitable investment for their shareholder’s even during difficult times, such as COVID-19 crisis.



**Figure 20:** ROA (left) and ROE (right) of Roche and J&J for 2019-2021

The last evaluated profitability ratio is ROCE, a metric that shows a company’s profit in respect of its capital. In case of significant debt, this indicator neutralizes the financial performance in contrast to ROE, which only relates profitability with shareholder’s equity and not debt. As can be observed in Figure 21, both companies show stability in respect of ROCE values during 2019-2021. Similarly to ROA and ROE values, Roche presented a better performance than J&J, comparing ROCE during the three-year period, even though both companies are considered to generate an adequate profit for their capital employed. Although, Roche presented lower values in respect of operating income (EBIT), the capital employed is significantly lower than J&J, indicating that Roche generates more profit per \$1 of capital employed.



**Figure 21:** ROCE of Roche and J&J for 2019-2021



## 6.5 Return on Research Capital of Roche and J&J

As stated in chapter 5, RORC is a very important indicator for pharmaceutical companies, since R&D investments can be a metric of future competitiveness. However, higher R&D expenditures does not ensure higher profits, more market share, increased competitiveness or more creativity. Thus, the return on research capital is a key metric to calculate revenues generated from R&D activities.

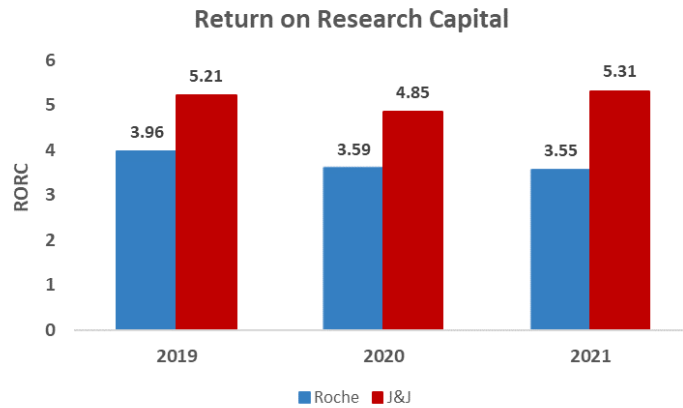
Both Roche and J&J presented high values of RORC, indicating high productivity and growth generated through their R&D activities. As illustrated in Figure 22, Roche presented similar RORC values during the examined three-year period, while J&J have shown a fluctuated pattern with higher RORC values compared to Roche. During 2019 to 2021, both companies have made similar R&D expenses with J&J generating greater profit than Roche, indicating that J&J's R&D may be more effective in developing new products. However, this is not a clear statement, since the route from R&D to commercialization is a complex and demanding process, depending on products requirements and challenges (e.g., legislation, safety, clinical trials) (Wall Street Journal, 2022b; Wall Street Journal, 2022d).

According to Roche's financial report of 2021, R&D expenses increased by 14% compared to 2020, a growth driven by late-stage investments in personalized healthcare, oncology, neuroscience as well as COVID-19-related investments, mostly for the co-development of Ronapreve with Regeneron (Roche, 2021b). Accordingly, J&J increased R&D expenditures in 2021 by 21%, to finance general portfolio progression in the pharmaceutical business and COVID-19 related vaccine expenses (Johnson & Johnson, 2021a).

Overall, as mentioned in Chapter 2, 3 and 4, both companies are among the biggest spenders in R&D with satisfactory return on research capital levels, showing the high importance of R&D in pharmaceutical industry and their response during the COVID-19 crisis by spending more on R&D activities related to the pandemic.

**Table 11:** RORC for 2019-2021

Metrics	Roche			J&J		
	2021	2020	2019	2021	2020	2019
RORC	3.55	3.59	3.96	5.31	4.85	5.21



**Figure 22:** RORC of Roche and J&J for 2019-2021

### 6.6 DuPont Analysis of Roche and J&J

As mentioned in chapter 5, DuPont analysis is often used by investors, managers and other stakeholders to decompose ROE and gain a better understanding of the company's financial performance.

As depicted in Table 12, Roche presented a higher ROE in comparison with J&J in 2021 mostly due to its differences in asset turnover and equity multiplier metrics. Both companies presented equal net profit margins, indicating that they can generate a sufficient profit by handling efficiently their operations, production and other activities. In respect of asset turnover, J&J presents a higher total asset value compared to Roche, a difference that is mainly allocated in intangible assets, which calculation depends on the company's evaluation criteria and its estimation is a very challenging process. In 2021 the equity multiplier of Roche shows a high dependency of external financing, which is mainly attributed to loans used to repurchase shares from Novartis.

In conclusion, a higher dependency from external financing seems to increase ROE values. Both companies are appropriately leveraged and they both have the ability to exploit further external financing resources without increasing the risks of over-leveraging. Both companies can employ more leverage to generate sales, even though it seems that they both follow a conservative financial strategy in respect of external financing.

**Table 12:** DuPont analysis of Roche and J&J for 2019-2021

Metrics	Roche			J&J		
	2021	2020	2019	2021	2020	2019
Net Profit Margin	22%	25%	22%	22%	18%	18%
Asset Turnover	0.7	0.69	0.76	0.53	0.5	0.53

Equity Multiplier	3.77	2.37	2.54	2.46	2.76	2.65
ROE	57%	39%	41%	28%	23%	25%

# Chapter 7

## Main Findings and Strategy Recommendations

---

In this Chapter, the most significant highlights and findings of this research will be presented, as well as some possible recommendations of policy redirection of Roche and J&J as a suggestion for further growth and development.

### 7.1 Key Findings of the Research

From the analysis of Roche's performance, the key findings that emerge are presented below:

- Roche seems to keep a low liquidity profile, since most liquidity ratios were calculated below 1 (except current ratio). The company keeps a low liquidity risk with strong cash generation ability, even in challenging situations, such as COVID-19 pandemic.
- In 2021, Roche presented an increase in short-term obligations to invest on new products against the pandemic and to repurchase its shares from Novartis to regain its ownership, indicating its flexibility to receive external funds when needed.
- Roche's policy is to maintain a sufficient inventory to avoid medicine shortage in difficult situations, as depicted by its inventory turnover.
- The company collaborates with a large number of suppliers and customers throughout the world to avoid unexpected risks and possible crisis. It possesses a significant bargaining power against both its customers and suppliers, keeping an average conversion cycle around 170 days for the examined period. Roche follows a strict policy and continuously monitors the risk limits and exposures by client and by supplier.

- Roche's main strategic goal is to meet its obligations at all times, following a rather conservative financial dependence when using external funds, as depicted by the calculated debt ratios.
- In 2021, the company presented an increase in debt, mainly attributed to its M&A strategy in targeted areas of interests and to the repurchase of shares from Novartis.
- Roche maintains a low risk profile and a significant borrowing capacity, as depicted by its debt ratios and debt-to-equity ratios.
- Roche presents an increased ability to meet its interest obligations. The company ensures the control of possible exposures in interest rates and currency fluctuations, using contracts, options and interest rate swaps.
- Roche presents a satisfactory profit with respect to both net profit margin and operating margin, indicating its ability to effectively generate sales.
- The company presents a 16% profit on average for each dollar of its assets, a rather satisfactory value, since pharmaceutical companies must possess valuable assets.
- Roche maintains a high profitability level for its investors. ROE value of 2021 was significantly increased, due to shareholder's equity decrease affected by the repurchased shares from Novartis.
- RORC values of Roche indicate its enhanced ability to generate profit through R&D expenses, an indicator of future competitiveness. Roche presented higher R&D expenses in 2021, driven mostly by COVID-19 investments, showing company's awareness in difficult times not only as an opportunity to make profit but also as a company obligated to save lives.

From the analysis of J&J's performance, the main highlights of the research are the following:

- J&J presents a low liquidity profile, showing only current ratios above or near 1, indicating its ability to pay its short-term obligations without receiving external funding, by using its total current assets. Despite the low liquidity levels, the company possess a high cash generation ability.
- J&J's strategy is to maintain a critical inventory level away from areas of high risk to avoid medicine shortage in unexpected circumstances.
- The company follows a strict policy with both its clients and suppliers, working under specific agreements and monitoring thresholds on credit ratings. J&J possesses a significant bargaining power with its stakeholders, keeping an average cash conversion cycle around 68 days for the examined period.
- J&J maintains low debt ratio values, following a conservative financing policy from external sources. At the same time, it retains its ability to raise capital when needed, e.g. COVID-19 or talc-related trust issues etc., especially when market conditions become favorable.

- J&J maintains a low risk profile and a significant borrowing capacity, as depicted by its debt ratios and debt-to-equity ratios.
- J&J maintains an increased capability to satisfy its interest obligations.
- The company presents a satisfactory profit level in respect of both net profit margin and operating margin, indicating its ability to effectively generate sales.
- The company presents a ~9.5% profit on average for each dollar of its assets, a rather satisfactory value, since pharmaceutical companies must possess valuable assets to develop and grow their business.
- J&J maintains a high profitability level for its investors with ROE values ~25% on average.
- The company presents an increased ability to generate sales through its R&D investments, an indicator of significant importance for future success in the pharmaceutical sector. In 2021, J&J increased its R&D investments mostly as a response to find rapid solutions during the pandemic.

The main highlights of the present research for Roche vs J&J are discussed below:

- J&J presented higher values of liquidity ratios compared to Roche, indicating a higher ability to pay off its obligations. Liquidity ratios less than 1.00 may seem alarming, but for these pharmaceutical leaders seem to be part of their business strategy. Both companies present a low liquidity risk, even during COVID-19 pandemic, with a strong cash generation ability.
- Both companies can get significant credit for their purchases and they possess a bargaining power against their clients (Porter Forces), helping them to maintain their liquidity and invest in other areas, such as R&D and equipment. J&J needs less time to convert its investments and other resources into cash (68 vs 170 on average), indicating that J&J may have a greater bargaining power against both its customers and suppliers.
- As depicted by the asset turnover, Roche seems to generate more sales proportionally to its assets in comparison with J&J, even though the latter presents higher sales.
- During COVID-19 years, both Roche and J&J maintained a low risk profile. Low debt ratios of Roche and J&J indicate increased borrowing capacity at low risk in case of future obligations. Both companies maintain low debt-to-equity ratios during the years, exhibiting a low risk profile for their investors.
- Roche seems to handle more effectively its operation expenses during 2019-2021, with respect to net profit- and operating-margin, even though J&J generates higher revenue.
- As depicted by ROA values, Roche appears to be more effective in generating profit by owning less resources.
- As depicted by ROE values, Roche appears to be more effective in generating profit by using its shareholders equity. Both companies present a very healthy financial performance, which renders them a profitable investment for their shareholder's even during difficult times, such as COVID-19 crisis.

- As depicted by RORC, both Roche and J&J presented high values, indicating high productivity and growth generated through their R&D activities. J&J seems to generate greater profit than Roche, indicating that J&J's R&D may be more effective in developing new products.

## **7.2 Strategy Recommendations**

In the framework of this diploma thesis, the financial performance of the two global pharmaceutical leaders was evaluated, using ratio analysis. Undoubtedly, their strength and consolidation in pharmaceutical sector cannot be disputed, even in difficult times, such as COVID-19 pandemic, and both companies can be a bright example of success to be followed from other peers. However, some strategy recommendations are discussed below as a result of the present analysis:

- Both companies seem not to exploit their bargaining power against their clients and suppliers, which is depicted by their cash conversion cycle. Roche and J&J could get higher credit for their purchases and give less credit to their customers in order to increase their liquidity and invest on R&D and/or on new assets.
- Roche and J&J maintain a low risk profile, using a conservative financial dependence from external sources. Both companies have a high borrowing capacity, which they could exploit for investments, especially in the years of this crisis, where both are at the forefront of COVID-19 war.
- According to DuPont analysis, a higher dependency from external financing seems to increase the ROE values of Roche and J&J. Both companies are appropriately leveraged and they both have the ability to exploit further external financing resources without increasing the risks of over-leveraging.

# Chapter 8

## Conclusions

---

In the framework of this diploma thesis, the pharmaceutical industry was selected for research as it is considered as one of the most significant and essential industrial sectors for mankind as well as global economy. Roche's and J&J's performance was evaluated for the critical years of COVID-19 pandemic (2019-2021), using key economic indicators in respect of liquidity, leverage, efficiency and profitability. According to the annual reports of Roche and J&J as well as from the key findings of this ratio analysis, it can be concluded that both companies present a healthy economical position even in the years of health crisis, demonstrating their concrete position in the pharmaceutical sector.

Some of the critical key points of their strategical mindset are their decision to follow a low liquidity and leverage profile, which is depicted by their business strategy and is additionally reinforced by the calculated liquidity and debt ratios. In 2021, Roche seems to adopt a less conservative profile in respect of external financial dependence as part of its strategy to regain its flexibility by repurchasing its shares from Novartis. Regarding Roche's and J&J efficiency, both companies have a significant bargaining power against their customers and suppliers with J&J, presenting a little higher capability in handling its credits, even though they both seem to choose not to exploit their strength to the fullest, following a win-win strategy for them and their stakeholders. Profitability indicators have shown a healthy and solid financial position, rendering both companies a profitable investment even in the years of health crisis. Finally, even in the era of COVID-19, both companies do not avoid to spend on R&D activities, since they acknowledge that R&D investments are essential for their future success, competitiveness, growth and development.

Although ratio analysis is considered an invaluable tool for business financial evaluation, in finances there isn't a golden standard to follow, but there is rather a combination of financial techniques and experience of the responsible person. This methodology presents some limitations without of course minimizing its importance in financial analysis. One of the



limitations of ratio analysis is the use of data of yearly financial statements, which may extrapolate controversial results in case that the company makes year-end changes to improve its performance. In addition, this technique ignores price level changes caused by inflation. Another limitation is that there are no standard definition of ratios and different formulas may be used, making challenging the comparison of a specific company with sector's results. Finally, ratio analysis does not resolve any financial obstacles, but it is rather a way to evaluate company's position and a useful tool in decision making and business strategy selection (Toppr, n.d.).

Finally, some recommendations for future work are presented, as an indication of the importance and interest of the present research:

- A combination of more than one financial approach could be used in order to have a better overview of the analysis. For instance, horizontal analysis could be additionally used to compare specific financial data for a specific accounting period to eliminate possible influences in case of year-end changes for better results.
- A vertical analysis in combination with ratio analysis could be used, setting as a base year the year before the pandemic (2018) in order to have a better overview of the financial changes during COVID-19 crisis.
- The calculation of average key performance indicators for 2019-2021 would give useful information, selecting peers of the same sector and market size to have a better overview of the pharmaceutical industry and a better comparison of the selected companies.

# Annex

Ratio analysis were conducted by using secondary data from the financial statements of Roche and J&J, which are presented below.

**Table 13:** Income statement of Roche for 2019-2021 (Wall Street Journal, 2022b)

Fiscal year is January-December All values CHF Millions	2021	2020	2019
Sales/Revenue	62,801	58,323	61,466
Sales Growth	7.68%	-5.11%	8.13%
Cost of Goods Sold (COGS) incl. D&A	19,703	16,354	17,662
COGS excluding D&A	15,256	11,789	13,353
Depreciation & Amortization Expense	4,447	4,565	4,309
Depreciation	2,891	2,815	2,777
Amortization of Intangibles	1,556	1,750	1,532
COGS Growth	20.48%	-7.41%	6.16%
Gross Income	43,098	41,969	43,804
Gross Income Growth	2.69%	-4.19%	8.94%
Gross Profit Margin	68.63%	-	-
SG&A Expense	25,577	23,975	24,674
Research & Development	13,707	12,152	11,690
Other SG&A	11,870	11,823	12,984
SGA Growth	6.68%	-2.83%	5.92%
Other Operating Expense	238	265	227
EBIT	17,283	17,729	18,903
Unusual Expense	2,767	637	3,700
Non Operating Income/Expense	3,225	1,296	1,947
Non-Operating Interest Income	-	16	99
Interest Expense	341	438	620
Interest Expense Growth	-22.15%	-29.35%	2.48%
Gross Interest Expense	341	438	620
Pretax Income	17,400	17,966	16,629
Pretax Income Growth	-3.15%	8.04%	17.59%
Pretax Margin	27.71%	-	-
Income Tax	2,463	2,897	2,506

Income Tax - Current Domestic	2,619	3,507	3,685
Income Tax - Deferred Domestic	(156)	(610)	(1,179)
Equity in Affiliates	(2)	(1)	(15)
Consolidated Net Income	14,935	15,068	14,108
Consolidated Net Income	14,935	15,068	14,108
Minority Interest Expense	1,005	773	611
Net Income	13,930	14,295	13,497
Net Income Growth	-2.55%	5.91%	28.54%
Net Margin	22.18%	-	-
Net Income After Extraordinaries	13,930	14,295	13,497
Net Income Available to Common	13,930	14,295	13,497
EPS (Basic)	16.39	16.72	15.77
EPS (Basic) Growth	-1.98%	6.04%	28.24%
Basic Shares Outstanding	850	855	856
EPS (Diluted)	16.20	16.52	15.62
EPS (Diluted) Growth	-1.99%	5.80%	27.94%
Diluted Shares Outstanding	860	865	864
EBITDA	21,730	22,294	23,212
EBITDA Growth	-2.53%	-3.95%	14.28%
EBITDA Margin	34.60%	-	-
EBIT	17,283	17,729	18,903

**Table 14:** Balance sheet of Roche for 2019-2021 (Wall Street Journal, 2022a)

Fiscal year is January-December All values CHF Millions	2021	2020	2019
<b>Assets</b>			
Cash & Short Term Investments	13,031	12,334	11,858
Cash Only	6,850	5,727	6,075
Short-Term Investments	6,181	6,607	5,783
Cash & Short Term Investments Growth	5.65%	4.01%	-10.61%
Cash & ST Investments / Total Assets	14.12%	14.32%	14.27%
Total Accounts Receivable	12,651	11,740	12,150
Accounts Receivables, Net	10,806	10,154	10,440
Accounts Receivables, Gross	11,344	10,669	10,972
Bad Debt/Doubtful Accounts	(538)	(515)	(532)
Other Receivables	1,845	1,586	1,710
Accounts Receivable Growth	7.76%	-3.37%	5.77%
Cash & Short Term Investments	13,031	12,334	11,858
Cash Only	6,850	5,727	6,075
Short-Term Investments	6,181	6,607	5,783
Cash & Short Term Investments Growth	5.65%	4.01%	-10.61%
Cash & ST Investments / Total Assets	14.12%	14.32%	14.27%
Total Accounts Receivable	12,651	11,740	12,150
Accounts Receivables, Net	10,806	10,154	10,440
Accounts Receivables, Gross	11,344	10,669	10,972

Bad Debt/Doubtful Accounts	(538)	(515)	(532)
Other Receivables	1,845	1,586	1,710
Accounts Receivable Growth	7.76%	-3.37%	5.77%
Accounts Receivable Turnover	4.96	4.97	5.06
Inventories	7,715	7,194	6,055
Finished Goods	1,202	1,956	1,426
Work in Progress	5,838	4,459	4,065
Raw Materials	1,547	1,354	1,296
Progress Payments & Other	(872)	(575)	(732)
Other Current Assets	2,230	1,674	1,191
Prepaid Expenses	1,869	1,153	795
Miscellaneous Current Assets	361	521	396
Total Current Assets	35,627	32,942	31,254
Net Property, Plant & Equipment	24,412	23,270	23,318
Property, Plant & Equipment - Gross	47,494	45,097	44,717
Buildings	18,175	17,456	17,353
Land & Improvements	1,316	1,350	1,426
Machinery & Equipment	21,998	21,127	21,189
Construction in Progress	4,756	4,052	3,604
Accumulated Depreciation	23,082	21,827	21,399
Buildings	8,289	7,696	7,293
Machinery & Equipment	14,691	13,939	13,889
Construction in Progress	102	192	217
Total Investments and Advances	1,070	1,278	741
LT Investment - Affiliate Companies	331	2	2
Other Long-Term Investments	739	1,276	739
Long-Term Note Receivable	133	125	128
Intangible Assets	22,926	21,266	20,814
Net Goodwill	10,809	9,249	12,456
Net Other Intangibles	12,117	12,017	8,358
Other Assets	2,566	1,798	1,625
Deferred Charges	1,732	1,181	1,174
Tangible Other Assets	834	617	451
Total Assets	92,317	86,138	83,091
Assets - Total - Growth	7.17%	3.67%	5.83%
Asset Turnover	0.70	-	-
Return On Average Assets	15.61%	-	-
<b>Liabilities &amp; Shareholder's Equity</b>			
ST Debt & Current Portion LT Debt	15,451	4,315	2,035
Short Term Debt	15,122	3,996	1,695
Current Portion of Long Term Debt	329	319	340
Accounts Payable	3,844	3,317	3,176
Accounts Payable Growth	15.89%	4.44%	11.56%
Income Tax Payable	3,002	3,679	3,838
Other Current Liabilities	16,119	14,090	15,070
Dividends Payable	3	3	3

Accrued Payroll	3,399	2,794	3,316
Miscellaneous Current Liabilities	12,717	11,293	11,751
Total Current Liabilities	38,416	25,401	24,119
Current Ratio	0.93	1.30	1.30
Quick Ratio	0.73	1.01	1.04
Cash Ratio	0.34	0.49	0.49
Long-Term Debt	17,101	11,096	13,547
Long-Term Debt excl. Capitalized Leases	16,076	10,220	12,668
Non-Convertible Debt	16,076	10,220	12,668
Capitalized Lease Obligations	-	-	-
Provision for Risks & Charges	7,545	9,284	8,995
Deferred Taxes	(4,955)	(5,106)	(4,913)
Deferred Taxes - Credit	628	353	298
Deferred Taxes - Debit	5,583	5,459	5,211
Other Liabilities	282	231	265
Other Liabilities (excl. Deferred Income)	36	75	93
Deferred Income	246	156	172
Total Liabilities	63,972	46,365	47,224
Total Liabilities / Total Assets	69.30%	53.83%	56.83%
Common Equity (Total)	24,489	36,341	32,747
Common Stock Par/Carry Value	160	160	160
Retained Earnings	34,161	45,571	40,524
Cumulative Translation Adjustment/Unrealized For. Exch. Gain	(9,712)	(9,480)	(7,965)
Unrealized Gain/Loss Marketable Securities	(60)	106	15
Other Appropriated Reserves	(60)	(16)	13
Common Equity / Total Assets	26.53%	42.19%	39.41%
Total Shareholders' Equity	24,489	36,341	32,747
Total Shareholders' Equity / Total Assets	26.53%	42.19%	39.41%
Accumulated Minority Interest	3,856	3,432	3,120
Total Equity	28,345	39,773	35,867
Liabilities & Shareholders' Equity	92,317	86,138	83,091

**Table 15:** Income statement of J&J for 2019-2021 (Wall Street Journal, 2022d)

<b>Fiscal year is January-December</b>			
<b>All values USD Millions</b>	2021	2020	2019
Sales/Revenue	93,758	82,572	82,113
Sales Growth	13.55%	0.56%	0.71%
Cost of Goods Sold (COGS) incl. D&A	29,874	27,998	27,135
COGS excluding D&A	22,484	20,767	20,126
Depreciation & Amortization Expense	7,390	7,231	7,009
Depreciation	2,690	2,531	2,509
Amortization of Intangibles	4,700	4,700	4,500

COGS Growth	6.70%	3.18%	-0.19%
Gross Income	63,884	54,574	54,978
Gross Income Growth	17.06%	-0.73%	1.16%
Gross Profit Margin	68.14%	-	-
SG&A Expense	39,403	34,106	33,428
Research & Development	14,744	12,022	11,250
Other SG&A	-	22,084	22,178
SGA Growth	15.53%	2.03%	1.01%
EBIT	24,481	20,468	21,550
Unusual Expense	3,350	3,876	6,008
Non Operating Income/Expense	2,351	518	2,198
Non-Operating Interest Income	53	111	357
Interest Expense	759	724	769
Interest Expense Growth	4.83%	-5.85%	-35.59%
Gross Interest Expense	808	787	839
Interest Capitalized	49	63	70
Pretax Income	22,776	16,497	17,328
Pretax Income Growth	38.06%	-4.80%	-3.73%
Pretax Margin	24.29%	-	-
Income Tax	1,898	1,783	2,209
Income Tax - Current Domestic	1,525	1,026	1,941
Income Tax - Current Foreign	2,452	1,898	2,744
Income Tax - Deferred Domestic	583	(76)	(814)
Income Tax - Deferred Foreign	(2,662)	(1,065)	(1,662)
Consolidated Net Income	20,878	14,714	15,119
Net Income	20,878	14,714	15,119
Net Income Growth	41.89%	-2.68%	-1.16%
Net Margin	22.27%	-	-
Net Income After Extraordinaries	20,878	14,714	15,119
Net Income Available to Common	20,878	14,714	15,119
EPS (Basic)	7.81	5.51	5.63
EPS (Basic) Growth	41.72%	-2.18%	0.40%
Basic Shares Outstanding	2,632	2,633	2,645
EPS (Diluted)	-	5.51	5.63
EPS (Diluted) Growth	0.00%	-2.18%	0.47%
Diluted Shares Outstanding	2,674	2,671	2,684
EBITDA	31,871	27,699	28,559
EBITDA Growth	15.06%	-3.01%	1.34%
EBITDA Margin	-	-	-
EBIT	24,481	20,468	21,550

**Table 16:** Balance sheet of J&J for 2019-2021 (Wall Street Journal, 2022c)

Fiscal year is January-December	2021	2020	2019
All values USD Millions			
<b>Assets</b>			

Cash & Short Term Investments	31,608	25,185	19,287
Cash Only	14,487	13,985	17,305
Short-Term Investments	17,121	11,200	1,982
Cash & Short Term Investments Growth	25.50%	30.58%	-2.03%
Cash & ST Investments / Total Assets	17.37%	14.40%	12.23%
Total Accounts Receivable	15,283	13,576	14,481
Accounts Receivables, Net	15,283	13,576	14,481
Accounts Receivables, Gross	15,513	13,869	14,707
Bad Debt/Doubtful Accounts	(230)	(293)	(226)
Accounts Receivable Growth	12.57%	-6.25%	2.72%
Accounts Receivable Turnover	6.13	6.08	5.67
Inventories	10,387	9,344	9,020
Finished Goods	6,508	5,894	6,071
Work in Progress	2,287	2,040	1,832
Raw Materials	1,592	1,410	1,117
Other Current Assets	3,701	3,132	2,486
Miscellaneous Current Assets	3,701	3,132	2,486
Total Current Assets	60,979	51,237	45,274
Net Property, Plant & Equipment	19,862	19,766	18,615
Property, Plant & Equipment - Gross	48,579	47,804	44,289
Buildings	12,882	12,502	11,877
Land & Improvements	884	882	854
Machinery & Equipment	29,774	29,104	26,964
Construction in Progress	4,139	4,316	3,637
Accumulated Depreciation	28,717	28,038	25,674
Total Investments and Advances	1,884	1,481	1,148
Other Long-Term Investments	1,884	1,481	1,148
Intangible Assets	81,638	89,795	81,282
Net Goodwill	35,246	36,393	33,639
Net Other Intangibles	-	53,402	47,643
Other Assets	7,432	4,081	3,590
Deferred Charges	4,436	656	551
Tangible Other Assets	2,996	3,425	3,039
Total Assets	182,018	174,894	157,728
Assets - Total - Growth	4.07%	10.88%	3.12%
Asset Turnover	0.53	-	-
Return On Average Assets	11.70%	-	-
<b>Liabilities &amp; Shareholder's Equity</b>			
ST Debt & Current Portion LT Debt	3,766	2,631	1,471
Short Term Debt	-	832	371
Current Portion of Long Term Debt	2,131	1,799	1,100
Accounts Payable	11,055	9,505	8,544
Accounts Payable Growth	16.31%	11.25%	13.36%
Income Tax Payable	1,112	1,392	2,266
Other Current Liabilities	29,293	28,965	23,683
Accrued Payroll	3,586	3,484	3,354

Miscellaneous Current Liabilities	25,707	25,481	20,329
Total Current Liabilities	45,226	42,493	35,964
Current Ratio	1.35	1.21	1.26
Quick Ratio	1.12	0.99	1.01
Cash Ratio	0.70	0.59	0.54
Long-Term Debt	30,985	33,735	27,210
Long-Term Debt excl. Capitalized Leases	29,985	32,635	26,494
Non-Convertible Debt	29,985	32,635	26,494
Provision for Risks & Charges	8,898	10,771	10,663
Deferred Taxes	(2,736)	(1,320)	(1,861)
Deferred Taxes - Credit	7,487	7,214	5,958
Deferred Taxes - Debit	10,223	8,534	7,819
Other Liabilities	15,399	17,403	18,462
Other Liabilities (excl. Deferred Income)	15,399	17,403	18,462
Total Liabilities	107,995	111,616	98,257
Total Liabilities / Total Assets	59.33%	63.82%	62.30%
Common Equity (Total)	74,023	63,278	59,471
Common Stock Par/Carry Value	3,120	3,120	3,120
Retained Earnings	123,060	113,890	110,659
Cumulative Translation Adjustment/Unrealized For. Exch. Gain	(10,017)	(8,938)	(8,705)
Unrealized Gain/Loss Marketable Securities	(3)	1	-
Other Appropriated Reserves	(3,038)	(6,305)	(7,186)
Treasury Stock	(39,099)	(38,490)	(38,417)
Common Equity / Total Assets	40.67%	36.18%	37.70%
Total Shareholders' Equity	74,023	63,278	59,471
Total Shareholders' Equity / Total Assets	40.67%	36.18%	37.70%
Total Equity	74,023	63,278	59,471
Liabilities & Shareholders' Equity	182,018	174,894	157,728



## References

- Access to Medicine Foundation. (2021) *7 lessons from COVID-19 for pharma companies*. Available at: <https://accesstomedicinefoundation.org/news/7-lessons-from-covid-19-for-pharma-companies> (Accessed: March 2022)
- Brown W. (2021) *Calculated Intangible Value (CIV)*. Available at: <https://www.investopedia.com/terms/c/civ.asp> (Accessed: April 2022)
- Carbon Collective. (2021) *Return on Research Capital (RORC)*. Available at: <https://www.carboncollective.co/sustainable-investing/return-on-research-capital-ratio> (Accessed: March 2022)
- Companies Market Cap. (2022) *Largest Pharma Companies by Market Cap*. Available at: <https://companiesmarketcap.com/pharmaceuticals/largest-pharmaceutical-companies-by-market-cap/> (Accessed: April 2022)
- CFI. (2022a) *Efficiency Ratios*. Available at: <https://corporatefinanceinstitute.com/resources/knowledge/finance/efficiency-ratios/> (Accessed: March 2022)
- CFI. (2022b) *Operating Profit Margin*. Available at: <https://corporatefinanceinstitute.com/resources/knowledge/finance/operating-profit-margin/> (Accessed: March 2022)
- Davis, A. N. (2022) *Pharmaceutical Industry SWOT Analysis 2022*. Available at: <https://swothub.com/pharmaceutical-industry-swot-analysis/> (Accessed: June 2022)
- Deshmukh, A. (2021) *Visualizing the World's Biggest Pharmaceutical Companies*. Available at: <https://www.visualcapitalist.com/worlds-biggest-pharmaceutical-companies/> (Accessed: February 2022)
- Elmhirst, E. (2020) *Roche and Lilly Most Vested in Research*. Available at: <https://www.evaluate.com/vantage/articles/data-insights/other-data/roche-and-lilly-most-vested-research> (Accessed: April 2022)
- European Federation of Pharmaceutical Industries and Associations (EFPIA). (2021) *The Pharmaceutical Industry in Figures*. Belgium
- Exchange Rates. (2021) *Exchange Rates - Swiss Franc Rates for 12/31/2021 - US Dollar* Available at: <https://www.exchange-rates.org/Rate/CHF/USD/12-31-2021> (Accessed: March 2022)
- Fernando J. (2021) *Return on Equity (ROE)*. Available at: <https://www.investopedia.com/terms/r/returnonequity.asp> (Accessed: April 2022)

Fernando J. (2022a) *Inventory Turnover*. Available at: <https://www.investopedia.com/terms/i/inventoryturnover.asp> (Accessed: April 2022)

Fernando J. (2022b) *Debt-to-Equity (D/E) Ratio*. Available at: <https://www.investopedia.com/terms/d/debtequityratio.asp> (Accessed: April 2022)

Frankenfield J. (2019) *Return on Research Capital (RORC)*. Available at: <https://www.investopedia.com/terms/r/return-on-research-capital.asp> (Accessed: April 2022)

Hargrave M. (2022a) *Return on Assets (ROA)*. Available at: <https://www.investopedia.com/terms/r/returnonassets.asp> (Accessed: April 2022)

Hargrave M. (2022b) *DuPont Analysis*. Available at: <https://www.investopedia.com/terms/d/dupontanalysis.asp> <https://www.investopedia.com/terms/r/returnonassets.asp> (Accessed: April 2022)

Hayes A. (2020) *Leverage Ratio Definition*. Available at: <https://www.investopedia.com/terms/l/leverageratio.asp> (Accessed: April 2022)

Hayes A. (2021a) *Liquidity Ratio*. Available at: <https://www.investopedia.com/terms/l/liquidityratios.asp> (Accessed: April 2022)

Hayes, A. (2021b) *Debt Ratio*. Available at <https://www.investopedia.com/terms/d/debtratio.asp> (Accessed: April 2022)

Hayes A. (2021c) *Interest Coverage Ratio*. Available at: <https://www.investopedia.com/terms/i/interestcoverageratio.asp> (Accessed: April 2022)

Hayes A. (2021d) *Operating Margin*. Available at: <https://www.investopedia.com/terms/o/operatingmargin.asp> (Accessed: April 2022)

Hayes A. (2022a) *Cash Conversion Cycle (CCC)*. Available at: <https://www.investopedia.com/terms/c/cashconversioncycle.asp> (Accessed: April 2022)

Hayes A. (2022b) *Asset Turnover Ratio*. Available at: <https://www.investopedia.com/terms/a/assetturnover.asp> (Accessed: April 2022)

Hayes A. (2022c) *Return on Capital Employed (ROCE)*. Available at: <https://www.investopedia.com/terms/r/roce.asp> (Accessed: April 2022)

Investing.com. (2021) *Roche Holding AG Participation (ROG)*. Available at: <https://www.investing.com/equities/roche-hldg-ratios> (Accessed: April 2022)

Investopedia. (2022) *What do you need to learn today*. Available at: <https://www.investopedia.com/> (Accessed: March 2022)

Investopedia Team. (2022) *What Are the Average Research and Development Costs for Pharmaceutical Companies?*. Available at: <https://www.investopedia.com/ask/answers/060115/how-much-drug-companys-spending-allocated-research-and-development-average.asp> (Accessed: April 2022)

Johnson & Johnson. (2020) *Annual Report*. USA

Johnson & Johnson. (2021a) *Annual Report*. USA

Johnson & Johnson. (2021b) *2021 Notice of Annual Meeting & Proxy Statement*. USA

Johnson & Johnson. (2022a) *2022 Notice of Annual Meeting & Proxy Statement*. USA

Johnson & Johnson. (2022b) *Our Credo*. Available at: <https://www.jnj.com/living-our-values,%20https://www.jnj.com/credo/> (Accessed: April 2022)

Johnson & Johnson. (2022c) *Johnson & Johnson Outlines Strategy to Deliver Above-Market Growth at 2019 Pharmaceutical Business Review*. Available at: <https://www.jnj.com/johnson-johnson-outlines-strategy-to-deliver-above-market-growth-at-2019-pharmaceutical-business-review> (Accessed: April 2022)

Kenton, W. (2021) *Efficiency Ratio Definition*. Available at: <https://www.investopedia.com/terms/e/efficiencyratio.asp> (Accessed: February 2022)

Maverick J. B. (2021) *Key Financial Ratios for Pharmaceutical Companies*. Available at: <https://www.investopedia.com/articles/financial-analysis/090616/key-financial-ratios-pharmaceutical-companies.asp> (Accessed: February 2022)

Mikulic, M. (2021a) *Global pharmaceutical industry - statistics & facts*. Available at: <https://www.statista.com/topics/1764/global-pharmaceutical-industry/#dossierKeyfigures> (Accessed: February 2022)

Mikulic, M. (2021b) *Total global spending on pharmaceutical research and development from 2012 to 2026*. Available at: <https://www.statista.com/statistics/309466/global-r-and-d-expenditure-for-pharmaceuticals/#statisticContainer> (Accessed: March 2022)

Mikulic, M. (2021c) *Global top 10 pharmaceutical companies based on projected R&D spending in 2026*. Available at: <https://www.statista.com/statistics/309469/global-r-and-d-spending-for-pharmaceuticals-by-projected-top-10-companies/> (Accessed: March 2022)

Mikulic, M. (2022a) *Revenue of the worldwide pharmaceutical market from 2001 to 2021*. Available at: <https://www.statista.com/statistics/263102/pharmaceutical-market-worldwide-revenue-since-2001/> (Accessed: May 2022)

Mikulic, M. (2022b) *Leading companies by number of COVID-19 drugs and vaccines in development as of June 3, 2022*. Available at: <https://www.statista.com/statistics/1119090/coronavirus-drugs-in-development-by-leading-companies/#statisticContainer> (Accessed: June 2022)

Mikulic M. (2022c) *Roche - Statistics & Facts*. Available at: <https://www.statista.com/topics/7777/roche/#dossierKeyfigures> (Accessed: April 2022)

Mikulic M. (2022d) *Roche's expenses from 2019 to 2021, by type*. Available at: <https://www.statista.com/statistics/1092667/roches-expenses-by-type/> (Accessed: April 2022)

Mikulic M. (2022e) *Roche's expenditure on research and development from 2011 to 2021*. Available at: <https://www.statista.com/statistics/266518/roches-expenditure-on-research-and-development-since-2007/> (Accessed: April 2022)

Mikulic M. (2022f) *Johnson & Johnson's expenditure on research and development from 2005 to 2021*. Available at: <https://www.statista.com/statistics/266407/research-and-development-expenditure-of-johnson-und-johnson-since-2006/> (Accessed: April 2022)

Murphy C. B. (2020) *Accounts Payable Turnover Ratio Definition*. Available at: <https://www.investopedia.com/terms/a/accountspayableturnoverratio.asp> (Accessed: April 2022)

Murphy C. B. (2021) *Receivables Turnover Ratio*. Available at: <https://www.investopedia.com/terms/r/receivableturnoverratio.asp> (Accessed: April 2022)

Murphy C. B. (2022) *Net Profit Margin*. Available at: [https://www.investopedia.com/terms/n/net\\_margin.asp](https://www.investopedia.com/terms/n/net_margin.asp) (Accessed: April 2022)

Planergy. (no date) *Ratio Analysis of Financial Statements: Analyse To Drive Better Performance*

Poznanski J., Sadownik B., Gannitsos I. (2013) *Financial Ratio Analysis*.

Ready Ratios (2021) *Pharmaceutical Preparations: average industry financial ratios for U.S. listed companies*. Available at: <https://www.readyratios.com/sec/industry/2834/> (Accessed: April 2022)

Research and Markets. (2021) *Global Pharmaceuticals Market Report 2021: Market is Expected to Grow from \$1228.45 Billion in 2020 to \$1250.24 Billion in 2021 - Long-term Forecast to 2025 & 2030*. Available at: <https://www.globenewswire.com/news-release/2021/03/31/2202135/28124/en/Global-Pharmaceuticals-Market-Report-2021-Market-is-Expected-to-Grow-from-1228-45-Billion-in-2020-to-1250-24-Billion-in-2021-Long-term-Forecast-to-2025-2030.html> (Accessed: February 2022)

Roche. (2019a) *Annual Report*. Switzerland

Roche. (2019b) *Financial Report*. Switzerland

Roche. (2020a) *Annual Report*. Switzerland

Roche. (2020b) *Financial Report*. Switzerland

Roche. (2021a) *Annual Report*. Switzerland

Roche. (2021b) *Financial Report*. Switzerland

Roche. (2022a) *About Roche*. Available at: <https://www.roche.com/about/> (Accessed: March 2022)

Roche. (2022b) *Our Strategy*. Available at: <https://www.roche.com/about/strategy/#13ca2ca8-cb7a-4209-9098-33fa3c96d96c> (Accessed: March 2022)

Statista. (2022) *Empowering people with data*. Available at: <https://www.statista.com/> (Accessed: February 2022)

Toppr. (no date) *Meaning, Objectives, Advantages and Limitations of Ratio Analysis*. Available at: <https://www.toppr.com/guides/accountancy/accounting-ratios/meaning-objectives-advantages-and-limitations-of-ratio-analysis/> (Accessed: June 2022)

Wall Street Journal. (2022a) *Roche Holding AG ADR – Balance Sheet*. Available at: <https://www.wsj.com/market-data/quotes/RHHBY/financials/annual/balance-sheet> (Accessed: February 2022)

Wall Street Journal. (2022b) *Roche Holding AG ADR – Income Statement*. Available at: <https://www.wsj.com/market-data/quotes/RHHBY/financials/annual/income-statement> (Accessed: February 2022)

Wall Street Journal. (2022c) *Johnson & Johnson – Balance Sheet*. Available at: <https://www.wsj.com/market-data/quotes/JNJ/financials/annual/balance-sheet> (Accessed: February 2022)

Wall Street Journal. (2022d) *Johnson & Johnson – Income Statement*. Available at: <https://www.wsj.com/market-data/quotes/JNJ/financials/annual/income-statement> (Accessed: February 2022)

Worldometer. (2022) *Coronavirus Cases*. Available at: <https://www.worldometers.info/coronavirus/coronavirus-cases/> (Accessed: March 2022)