A Work Project, presented as part of the requirements for the Award of a Master Degree in Finance from the NOVA – School of Business and Economics.

ZOETIS INC. EQUITY RESEARCH PAPER:
BUSSINESS RESILIENCE: ORGANIC GROWTH - LESSONS FROM THE PAST

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Abstract

The presented report consists of a full and comprehensive analysis of Zoetis Incorporated (ZTS:NYSE), and the animal health industry. This Equity Research was developed as part of the requirements for the Awards of a Master Degree in Finance from NOVASBE. The choice of Zoetis Inc. resulted from curiosity to know how the global animal health leader would be affected by the recent economic events, and consequently what holds for its Livestock unit. Through an exhaustive study, it was possible to develop a complete overview of Zoetis' and the animal health industry as well as insights on the company's past financial performance.

Keywords: Animal Health; Generics; Acquisitions; R&D; Livestock

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This report is part of the Business Resilience: Organic Growth report (annexed), developed by Carlota de Andrade Ramalhão Ferreira da Costa and Filipa Manuel Magalhães Freitas Silva Ribeiro, and should be read has an integral part of it.

Table of Contents

A WORK PROJECT, PRESENTED AS PART OF THE REQUIREMENTS FOR THE AWARD OF A MASTER DEGREE IN FINANCE FROM THE NOVA – SCHOOL OF BUSINESS AND ECONOMICS. 1

INTRODUCTION 5

COMPANY OVERVIEW 6

COMPANY DESCRIPTION 6
ZOETIS INCORPORATED IS THE GLOBAL LEADER OF THE ANIMAL HEALTH INDUSTRY, AND IT IS FOCUSED ON THE DEVELOPMENT, MANUFACTURE, AND COMMERCIALIZATION OF MEDICINES, VACCINES, DIAGNOSTICS, BIODEVICES, AND PRECISION HEATH TECHNOLOGY. IN 1950, PFIZER' RESEARCHERS, ZOETIS' PARENT COMPANY, DISCOVERED AN ANIMAL ANTIBIOTIC *(TERRAMYCIN),* MARKING THE COMPANY'S ENTRY INTO THE ANIMAL HEALTH BUSINESS. BETWEEN 2012 AND 2013, PFIZER ANNOUNCED THAT ITS ANIMAL HEALTH UNIT WOULD BECOME A STANDALONE COMPANY. NOWADAYS, ZOETIS IS A FORTUNE 500 COMPANY, TRADED ON THE NYSE (TICKER: ZTS), HAVING GENERATED REVENUES OF $7.8 BILLIONS, IN 2021. 6
PRODUCTS 6
GEOGRAPHIC PRESENCE & SEGMENTS 6
COMPANION ANIMAL & LIVESTOCK 7
MANUFACTURING NETWORK 8
CAPITAL STRUCTURE 8

INDUSTRY OVERVIEW 8

INDUSTRY SHIFT 9
COMPETITION & CONSOLIDATION TREND 10
GENERICS PRICE IMPACT 11

PAST ANALYSIS 11

DEVELOPMENT TRACK 11
INCOME STATEMENT 12

Introduction

The purpose of the Equity Research report is to develop a full and comprehensive analysis of Zoetis Incorporated (ZTS) stock upon which investors can base their decisions. In addition to the report, a valuation model was created for Zoetis, which allowed the creation of multiple scenarios that culminated in a final share price of $168 (with a 10% of Capital Gain), thus leading investors to a 'Hold' decision.

The first part of the joint report is structured in the following way (i) first, company overview with an emphasis on Zoetis products, main segments, geographies, and capital structure (ii) secondly, an industry overview, allowing to understand its main value drivers, Zoetis' main competitors with a strong emphasis on generics as one of the industry' biggest threats, the M&A activity, and its contribution to the industry consolidation trend, as well as the impact of generics on brand-name medicines prices (iii) Zoetis' growth strategy – comprising both organic and inorganic strategies – is analysed in terms of efficient value creation, and expectations regarding Zoetis' future growth strategy are developed, highlighting how, in the long-run, organic efforts are expected to represent less of Zoetis' strategy, comparing with inorganic efforts (iv) Zoetis' macroeconomic environment is analysed, focusing on foreign exchange rates' movements to Zoetis' revenue alongside the recent food price inflation (v) analysis of Zoetis' historical financial performance, understanding how Zoetis' investments were translated into the financial statements (vi) forecast of Zoetis' revenue both for Livestock and Companion Animal' business segments, distinguishing among geographic markets – U.S. and International –, and within each different forecast techniques, and revenues drivers were applied (vii) Zoetis' cost of capital was estimated, and it was possible to infer regarding Zoetis' stock valuation, understanding why and how the market is mispricing the company' securities.

For the purposes of Individual Report, Carlota Costa's report (49076) is composed by the Zoetis' and the animal health industry overviews, with a deep description of its main value drivers, and how the recent macroeconomic challenges have been reflecting in the industry. Moreover, and as a way of further providing powerful insights to infer regarding Zoetis' stock, the presented individual report also contains a complete company's past analysis. Regarding Filipa Ribeiro's (49460) individual report, it was more focused on Zoetis' growth strategy, the forecast of Zoetis' financial statements, and the consequent development of the valuation model, allowing the inference of Zoetis' share price.

Company Overview

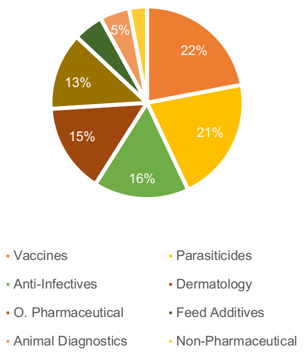
Company Description

The world largest animal health company

Zoetis Incorporated is the **global leader of the animal health industry**, and it is focused on the development, manufacture, and commercialization of medicines, vaccines, diagnostics, biodevices, and precision heath technology. In 1950, Pfizer’ researchers, Zoetis’ parent company, discovered an animal antibiotic *(Terramycin),* marking the company’s entry into the animal health business. Between 2012 and 2013, Pfizer announced that its animal health unit would become a standalone company. Nowadays, Zoetis is a Fortune 500 company, traded on the NYSE (Ticker: ZTS), having generated revenues of $7.8 billions, in 2021.

Products

Figure 1 – Revenue Segmentation (2021, Product)

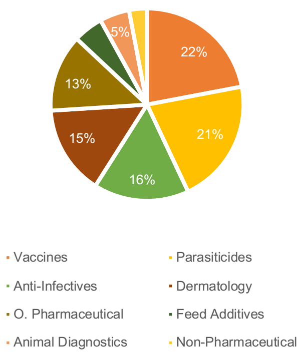


Source: Zoetis Reports

The company offers a portfolio composed by **300+ product lines** which are targeted to **8 main species**: dogs, cats, and horses (collectively, Companion Animal), and cattle, swine, poultry, fish, and sheep (collectively, Livestock). Zoetis’ product lines are distributed across seven major categories, from Vaccines (22% of 2021 revenue), Parasiticides (21%), Anti-Infectives (16%), Dermatology products (15%), Other Pharmaceutical products (13%), Medicated Feed Additives (5%), Animal Health Diagnostics (5%) to Other Non-Pharmaceutical Products (3%) (Figure 1).

Geographic Presence & Segments

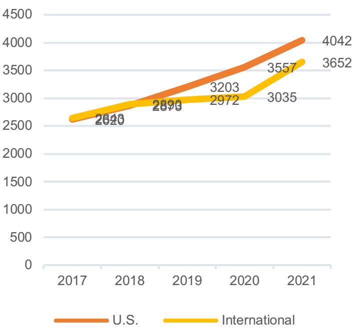
Figure 2 – Revenue Segmentation (2021, Geography)



Source: Zoetis Reports

These products are **directly marketed in 45 countries**, and are **sold in more than 100 countries**, both developed and emerging ones. United States is Zoetis’ main market, having contributed 52% to 2021 revenues, followed by China (10%), Brazil (9%), Australia (7%), Canada (6%), and United Kingdom (6%) (Figure 2). Overall, in 2021, developed countries contributed 77% to total revenues, while emerging markets contributed 22% [1]. Zoetis’ operations are managed through two geographic segments – United States (U.S.) and International, and within each, the company offers solutions both for pet owners and Livestock producers, helping to tackle specific needs.

Figure 3 – U.S. Vs International Revenue Evolution



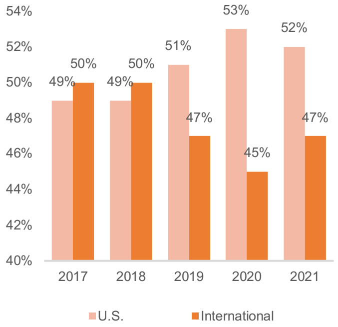
Source: Zoetis Reports

U.S. represented **52% of revenue** for the **year ended in December 2021** (Figure 4), with 70% of this revenue resulting from dogs/cats, 5% from poultry, 3% from swine, 18% from cattle, and 4% from horses’ products. The U.S. segment’ revenue increased in 2021, comparing with 2020, which happened due to a sales’ **growth in Companion Animal** products, slightly offset by a **decline in Livestock** products. The increase in Companion Animal’ revenue was driven by a growing demand for Parasiticides. At the same time, the Livestock revenue’ decreased due to cattle, poultry and swine segments. Cattle sales declined given intensified competition from lower-cost alternatives. In addition to this, several factors led to the recent food price inflation such as i) higher energy and fertilizer costs which increased feeding costs, putting further pressure on farmers margins ii) poor weather conditions that squeezed feed grain, as well as the iii) Russia-

Contract Manufacturing & Human Health’ business segment

Ukraine war and its consequent geopolitical risk [2]. All of this led several farmers to opt for generic, that are less expensive, rather than Zoetis' products, which severely impacted its results. Poultry sales also decreased given higher competition from generics, and lastly, the decline in swine products' was driven by pricing pressures on Zoetis' Anti-Infective and Vaccine portfolio.

Figure 4 – U.S. Vs International Revenue Contribution



Source: Zoetis Reports

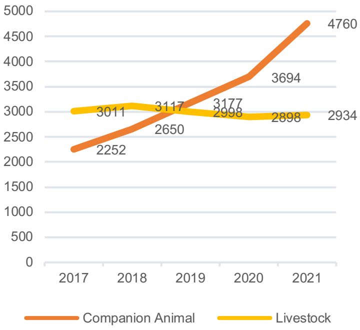
International, with Australia, Brazil, Canada, China, and United Kingdom being the main markets, represented **47% of revenue** for the **year ended in December 2021** (Figure 4), with 44% of this revenue resulting from dogs/cats, 3% from horses, 23% from cattle, 14% from swine, 9% from poultry, 5% from fish, and 2% from sheep and others. The International segment' revenue increased in 2021, comparing with 2020, reflecting a **growth both in Companion Animal and Livestock**. The revenue increase in Companion Animal resulted from higher sales of Zoetis' Parasiticides, and a growth in sales of Dermatology, Diagnostics, and Vaccines. Simultaneously, Livestock revenue' was driven by a simultaneous increase in cattle, fish, and swine segments. Cattle sales grew due to several marketing efforts, as well as favourable export conditions to Brazil. Swine products' sales increased as a result of expanded pork production. Finally, the fish growth was a result of higher Vaccines sales in key salmon markets, and several Zoetis' acquisitions.

Additionally, the company has a non-operating segment – **Contract Manufacturing & Human Health** – which comprises contract manufacturing services to third parties [3], and some human health products which represented 1% of revenue for the year ended in December 2021.

Companion Animal & Livestock

Companion Animal business helps to extend and improve pet's life quality, convenience for pet owners, and veterinarians service' quality. This sub-segment represented **60% of the company's revenue** for the **year ended in December 2021** (Figure 6).

Figure 5 – Companion Animal Vs Livestock Revenue Evolution

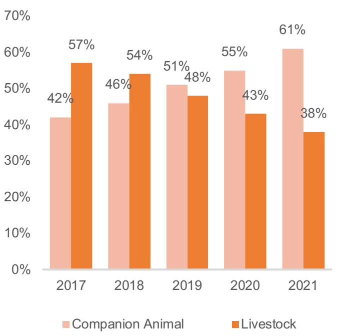


Source: Zoetis Reports

Zoetis' Companion Animal products' are mainly sold to veterinarians who, then resell the products to pet owners. There are several factors influencing these products' demand, such as (i) economic development and purchasing power (ii) increases in pet ownership, and commitment to pets' well-being, as well as (iii) medical advances in veterinarian treatments. Companion animals are also living longer which contributes to strengthen the 'human-pet' bond, further increasing pet care' spending.

Livestock business is dedicated to the prevention and detection of diseases, allowing farmers to perform a sustainable, and cost-effective production of high-quality animal protein. This sub-segment represented **39% of the company's revenue** for the **year ended in December 2021** (Figure 6).

Figure 6 – Companion Animal Vs Livestock Revenue Contribution



Source: Zoetis Reports

Zoetis' Livestock products are sold to several parties such as vets, livestock producers, veterinarians distributors, and animal outlets. This business area comprises some products and product lines such as Vaccines (e.g., *Improvac/Improvest/Vivax, Fostera/Suvaxyn*), Anti-Infectives (e.g., *Spectramast, Draxxin*), Parasiticides (e.g., *Dectomax*), and Medicated Feed Activities (e.g., *Lincomycin*). Among the factors influencing these products' demand, it is possible to highlight (i) human population growth and increasing living standards (ii) demand for better nutrition, mainly in terms of animal protein, as well as (iii) food safety. In a logical way, as human

ultural Market Information System, most countries are facing yearly increases between 10-30% of domestic prices inflation, as a war effect

[3] Zoetis provides logistics, sales, marketing support for other organizations

population continues to grow, demand for nutritious food will increase, thus the sector must be able to fulfil it in a sustainable way, without causing major environmental damages.

Manufacturing Network

Zoetis' medicines are fabricated at manufacturing sites, owned and operated by the company, or at factories run by third-party contract manufacturing organizations (CMOs). The company has a network composed by 28 manufacturing sites, with nine of them being leased. The whole manufacturing and supply chain network is supported by a total of 136 CMOs, both locally and globally-managed. Also, the company acquires its raw materials from several third-party suppliers, and logistic services' providers are responsible for Zoetis' entire shipping and logistics process.

Figure 7 – Zoetis' Earnings per Share & Share Price Evolution

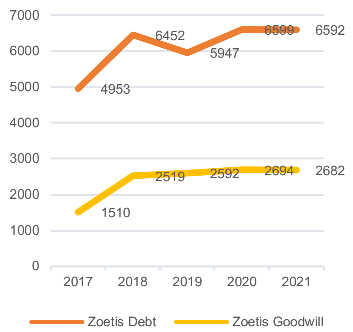
Source: Zoetis Reports & Bloomberg

Capital Structure

As of 13 of December 2022, **Zoetis' market capitalization** was $71.24 billion. Over almost a decade, Zoetis managed to grow its Earnings per Share at an average of 28% per year, highlighting how the company has been able to distribute higher profits to its shareholders. This EPS' increase is reasonably close to the average 23% annual increase in the company' share price. Indeed, this suggests that the market sentiment around Zoetis has not changed much, from 2012 to 2021, as the EPS has approximately tracked share price' movements (Figure 7).

As of December 14, 2022, **current share outstanding** was more than 466.1 million, with 96.94% of public float. The company' most important holders are institutional (with 94.45%) including Blackrock Inc. (9.32%), Vanguard Group Inc. (7.84%), Capital Group (4.74%), and State Street Corporation (4.25%). [4] Additionally, since 2017, **Debt** has been growing in line with Zoetis' acquisitions – 'Goodwill' caption evolution, – which is justified by the fact that Zoetis' mainly uses Debt to finance its acquisitions (Figure 8).

Figure 8 – Zoetis Net Debt/Equity & Goodwill Evolution



Source: Zoetis Reports

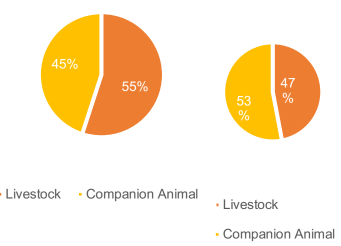
Industry Overview

The **animal health industry is growing** and includes all products and services that promote livestock' productivity and pets' health. The **Global Animal Health Market** size was estimated at US$ 39.9 billion in 2021, and it is expected to grow at a **CAGR** of **10.0%** from **2022 to 2030** [5]. Also, the combined revenue of the Top 20 animal health companies had an annual growth of 9.4%, from 2011 to 2021 highlighting that the sector has been positioning itself to be a leading force for upcoming years [6].

Animal Health is facing an industry shift

Considering the Top 20 animal health companies, **Companion Animal' revenues are surpassing Livestock's**, highlighting a **sector shift**. In 2017, Livestock generated 55% of total sector' revenues, while in 2021, pets dominated the sector, being responsible for 52.7% of revenues, according to CEESA (Figure 9).

Figure 9 –Sales Contribution by Livestock & Companion Animal (2017 Vs 2021)



Source: Global Animal Health Association (2022)

The industry has three main drivers:

Animal-Protein Food such as chicken, fish, beef, and milk is being highly demanded, due to an increasing awareness regarding its benefits. In fact, animal-based food currently represents 1/3 of total human protein consumption and, according to FAO, this value is expected to increase,

[4] Bloomberg, December 2022
[5] Grand View Research: *Animal Health Market Size, Share & Trends Analysis, 2022-2030*
[6] Global Animal Health Association: *Global Trends in the Animal Health Sector 2022*

showing the importance of having a productive production [7]. Global population, in 2022, is around 7.9 billion, and it is expected to surpass the 9.6 billion, by 2050 [8], which adds to the fact that, in 2020, between 720 and 811 million people were undernourished, according to FAO. The need to combat hungry while meeting food-growing demand, having limited resources, highlights the imperative need to adopt a large-scale, but sustainable Livestock supply.

Growth demand for animal-food drives up this industry' growth

Zoonotic and Food-borne Diseases and their prevalence is another factor impacting the industry. Animal health is, in fact, highly connected with human health, as diseases affecting animals can likewise affect humans. Also, there has been an unprecedent rise of zoonotic diseases [9], which is triggering companies to produce pharma solutions for pathogen contamination control. Additionally, governmental organizations are permanently issuing guidelines regarding safety practises that must be implemented to improve long-term animal health, and consequently food safety [10].

Greater spread of zoonotic diseases requires safer food production

Pet Ownership & Adoption trend [11], and the consequent affective bond between pets and their owners, also drives zoonotic diseases' spread. Pet' ownership growth is more evident in emerging countries, where an expansion of the middle class is being witnessed characterized by the emergence of a new 'Pet Culture', developed around companion animals' humanization [12]. In fact, the pet ownership trend combined with the fact that companion animals are living longer [13], will likely boost companion animal' spending [14], thus industry growth. A Morgan Stanley study (2020) concluded how, from 2014 to 2019, pet owners' disposable income had a progressively lower weight in purchasing decisions, when it comes to pet spending, a trend expected to continue in the future. In a post Covid-19 scenario, the benefits associated with owning pets are being emphasized, such as companionship and anxiety' reduction. Also, the pandemic greatly depressed birth rates which could have drove, among millennial couples, the replacement of children with pets. In fact, during the pandemic' peak, 23 million people worldwide added a pet to their family.

Covid-19 pandemic accelerated pet ownership & adoption trend

Industry Shift

Besides the increasing pet ownership and pet spending, the **growth of the pets segment, relative to Livestock**, has also been driven by the **introduction of innovations such as monoclonal antibodies, and digital technologies**. Vaccines and Parasiticides remain the core driver of the Companion Animal segment, however, the Veterinary Diagnostics sector is rapidly growing. The strong modernization in the pets' field combined with increasing awareness regarding the benefits of an early diagnostic is key to sustaining the segment' high long-term growth.

Introduction of new technologies drives up Companion Animal' segment growth

Regional Insights

North America is the biggest animal health market, but Asia-Pacific region is growing faster

North America is the **largest animal health market**, having accounted for **29.5% of revenue, in 2021**. The region has several governmental animal organizations that aim to improve animal

[7] FAO claims that, to feed the world population by 2050, the production levels, verified in 2005, would need to increase, by more than 70%. Considering 2003 level, it is estimated that, in 2050, dairy products' demand will more than quadruple
[8] United Nations Department of Economic and Social Affairs, Population Division 2022
[9] Nowadays, around 60% of human infectious are zoonotic – spread from animals to humans – according to National Geographic (2021)
[10] According to WHO data, ever year, the consumption of spoiled food causes 420 000 deaths and 600 million disease' cases
[11] In the U.S., 4 million pets are adopted each year, according to the American Society for the Prevention of Cruelty to Animals. In 2021, the American Pet Products Association stated that 67% of U.S. households owned a pet, and this % is expected to increase
[12] In China, pet ownership increased by 113%, and in 2024, China is expected to be the country with the most pets
[13] Reuters: *As pets live longer, they may need long-term health care*: pets' life expectancy, in the US, increased 12.4% (2002-2016)
[14] According to the European Pet Food Organization, the consumer spending on pets, in the EU, increased from €35B to €51B (2018-2021). In the US, it increased from $91B, in 2018, to $124B, in 2021

health, which is combined with being pioneer in several technological advancements. In fact, leading U.S. animal companies combine their R&D efforts to, eventually, achieve higher returns on research capital. The U.S. is also the largest market for human health, so the cooperation and positive synergies between both health systems are also key to explain its health' dominance [15].

Asia-Pacific is the **fastest growing region in the industry**, with a forecast **CAGR of 10.5%** [16] for upcoming years. This expectation leads to hefty investments made by main players, in the region, for instance, in 2020, Boehringer Ingelheim – European largest animal health company – acquired an equity stake in the China-based New Ruipeng Group [17], which is coupled with its strong efforts to commercialize their products at a discount price, as a way of conquering market share.

Competition & Consolidation Trend

Industry is dominated by large, well-established

The **animal health industry,** due to the consolidation trend, is becoming dominated by few players with large market share, and well-established reputation. The industry is **dominated by four companies**: Boehringer Ingelheim [18], Elanco Animal Health, Merck & Co. [19], and Zoetis. Other peers such as Virbac and IDEXX Laboratories also play an important role [20].

Currently, as a result of the consolidation wave, this **industry is still not highly competitive**, however, over time, **more direct competition is expected** – from **generic alternatives** that received market authorization –, and, particularly, in long term, **indirect competition** from alternative medical options perceived as less invasive to animal health, such as natural treatments. There are several ways of competition in the industry such as new product launches, quality, price, product promotion, consolidation, and geographic expansion. Besides competition from **standalone animal health business** or **animal health units of pharma companies**, there are several **start-ups** trying to break into the industry, mainly in the Precision Livestock Farming' segment.

Generics competition is one of the biggest threats in the industry

Also, it is fundamental to mention the competition from **generic producers**, who aim to conquer market share by offering lower-cost alternatives. In fact, one of this **industry' main threats** is related with being **highly dependent on patents** as well as on the **exclusivity rights** they provide. Therefore, once a patent expires, the competition from generics increases [21]. It is relevant to highlight that this **threat** is much **more felt in the Livestock segment**. This happens due to (i) generics offer being much more extensive for Livestock' business comparing with Companion Animal (ii) pet owners tend to be more resilient when it comes to change their pets' medicines for lower-cost alternatives, as they scare the secondary effects (iii) the recent food price inflation is having a major impact on the Livestock segment, as its production and feeding – input costs – are becoming much more expensive, thus farmers could be more willing to change their Livestock' medicines for lower-cost generic alternatives. For example, all patents related with *Draxxin* (Livestock Anti-Infective) have expired, in the majority of markets, and generic

[15] According to Zoetis 2017 Annual Report, several animal health products are derived from molecules and compounds resulting from human health research
[16] Grand View Research: *Animal Health Market Growth & Trends, 2022*
[17] New Ruipeng Group (NRP) offers veterinary care and e-commerce services to pet owners across China
[18] Boehringer Ingelheim is a private company with limited information being disclosed, thus it was not possible to take it into consideration, for the purpose of this Equity Research report
[19] Despite Merck & Co. being one of the biggest players in the animal health industry, for the purposes of this Equity Research report, it was not considered among this report' analysis, except RORC, since its human health unit dominates, by far, the animal health (Merck Animal Health), which would have created an outlier
[20] Forbes: *5 Forces Transforming the Animal Health Market (December 2019)*
[21] Despite this, competition from generic producers is much more felt in the Human Health sector, rather than Animal Health as Human Health is a more developed business sector

versions are now being commercialized, leading to a reduction in Zoetis' sales [22]. Also *Zoamix'* (Zoetis Livestock Medicated Feed Additive) sales have been suffering a strong decline due to its generic – *ZoaShield 25%,* – produced and commercialized by Elanco.

Strong M&A activity fuelled consolidation trend

Strong M&A activity fuelled consolidation trend

However, the **entrance** in this industry faces **several barriers**. Firstly, it is hard for new players to set up their businesses as high expenditures need to be incurred, mainly in terms of technology advancement. Also, this business is subject to strict licensing, and legal requirements that must be fulfilled, before a company is authorized to start operating, which might slow down competition. In the generics field, though, there is still no company present as a market leader. Nowadays, the majority of generics are produced by large well-established health companies, such as Elanco. Consequently, more and more **companies are pursuing M&A's** [23] as a way of enhancing their pipelines, while conquering market share. The consolidation trend is based on the adoption of a more **cost-efficiency approach**, in terms of R&D, as well as the possibility of breaking into **new markets and business segments**, without exploring them from scratch. To illustrate this, in February 2021, Merck & Co. [24] completed the acquisition of Poultry Sense Ltd., as a way of expanding its presence in the poultry field. Also, Elanco [25] acquired Kindred Biosciences for a price of $444 million, allowing the company to deepen its presence in the pets segment, more specifically in the Dermatology field due to Kindred's strong pipeline. In 2020, Elanco acquired Bayer Animal Health for $7.6 billion, being the industry's most expensive deal ever. During the same year, Zoetis completed the acquisition of Fish Vet Group as a strategic addition to its Pharmaq business, thus enhancing Zoetis' geographic presence and Diagnostics' expertise.

Generics Price Impact

Figure 10 – Draxxin Price Vs Generics Price & Active Ingredient

	Price ($/mL)	Active Ingredient (mg/mL)
Macrosyn	1.83	100
Increxxa	1.90	100
Draxxin	2.56	100

Source: FDA and European Medicines Agency

It is extremely important to understand the impact of generics emergence on brand-name drugs' prices. According to the U.S. Food & Drug Administration (FDA), greater competition from generic alternatives triggers a reduction in the prices of their respective brand-name medicine. Additionally, an FDA 2019 study proved that the Generic-to-Brand price ratio tends to decrease, as the number of generic producers increase. Also, the generic price difference, relative to the respective brand-name medicine, is much higher for medicines that have several generic alternatives, rather than a single one, as generic producers' pricing power decreases [26]. For instance, *Draxxin*' price is 40% and 35% higher than its generics *Macrosyn* (produced by Bimeda U.S.), and *Increxxa* (produced by Elanco), respectively (Figure 10). Therefore, the emergence of generic products will have a significant impact in Zoetis, reducing its pricing power.

Past Analysis

Development Track

Pfizer is Zoetis' former parent company

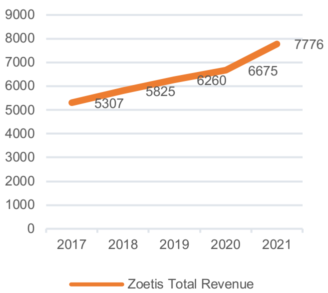
On 1st February 2013, **Pfizer**, through an IPO, was able to **sell about 86.1 million Zoetis' shares** for US$ 2.2 billion, despite keeping an 83% controlling stake in the new standalone company. Later that year, Pfizer announced its plans to sell the remaining stake. According to

[22] Anti-Infective segment registered declines, in its yearly growth. Both in 2019 and 2020, the annual growth rate was negative of -2% and -4%, respectively
[23] 2021 was a record year for M&A activity in the field. According to Capstone Partners 2022 report, the number of transactions more than doubled from 76, in 2020 to 169, in 2021, and it was registered a 157% increase, in terms of transaction volume (2020-2021)
[24] Merck & Co. is a global healthcare company responsible for delivering medicines, vaccines, and biological therapies with its operations being divided across three main segments: pharmaceutical, animal health, and consumer care
[25] Elanco is, after Zoetis, the world biggest animal health company, and it is focused on manufacturing and commercializing medicines and vaccines for both Livestock and Companion Animal' segment
[26] The 2019-FDA study (*Generic Competition and Drug Prices: New Evidence linking greater generics competition and lower generic drug prices*) concluded that generic medicines, with 6 or more generic competitors, face price reductions of more than 95% compared to brand-name prices, while if there is only one generic producer, the generic price is only 39% lower than its brand-name medicine

Reuters [27], this would represent a key step for Pfizer to further strengthen its position in the prescription drug business which offered, by far, higher margins than animal health.

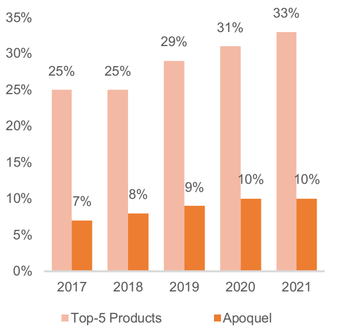
Income Statement

Figure 11 – Zoetis' Total Revenue



Source: Zoetis Reports

Figure 12 – Top-5 Products & Apoquel Revenue' Contribution

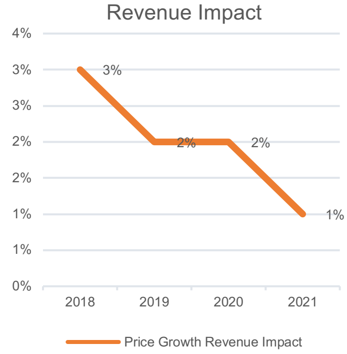


Source: Zoetis Reports

Figure 13 – Operational Growth Vs Revenue Growth

Source: Zoetis Reports

Figure 14 – Zoetis Price Growth Revenue Impact



Source: Zoetis Reports

In general terms, Zoetis' **revenue** witnessed an **increase of around 47%**, rising from $5.3 billion, in **2017** to $7.8 billion, in **2021** (Figure 11). Comparing with 2020, revenue increased by 16% mainly driven by Parasiticides (+40%), Dermatology (+25%), and Animal Health Diagnostics (+23%). In fact, 2021 was the year that most contributed to a revenue' increase. It might also be relevant to state that, **Zoetis' Top-5 products** contributed, in 2021, 33% to total sales, and this **contribution has been increasing since 2017**, where it was of just 25% (Figure 12). Both in 2020 and 2021, *Apoquel* (Dermatology) was the medicine that most contributed to revenue (10%), while *Simparica* (Parasiticide) was the 2nd one (6% in 2020 and 10% in 2021), and both products have been increasing their revenue' contribution over the years. It is important to add that the **Covid-19 pandemic**, mainly, affected Zoetis' Livestock business given that several farmers were forced to close facilities or substantially reduce production levels, thus impacting medicines demand. However, the biggest impact was not felt at a revenue level which, despite the slowdown in 2020, relative to 2019, grew significantly in 2021. Instead, Covid-19 impact was **most evident at a supply chain level**, as it led to products shipment' delays, labour shortages, among others, that were already felt in 2022, and are expected to continue through the medium-run [28].

From 2017 to 2021, **operational growth [29] of revenues** was mainly driven by volume growth from **'In-Line' products** [30] (Figure 13 & Appendix 2). The **volume growth** from **'In-Line'** products contributed to **60% of the operational growth of revenues**, verified in 2021, followed by **'New Products'** which **contributed around 33%** to revenue' growth. The **volume growth** of both **'In-Line'** and **'New Products'** has **been increasing for the past years**, showing how Zoetis efforts – R&D, acquisitions, and licensing – are, from a commercial point of view, generating positive effects, that remain through the medium and long-run. Besides that, **Zoetis revenues** have been **growing through price growth**, however, during last years, this growth was in a **lower percentage, due to competition from lower-cost alternatives** (Figure 14). Furthermore, in 2018 and 2019, Abaxis acquisition contributed to a 2% growth in revenues, and Zoetis' more recent acquisitions, in 2020, contributed 1% to the operational revenue growth while, in 2021, acquisitions had no major impact in Zoetis' revenue growth [31]. Lastly, **changes in foreign exchange rates** also significantly **impacted Zoetis' total revenue growth**, as the International segment represents more than 45% of its total revenue.

In terms of **Costs**, from **2017** to **2021**, total costs **decreased as a percentage of revenue** from 65.8% to 61.9%, respectively. This decline was mainly driven by a **decrease in 'Cost of Sales'** as a percentage of revenue, which resulted from more favourable product mix and a decline in manufacturing costs (Figure 15). Zoetis' industry peers also witnessed an **increase** on their **gross margin**, which is partially justified by the acquisition activity, and consolidation trend. For

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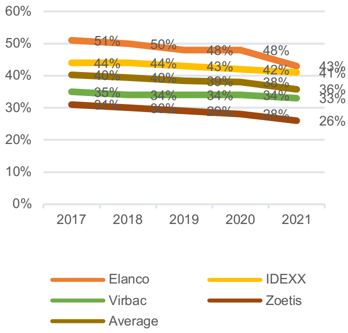
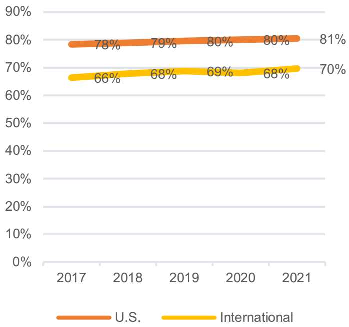
[27] Reuters, May 2012 – *Pfizer to spin off Zoetis stake to shareholders*
[28] According to Zoetis Q1 2022 report, "the Covid-19 pandemic has and may continue to impact our global supply chain as we continue to experience disruptions or delays in shipments of certain materials and components of our products."
[29] Operational Revenue Growth (a non-GAAP financial measure) is defined as revenue growth, excluding foreign exchange' impact
[30] In-Line Products are those that were licensed in the market, in previous years
[31] It is important to refer that Zoetis acquisitions real impact' cannot only be measured considering these percentages, as they reflect 'Recent Acquisitions' effects, without their medium to long-term impact, namely in terms of new products or new markets' expansion

Figure 15 – Zoetis & Peers Cost of Sales Expenses Evolution



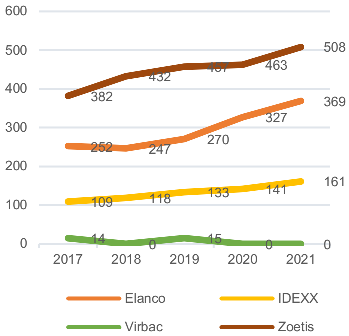
Source: Zoetis Reports

Figure 16 – Zoetis Gross Margin U.S. & International



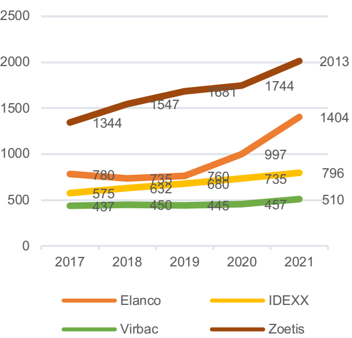
Source: Zoetis Reports

Figure 17 – Zoetis & Peers SG&A Expenses Evolution



Source: Zoetis Reports

Figure 18 – Zoetis & Peers R&D Expenses Evolution



Source: Zoetis & Peers Reports

example, in 2021, Elanco suffered a decrease in its 'Cost of Sales', as a percentage of revenue, to 43% comparing with 51%, in 2017. Indeed, this might be due to the inclusion of Bayer Animal Health products – which offer higher margins –, on Elanco's portfolio. Comparing with some peers, it is possible to infer how **Zoetis**, within the analysed period, **outperformed the industry as 'Cost of Sales' caption weighted less** in total revenues. Additionally, in both geographies – U.S. and International – **Zoetis improved** its **gross margins**, especially in the International segment, growing from 66%, in 2017 to 70%, in 2021 (Figure 16).

Despite the overall cost' management improvement, the '**SG&A**' caption behaved the opposite way, **increasing its weight in total revenue**, from 25.1%, in 2017, to 25.7%, in 2021. From 2017 to 2021, SG&A expenses grew by almost 50%, due to increased spending with acquisitions, higher advertising and promotional investments – associated with new products' development and new geographies' expansion –, as well as increases in certain compensation-related costs. When comparing to some industry peers, Zoetis is the one with highest SG&A expenses, followed by Elanco, which registered, from 2017 to 2021, the highest growth of these cost caption – around 80%. However, all peers, from 2017 to 2021, increased their SG&A expenses which is justified by greater promotional investments, and compensation-related costs (Figure 17). The 'compensation-costs' increase is a consequence of the 'skills shortage' and talent gap that is, currently, shaping the Health Care industry, as the Pharmaceutical workforce expertise is not yet aligned with the new 'manufacturing world', characterized by innovation and the usage of cutting-edge technology.

Regarding Zoetis' **R&D**, it **increased around 33%**, from 2017 to 2021, as a result of both the inclusion of acquired companies, in Zoetis' business, and several project investments. The behaviour of 'Compensation-related Costs' caption also contributed to 'R&D' expenses' growth. Zoetis registered its R&D highest value in 2018, due to Abaxis acquisition, and **all peers, except Virbac, grew their R&D expenses**, from 2017 to 2021 (Figure 18). Moreover, it is relevant to mention that foreign exchange' movements impacted Zoetis' costs, in a very irregular way [32], but were not the main driver of total costs. For example, in 2018 and 2020, changes in foreign currencies, relative to U.S. dollar, had a negative impact on Zoetis' costs however, in both years, Costs of Sales decreased, as a percentage of revenue, precisely showing how Costs of Sales are not exclusively driven by these foreign currencies' fluctuations. Additionally, it is important to explain that Zoetis' controls its foreign exchange risk, in part, through operational means, by managing same-currency revenue in relation to same-currency costs, and same-currency assets in relation with same-currency liabilities. This risk is, also weakened by foreign currency forward-exchange contracts, which are used to offset the potential earnings' effect, arising from operations, on short-term foreign currency assets and liabilities.

Regarding **EBITDA Margin, it increased** from 34%, in 2017, to 37%, in 2021 due to a 47% Revenue' increase, and a 61% EBITDA' increase, within the same period. Furthermore, Net Income grew from $864 million, in 2017 to $2037, in 2021. This happened as a consequence of a 29% Core Result' increase, despite slightly offset by a 70% decrease in Non-Core Result, from 2017 to 2021. Comparing with health care industry' peers – both animal and human health – it is possible to conclude that, in 2021, **Zoetis registered the highest EBITDA Margin**, with a value of 37% (Figure 19). In 2021, Elanco had an EBITDA Margin of 9% which is quite below the peer's average of 28%. This reflects Elanco's high involvement in the generics business, where the

[32] It is not possible to compute the exact impact of foreign exchange' movements, in Zoetis' Costs, due to the lack of information

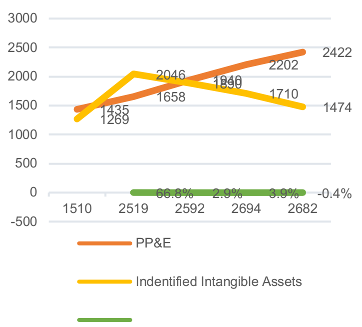
pricing power is lower, so operating margins are also lower.

Figure 19 – Zoetis & Peers EBITDA Margin (2021)

EBITDA Margin	2021
Corcept Therapeutics	35%
Elanco Animal Health	9%
Harmony Biosciences	35%
IDEXX Laboratories	33%
Pacira Biosciences	24%
Prestige Consumer	35%
Supernus Pharmaceuticals	22%
Virbac	19%
Zoetis	37%
Average	28%

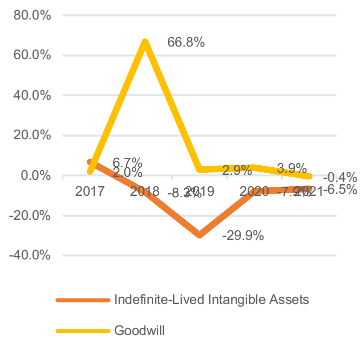
Source: Zoetis Reports

Figure 20 – Zoetis Goodwill, PP&E, and Identified Intangible Assets Evolution



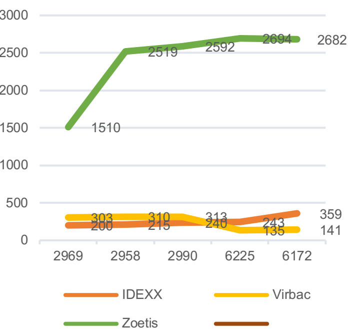
Source: Zoetis Reports

Figure 21 – Zoetis Indefinite-Lived Intangible Assets & Goodwill Growth



Source: Zoetis Reports

Figure 22 – Zoetis & Peers Goodwill Evolution



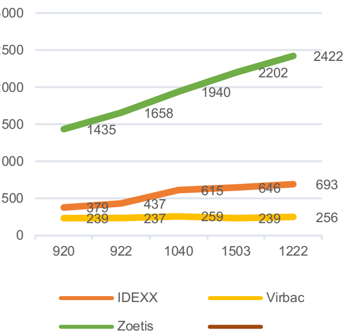
Source: Zoetis & Peers Reports

Balance Sheet

From 2017 to 2021, '**Total Assets**' increased around 62%, driven by the growth in 'Excess Cash' (+123%), 'Goodwill' (+78%), and 'Property, Plant, and Equipment' (+69%) (Figure 20). The **growth in 'Goodwill'** was mainly due to the inclusion of **acquisitions** such as, Abaxis, in Zoetis' business. Regarding **'PP&E'**, the **growth** resulted, primarily, from the **increase in capital spending**, slightly offset by the disposal of manufacturing sites in Brazil, and China, in 2018, as part of the company's efficiency program. It is relevant to mention that the closure of these two facilities followed the acquisition of two companies, in Brazil and China, in 2017, which might indicate that Zoetis is improving its operational efficiency through acquisitions, that allow the introduction of more profitable products. Also, it should be added that Zoetis' PP&E was significantly affected by Abaxis acquisition, in 2018. Lastly, the **growth of 'Excess Cash'** resulted from the company's **strategy to strengthen its liquidity position** and, M&A activity' role in the animal health industry further emphasizes Zoetis' need to properly monitor its liquidity position. It is also important to refer that, in 2021, assets increased but at a lower rate when compared to other years, given that 'PP&E', 'Goodwill', and 'Intangible Assets' investments growth experienced a slowdown, comparing with other analysed years. Indeed, this is justified by the uncertainty triggered by the recent macroeconomic events, coupled with the supply-chain constraints due to the pandemic. Concerning **Intangible Assets**, excluding 'Goodwill', it is possible to infer that this caption witnessed a **16% increase**, from 2017 to 2021, mainly **due to the 'Developed Technology Rights'** growth. Despite this, **both 'Brands and Trademarks' and 'In-Process Research & Development' (IPR&D) had decrease**, from 2017 to 2021. The majority of these IPR&D assets were acquired when Zoetis completed Nexvet acquisition, in 2017 (Appendix 4). The **decrease** in this **IPR&D caption**, couple with 'Goodwill' **growth**, reflects the increasing **relevance of Zoetis' inorganic growth,** which is anticipated to conquer greater power in Zoetis' future strategy (Figure 21). When comparing to animal health peers, it is possible to point **Elanco** as the only one peer with **higher 'Goodwill' values**, in all analysed years, **comparing to Zoetis**, having registered a growth of 108%, from 2019 to 2020, which was a consequence of Bayer's acquisition. Zoetis' 'Goodwill', from 2017 to 2018, registered a growth of 69% due to Abaxis acquisition, in 2018 (Figure 22). In terms of **'PP&E'**, **Zoetis** is, among its peers, the one with the **highest 'PP&E'** value, for every year, and it is also the one where 'PP&E' grew at a faster rate, which was a result of increasing capital spending (Figure 23).

Regarding '**Total Liabilities**', from 2017 to 2021, its **growth was around 24%** lower than the growth verified for 'Total Assets'. In fact, 'Total Liabilities' increased mainly due to a 33% **growth of 'Long-Term Debt'** paired with a 67% **growth of 'Accounts Payable'**. The verified growth in debt was highly related with acquisition activity, and, for instance, in 2018, 'Long-Term Debt' increased 30%, compared with 2017, to fund the cash portion in the company's most expensive acquisition – Abaxis. After 2018, debt remained practically constant until 2021, as the acquisitions carried by Zoetis were much smaller, in size. The **growth in 'Accounts Payable'** is justified by Zoetis' **extension** of its **average payable period**. The **average holding period**, particularly from 2019 to 2020, **increased** significantly as an attempt to mitigate the supply chain constraints, that

Figure 23 – Zoetis & Peers PP&E Evolution



Source: Zoetis & Peers Reports

Figure 24 – Zoetis Cash Conversion Cycle Evolution

	2017	2018	2019	2020	2021
Cash Conversion Cycle	331	289	286	288	317

Source: Zoetis Reports

lead to stock shortages, and the delays with material purchases and product shipment, triggered by the Covid-19 pandemic. Zoetis, **from 2017 to 2021**, was able to **improve its cash conversion cycle**, by reducing it, given that, despite the unfavourable increase in the average holding period, the **average collection period decreased**, while the average payable period increased (Figure 32).

In terms of '**Total Equity**', from 2017 to 2021, it **increased by more than 150%**, as a consequence of a substantial **growth of 'Retained Earnings'**, within the same period. Also, Zoetis' **payout ratio increased** from 0.28, in 2018, to 0.29, in 2021, and 'Net Income' grew almost 136%, from 2017 to 2021. Moreover, the company had **improved its financial autonomy**, from a 0.36 to 0.69 ratio, in 2017 and 2021, respectively. In addition, **Net Debt to EBITDA decreased**, which means that Zoetis is able to offer more debt coverage, thus improving its capitalization ratio, which grew from 0.33, in 2017 to 0.56, in 2021. Finally, Zoetis **ROIC also increased from 15%, in 2018 to 20%, in 2021** which was mainly a consequence of core operational margin improvement – from 24%, in 2018 to 28%, in 2021. In 2018, relative to 2017, the assets turnover substantially declined due to Abaxis' acquisition, however, from that year onwards, this indicator grew. When comparing to animal health peers, **Zoetis** is the company with the **highest values** for **ROIC**, in every year, **after IDEXX Laboratories** (Figure 24). It is interesting to notice that **Elanco** is the player with the **lowest ROIC** values being, in 2020 and 2021, showing how the company is poorly allocating its capital investments. Lastly, one the most important measures in the Health Care industry is the Return on Research Capital (RORC), as these industry' companies growth strongly rely on their capacity to develop new products and innovate. When comparing to animal health peers, it is possible to infer that **Zoetis RORC** is positioned **above the industry average**.

NOVA SCHOOL OF BUSINESS & ECONOMICS

MASTER IN FINANCE

ZOETIS

COMPANY REPORT

PHARMACEUTICALS

16 DECEMBER 2022

STUDENT: CARLOTA COSTA, FILIPA RIBEIRO

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Business resilience: Organic growth

The Leader of the Animal Health Industry

- We recommend the investors to **HOLD** the position on Zoetis, considering the 2023 Target Price of **168.04$**, which generates an expected **return of 9.93%**.
- Zoetis' **Livestock** segment has been particularly affected by **generic competition** and **rising inputs for livestock producers**. In 2021, revenues decreased by 10% in the U.S., mainly driven by the **expiration of the patent of *Draxxin***, Zoetis´s **main livestock product.**
- Zoetis' **Companion Animal** segment **increased** its **contribution to revenues**, from 55%, in 2020, to 61%, in 2021, primarily, as a result, of the **growth** of the **international segment.**
- **Acquisitions** generated, on average, **1%** of **revenue´s growth**. **Inorganic growth** and **penetration** in **key emerging markets** will be the main drivers of the company´s success.
- **Zoetis' share price** recent **weak performance** has been caused by **supply chain constraints**, **labour shortages**, **unfavourable** macro **conditions**, and ***Draxxin*´s** decrease in revenue.

Company description

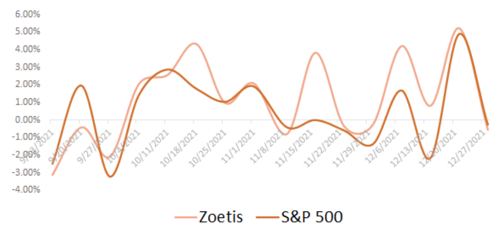
Zoetis is the global leader of the animal health industry, and the world´s largest producer of medicine and vaccinations, both for companion animals and livestock. It has more than 300 product lines targeted to 8 different animal species. The products are directly marketed in 45 countries, being sold in more than 100 countries.

Recommendation:	**HOLD**
Vs Previous Recommendation	
Price Target FY23:	**168.04 $**
Vs Previous Price Target	
Price (as of 13-Dec-22)	**152.86 $**

Reuters: ZTS.A, Bloomberg: ZTS:US

52-week range (US$)	124.15 - 249.27
Market Cap (US$ billions)	71.243
Outstanding Shares (millions)	466.07
Other (…)	

Source: Bloomberg (as of 13 December 2022)



Source: Bloomberg

(Values in US$ million)	2021	2022E	2023F
Revenue	7776	8071	8937
U.S.	4042	4231	4758
Companion Animal	2990	3313	3941
Livestock	1052	918	816
International	3652	3770	4103
Companion Animal	1770	1989	2318
Livestock	1882	1781	1786
Cost of Sales	2059	2329	2579
Net Debt	3609	5010	5227
Gross Profit	5635	5672	6282

Source: Company Data & Valuation Model

Table of Contents

EXECUTIVE SUMMARY ... 3
COMPANY OVERVIEW ... 4
COMPANY DESCRIPTION ... 4
PRODUCTS ... 4
GEOGRAPHIC PRESENCE & SEGMENTS ... 4
COMPANION ANIMAL & LIVESTOCK ... 5
MANUFACTURING NETWORK ... 6
CAPITAL STRUCTURE ... 6
INDUSTRY OVERVIEW ... 7
INDUSTRY SHIFT ... 8
REGIONAL INSIGHTS ... 8
COMPETITION & CONSOLIDATION TREND ... 9
GENERICS PRICE IMPACT ... 11
GROWTH STRATEGY ... 11
MACROECONOMIC ENVIRONMENT ... 14
PAST ANALYSIS ... 15
DEVELOPMENT TRACK ... 15
INCOME STATEMENT ... 16
ANALYSIS & FORECAST ... 20
LIVESTOCK ... 21
COMPANION ANIMAL ... 26
VALUATION ... 29
COST OF CAPITAL & GROWTH ... 29
SENSITIVITY ANALYSIS ... 30
MULTIPLES VALUATION ... 31
APPENDIX ... 33
REPORT RECOMMENDATIONS ... 35

Executive Summary

With 70 years of experience and presence in more than 100 countries, Zoetis is the **global leader of the animal health industry.** Its diverse and durable portfolio, with a focus on innovative growth, allowed the company to continually drive **'above-the-market' operational revenue growth**. Zoetis is currently focused on expanding to **emerging markets** as these regions (i) do not have a well-established market leader, (ii) **competition from generics is still relatively low**, and (iii) are experiencing a sustainable growth in Livestock and Companion Animal industries' main drivers. Moreover, Zoetis invests on **R&D as a way of extending the portfolio** and constantly upgrading its medicines, turning more challenging for competitors to reproduce them. In addition, the company pursues **target acquisitions** which are a key tool to conquer market share, but also to entry completely new business segments, which were already explored. In fact, by completing Abaxis acquisition, in 2018, Zoetis entered the **Veterinary Diagnostics' business**. This segment is one of Zoetis' future growth' targets due to the belief that it will grow at a higher rate than the animal health industry overall, so there are opportunities for the company to consolidate its position. Nevertheless, Zoetis faces **competition from lower-cost alternatives**, which are mostly affecting the Livestock segment, mainly in the current period of economic slowdown. Therefore, Zoetis is, alongside the industry, experiencing the **shift between Livestock and Companion Animal.**

It is believed that Zoetis will benefit from the high growth of the industry, namely, in the Companion Animal' segment as **pet spending is drastically increasing**, as well as from its further **expansion to emerging markets**. However, generics will increasingly have a negative impact in Zoetis' growth and pricing power. Therefore, **inorganic growth will also play a crucial role in the company's future**. Despite the negative effects from lower-cost alternatives, Zoetis will be able to ensure a sustainable growth by expanding to new business segments, namely, **Diagnostics, Reference Labs, and Precision Livestock Farming.**

Talking all of this into account, Zoetis' share price was estimated through an intrinsic valuation, namely, the employing the Adjusted Present Value model. Complemented with a three scenarios analysis (Optimistic, Base and Pessimistic) – to consider long-term different acquisitions impact – the developed valuation model resulted in a share price of **$168,** offering an **expected return of 10%,** thus culminating in a **HOLD** recommendation to investors. The **implied terminal growth rate** was **3%** and the considered **cost of capital** was **7%**.

Company Overview

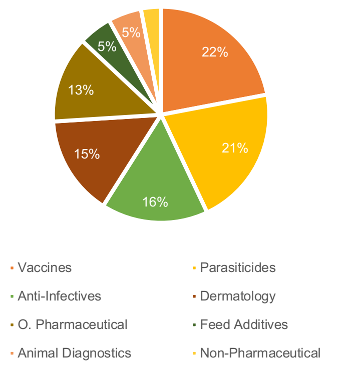
Company Description

The world largest animal health company

Zoetis Incorporated is the **global leader of the animal health industry**, and it is focused on the development, manufacture, and commercialization of medicines, vaccines, diagnostics, biodevices, and precision heath technology. In 1950, Pfizer' researchers, Zoetis' parent company, discovered an animal antibiotic *(Terramycin),* marking the company's entry into the animal health business. Between 2012 and 2013, Pfizer announced that its animal health unit would become a standalone company. Nowadays, Zoetis is a Fortune 500 company, traded on the NYSE (Ticker: ZTS), having generated revenues of $7.8 billions, in 2021.

Products

Figure 1 – Revenue Segmentation (2021, Product)

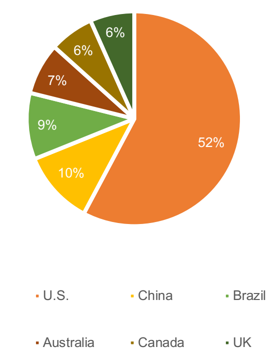


Source: Zoetis Reports

The company offers a portfolio composed by **300+ product lines** which are targeted to **8 main species**: dogs, cats, and horses (collectively, Companion Animal), and cattle, swine, poultry, fish, and sheep (collectively, Livestock). Zoetis' product lines are distributed across seven major categories, from Vaccines (22% of 2021 revenue), Parasiticides (21%), Anti-Infectives (16%), Dermatology products (15%), Other Pharmaceutical products (13%), Medicated Feed Additives (5%), Animal Health Diagnostics (5%) to Other Non-Pharmaceutical Products (3%) (Figure 1).

Geographic Presence & Segments

Figure 2 – Revenue Segmentation (2021, Geography)



Source: Zoetis Reports

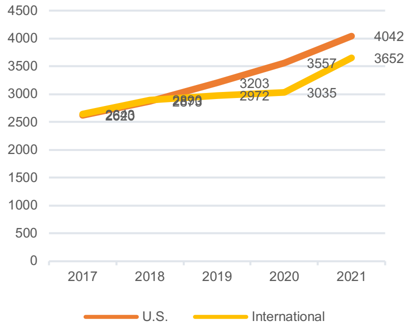
These products are **directly marketed in 45 countries**, and are **sold in more than 100 countries**, both developed and emerging ones. United States is Zoetis' main market, having contributed 52% to 2021 revenues, followed by China (10%), Brazil (9%), Australia (7%), Canada (6%), and United Kingdom (6%) (Figure 2). Overall, in 2021, developed countries contributed 77% to total revenues, while emerging markets contributed 22% [1]. Zoetis' operations are managed through two geographic segments – United States (U.S.) and International, and within each, the company offers solutions both for pet owners and Livestock producers, helping to tackle specific needs.

U.S. represented **52% of revenue** for the **year ended in December 2021** (Figure 4), with 70% of this revenue resulting from dogs/cats, 5% from poultry, 3% from swine, 18% from cattle, and 4% from horses' products. The U.S. segment' revenue

[1] The remaining corresponds to 'Contract Manufacturing & Human Health' business segment

increased in 2021, comparing with 2020, which happened due to a sales' **growth in Companion Animal** products, slightly offset by a **decline in Livestock** products. The increase in Companion Animal' revenue was driven by a growing demand for Parasiticides. At the same time, the Livestock revenue' decreased due to cattle, poultry and swine segments. Cattle sales declined given intensified competition from lower-cost alternatives. In addition to this, several factors led to the recent food price inflation such as i) higher energy and fertilizer costs which increased feeding costs, putting further pressure on farmers margins ii) poor weather conditions that squeezed feed grain, as well as the iii) Russia-Ukraine war and its consequent geopolitical risk [2]. All of this led several farmers to opt for generic, that are less expensive, rather than Zoetis' products, which severely impacted its results. Poultry sales also decreased given higher competition from generics, and lastly, the decline in swine products' was driven by pricing pressures on Zoetis' Anti-Infective and Vaccine portfolio.

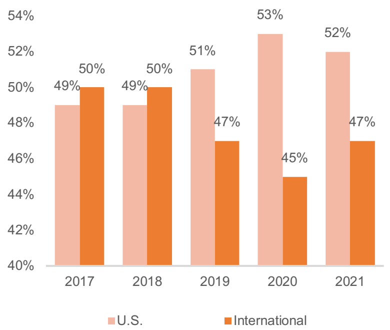
Figure 3 – U.S. Vs International Revenue Evolution



Source: Zoetis Reports

International, with Australia, Brazil, Canada, China, and United Kingdom being the main markets, represented **47% of revenue** for the **year ended in December 2021** (Figure 4), with 44% of this revenue resulting from dogs/cats, 3% from horses, 23% from cattle, 14% from swine, 9% from poultry, 5% from fish, and 2% from sheep and others. The International segment' revenue increased in 2021, comparing with 2020, reflecting a **growth both in Companion Animal and Livestock**. The revenue increase in Companion Animal resulted from higher sales of Zoetis' Parasiticides, and a growth in sales of Dermatology, Diagnostics, and Vaccines. Simultaneously, Livestock revenue' was driven by a simultaneous increase in cattle, fish, and swine segments. Cattle sales grew due to several marketing efforts, as well as favourable export conditions to Brazil. Swine products' sales increased as a result of expanded pork production. Finally, the fish growth was a result of higher Vaccines sales in key salmon markets, and several Zoetis' acquisitions.

Figure 4 – U.S. Vs International Revenue Contribution



Source: Zoetis Reports

Additionally, the company has a non-operating segment – **Contract Manufacturing & Human Health** – which comprises contract manufacturing services to third parties [3], and some human health products which represented 1% of revenue for the year ended in December 2021.

Companion Animal & Livestock

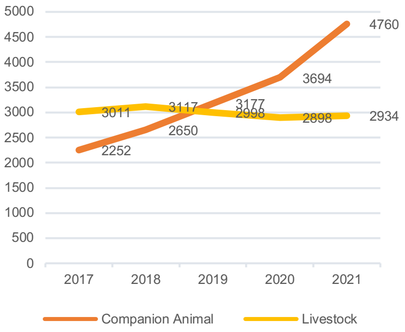
Companion Animal business helps to extend and improve pet's life quality, convenience for pet owners, and veterinarians service' quality. This sub-segment

[2] According to Agricultural Market Information System, most countries are facing yearly increases between 10-30% of domestic prices inflation, as a war effect

[3] Zoetis provides logistics, sales, marketing support for other organizations

represented **61% of the company's revenue** for the **year ended in December 2021** (Figure 6).

Figure 5 – Companion Animal Vs Livestock Revenue Evolution

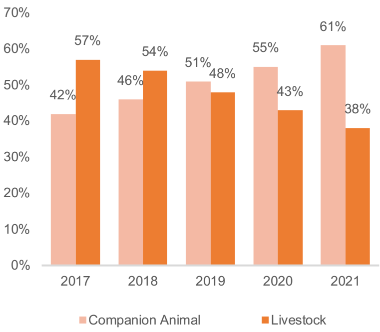


Source: Zoetis Reports

Zoetis' Companion Animal products are mainly sold to veterinarians who, then resell the products to pet owners. There are several factors influencing these products' demand, such as (i) economic development and purchasing power (ii) increases in pet ownership, and commitment to pets' well-being, as well as (iii) medical advances in veterinarian treatments. Companion animals are also living longer which contributes to strengthen the 'human-pet' bond, further increasing pet care' spending.

Livestock business is dedicated to the prevention and detection of diseases, allowing farmers to perform a sustainable, and cost-effective production of high-quality animal protein. This sub-segment represented **38% of the company's revenue** for the **year ended in December 2021** (Figure 6).

Figure 6 – Companion Animal Vs Livestock Revenue Contribution



Source: Zoetis Reports

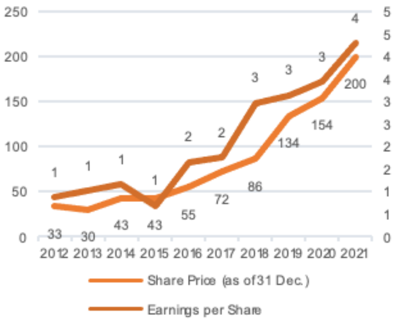
Zoetis' Livestock products are sold to several parties such as vets, livestock producers, veterinarians' distributors, and animal outlets. Among the factors influencing these products' demand, it is possible to highlight (i) human population growth and increasing living standards (ii) demand for better nutrition, mainly in terms of animal protein, as well as (iii) food safety. In a logical way, as human population continues to grow, demand for nutritious food will increase, thus the sector must be able to fulfil it in a sustainable way, without causing major environmental damages.

Manufacturing Network

Zoetis' medicines are fabricated at manufacturing sites, owned and operated by the company, or at factories run by third-party contract manufacturing organizations (CMOs). The company has a network composed by 28 manufacturing sites, with nine of them being leased. The whole manufacturing and supply chain network is supported by a total of 136 CMOs, both locally and globally managed.

Capital Structure

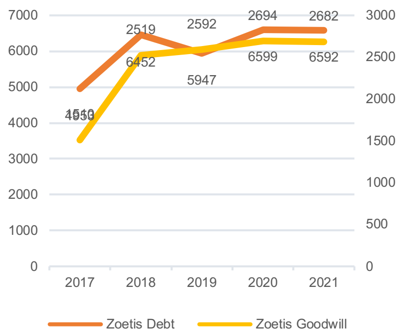
Figure 7 – Zoetis' Earnings per Share & Share Price Evolution



Source: Zoetis Reports

As of 13 of December 2022, **Zoetis' market capitalization** was $71.24 billion. Over almost a decade, Zoetis managed to grow its Earnings per Share at an average of 28% per year, highlighting how the company has been able to distribute higher profits to its shareholders. This EPS' increase is reasonably close to the average 23% annual increase in the company' share price. Indeed, this suggests that the market sentiment around Zoetis has not changed much, from 2012 to 2021, as the EPS has approximately tracked share price' movements (Figure 7).

Figure 8 – Zoetis Net Debt/Equity & Goodwill Evolution



Source: Zoetis Reports

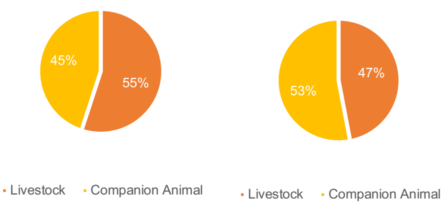
As of December 14, 2022, **current share outstanding** was more than 466.1 million, with 96.94% of public float. The company' most important holders are institutional (with 94.45%) including Blackrock Inc. (9.32%), Vanguard Group Inc. (7.84%), Capital Group (4.74%), and State Street Corporation (4.25%). [4] Additionally, since 2017, **Debt** has been growing in line with Zoetis' acquisitions – 'Goodwill' caption evolution, – which is justified by the fact that Zoetis' mainly uses Debt to finance its acquisitions (Figure 8).

Industry Overview

Animal Health is facing an industry shift

The **animal health industry is growing** and includes all products and services that promote livestock' productivity and pets' health. The **Global Animal Health Market** size was estimated at US$ 39.9 billion in 2021, and it is expected to grow at a **CAGR** of **10.0%** from **2022 to 2030** [5]. Also, the combined revenue of the Top 20 animal health companies had an annual growth of 9.4%, from 2011 to 2021 highlighting that the sector has been positioning itself to be a leading force for upcoming years [6].

Figure 9 –Sales Contribution by Livestock & Companion Animal (2017 Vs 2021)



Source: Global Animal Health Association (2022)

Considering the Top 20 animal health companies, **Companion Animal' revenues** are **surpassing Livestock's**, highlighting a **sector shift**. In 2017, Livestock generated 55% of total sector' revenues, while in 2021, pets dominated the sector, being responsible for 52.7% of revenues, according to CEESA (Figure 9).

The industry has three main drivers:

Growth demand for animal-food drives up this industry' growth

Animal-Protein Food such as chicken, fish, beef, and milk is being highly demanded, due to an increasing awareness regarding its benefits. In fact, animal-based food currently represents 1/3 of total human protein consumption and, according to FAO, this value is expected to increase, showing the importance of having a productive production [7]. Global population, in 2022, is around 7.9 billion, and it is expected to surpass the 9.6 billion, by 2050 [8], which adds to the fact that, in 2020, between 720 and 811 million people were undernourished, according to FAO. The need to combat hungry while meeting food-growing demand, having limited resources, highlights the imperative need to adopt a large-scale, but sustainable Livestock supply.

Greater spread of zoonotic diseases requires safer food production

Zoonotic and Food-borne Diseases and their prevalence is another factor impacting the industry. Animal health is, in fact, highly connected with human

[4] Bloomberg, December 2022
[5] Grand View Research: *Animal Health Market Size, Share & Trends Analysis, 2022-2030*
[6] Global Animal Health Association: *Global Trends in the Animal Health Sector 2022*
[7] FAO claims that, to feed the world population by 2050, the production levels, verified in 2005, would need to increase, by more than 70%. Considering 2003 level, it is estimated that, in 2050, dairy products' demand will more than quadruple
[8] United Nations Department of Economic and Social Affairs, Population Division 2022

health, as diseases affecting animals can likewise affect humans. Also, there has been an unprecedent rise of zoonotic diseases [9], which is triggering companies to produce pharma solutions for pathogen contamination control. Additionally, governmental organizations are permanently issuing guidelines regarding safety practises that must be implemented to improve long-term animal health, and consequently food safety [10].

Covid-19 pandemic accelerated pet ownership & adoption trend

Pet Ownership & Adoption trend [11], and the consequent affective bond between pets and their owners, also drives zoonotic diseases' spread. Pet' ownership growth is more evident in emerging countries, where an expansion of the middle class is being witnessed characterized by the emergence of a new 'Pet Culture', developed around companion animals' humanization [12]. In fact, the pet ownership trend combined with the fact that companion animals are living longer [13], will likely boost companion animal' spending [14], thus industry growth. A Morgan Stanley study (2020) concluded how, from 2014 to 2019, pet owners' disposable income had a progressively lower weight in purchasing decisions, when it comes to pet spending, a trend expected to continue in the future. In a post Covid-19 scenario, the benefits associated with owning pets are being emphasized, such as companionship and anxiety' reduction. Also, the pandemic greatly depressed birth rates which could have drove, among millennial couples, the replacement of children with pets. In fact, during the pandemic' peak, 23 million people worldwide added a pet to their family.

Industry Shift

Introduction of new technologies drives up Companion Animal' segment growth

Besides the increasing pet ownership and pet spending, the **growth of the pets segment, relative to Livestock**, has also been driven by the **introduction of innovations such as monoclonal antibodies, and digital technologies**. Vaccines and Parasiticides remain the core driver of the Companion Animal segment, however, the Veterinary Diagnostics sector is rapidly growing. The strong modernization in the pets' field combined with increasing awareness regarding the benefits of an early diagnostic is key to sustaining the segment' high long-term growth.

[9] Nowadays, around 60% of human infectious are zoonotic – spread from animals to humans – according to National Geographic (2021)
[10] According to WHO data, ever year, the consumption of spoiled food causes 420 000 deaths and 600 million disease' cases
[11] In the U.S., 4 million pets are adopted each year, according to the American Society for the Prevention of Cruelty to Animals. In 2021, the American Pet Products Association stated that 67% of U.S. households owned a pet, and this % is expected to increase
[12] In China, pet ownership increased by 113%, and in 2024, China is expected to be the country with the most pets
[13] Reuters: *As pets live longer, they may need long-term health care*: pets' life expectancy, in the US, increased 12.4% (2002-2016)
[14] According to the European Pet Food Organization, the consumer spending on pets, in the EU, increased from €35B to €51B (2018-2021). In the US, it increased from $91B, in 2018, to $124B, in 2021

Regional Insights

North America is the biggest animal health market, but Asia-Pacific region is growing faster

North America is the **largest animal health market**, having accounted for **29.5% of revenue, in 2021**. The region has several governmental animal organizations that aim to improve animal health, which is combined with being pioneer in several technological advancements. In fact, leading U.S. animal companies combine their R&D efforts to, eventually, achieve higher returns on research capital. The U.S. is also the largest market for human health, so the cooperation and positive synergies between both health systems are also key to explain its health' dominance [15].

Asia-Pacific is the **fastest growing region in the industry**, with a forecast **CAGR of 10.5%** [16] for upcoming years. This expectation leads to hefty investments made by main players, in the region, for instance, in 2020, Boehringer Ingelheim – European largest animal health company – acquired an equity stake in the China-based New Ruipeng Group [17], which is coupled with its strong efforts to commercialize their products at a discount price, as a way of conquering market share.

Competition & Consolidation Trend

Industry is dominated by large, well-established players

The **animal health industry,** due to the consolidation trend, is becoming dominated by few players with large market share, and well-established reputation. The industry is **dominated by four companies**: Boehringer Ingelheim [18], Elanco Animal Health, Merck & Co. [19], and Zoetis. Other peers such as Virbac and IDEXX Laboratories also play an important role [20].

Currently, as a result of the consolidation wave, this **industry is still not highly competitive**, however, over time, **more direct competition is expected** – from **generic alternatives** that received market authorization –, and, particularly, in long term, **indirect competition** from alternative medical options perceived as less invasive to animal health, such as natural treatments. There are several ways of competition in the industry such as new product launches, quality, price, product promotion, consolidation, and geographic expansion. Besides competition from **standalone animal health business** or **animal health units of pharma**

[15] According to Zoetis 2017 Annual Report, several animal health products are derived from molecules and compounds resulting from human health research
[16] Grand View Research: *Animal Health Market Growth & Trends, 2022*
[17] New Ruipeng Group (NRP) offers veterinary care and e-commerce services to pet owners across China
[18] Boehringer Ingelheim is a private company with limited information being disclosed, thus it was not possible to take it into consideration, for the purpose of this Equity Research report
[19] Despite Merck & Co. being one of the biggest players in the animal health industry, for the purposes of this Equity Research report, it was not considered among this report' analysis, except RORC, since its human health unit dominates, by far, the animal health (Merck Animal Health), which would have created an outlier
[20] Forbes: *5 Forces Transforming the Animal Health Market (December 2019)*

companies, there are several **start-ups** trying to break into the industry, mainly in the Precision Livestock Farming' segment.

Generics competition is one of the biggest threats in the industry

Also, it is fundamental to mention the competition from **generic producers**, who aim to conquer market share by offering lower-cost alternatives. In fact, one of this **industry' main threats** is related with being **highly dependent on patents** as well as on the **exclusivity rights** they provide. Therefore, once a patent expires, the competition from generics increases [21]. It is relevant to highlight that this **threat** is much **more felt in the Livestock segment**. This happens due to (i) generics offer being much more extensive for Livestock' business comparing with Companion Animal (ii) pet owners tend to be more resilient when it comes to change their pets' medicines for lower-cost alternatives, as they scare the secondary effects (iii) the recent food price inflation is having a major impact on the Livestock segment, as its production and feeding – input costs – are becoming much more expensive, thus farmers could be more willing to change their Livestock' medicines for lower-cost generic alternatives. For example, all patents related with *Draxxin* (Livestock Anti-Infective) have expired, in the majority of markets, and generic versions are now being commercialized, leading to a reduction in Zoetis' sales [22]. Also *Zoamix'* (Zoetis Livestock Medicated Feed Additive) sales have been suffering a strong decline due to its generic – *ZoaShield 25%,* – produced and commercialized by Elanco.

Strong M&A activity fuelled consolidation trend

However, the **entrance** in this industry faces **several barriers**. Firstly, it is hard for new players to set up their businesses as high expenditures need to be incurred, mainly in terms of technology advancement. Also, this business is subject to strict licensing, and legal requirements that must be fulfilled, before a company is authorized to start operating, which might slow down competition. In the generics field, though, there is still no company present as a market leader. Nowadays, the majority of generics are produced by large well-established health companies, such as Elanco. Consequently, more and more **companies are pursuing M&A's** [23] as a way of enhancing their pipelines, while conquering market share. The consolidation trend is based on the adoption of a more **cost-efficiency approach**, in terms of R&D, as well as the possibility of breaking into **new markets and business segments**, without exploring them from scratch. To illustrate this, in February 2021, Merck & Co. [24] completed the acquisition of Poultry Sense Ltd., as

[21] Despite this, competition from generic producers is much more felt in the Human Health sector, rather than Animal Health as Human Health is a more developed business sector
[22] Anti-Infective segment registered declines, in its yearly growth. Both in 2019 and 2020, the annual growth rate was negative of -2% and -4%, respectively
[23] 2021 was a record year for M&A activity in the field. According to Capstone Partners 2022 report, the number of transactions more than doubled from 76, in 2020 to 169, in 2021, and it was registered a 157% increase, in terms of transaction volume (2020-2021)
[24] Merck & Co. is a global healthcare company responsible for delivering medicines, vaccines, and biological therapies with its operations being divided across three main segments: pharmaceutical, animal health, and consumer care

a way of expanding its presence in the poultry field. Also, Elanco [25] acquired Kindred Biosciences for a price of $444 million, allowing the company to deepen its presence in the pets segment, more specifically in the Dermatology field due to Kindred's strong pipeline. In 2020, Elanco acquired Bayer Animal Health for $7.6 billion, being the industry's most expensive deal ever. During the same year, Zoetis completed the acquisition of Fish Vet Group as a strategic addition to its Pharmaq business, thus enhancing Zoetis' geographic presence and Diagnostics' expertise.

Generics Price Impact

It is extremely important to understand the impact of generics emergence on brand-name drugs' prices. According to the U.S. Food & Drug Administration (FDA), greater competition from generic alternatives triggers a reduction in the prices of their respective brand-name medicine. Additionally, an FDA 2019 study proved that the Generic-to-Brand price ratio tends to decrease, as the number of generic producers increase. Also, the generic price difference, relative to the respective brand-name medicine, is much higher for medicines that have several generic alternatives, rather than a single one, as generic producers' pricing power decreases [26]. For instance, *Draxxin*' price is 40% and 35% higher than its generics *Macrosyn* (produced by Bimeda U.S.), and *Increxxa* (produced by Elanco), respectively (Figure 10). Therefore, the emergence of generic products will have a significant impact in Zoetis, reducing its pricing power

Figure 10 – Draxxin Price Vs Generics Price & Active Ingredient

	Price ($/mL)	Active Ingredient (mg/mL)
Macrosyn	1.83	100
Increxxa	1.90	100
Draxxin	2.56	100

Source: FDA and European Medicines Agency

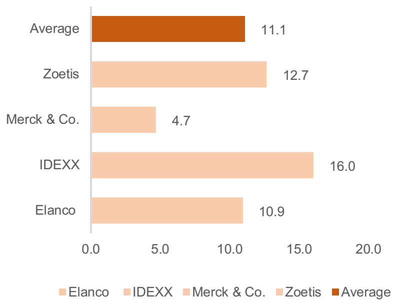
Growth Strategy

Firstly, it is important to state that Zoetis' **growth strategy** comprises both **Organic Growth** – through R&D efforts that allow the development of New Products or Product Lifecycle innovation – and **Inorganic Growth** – through targeted Joint-Ventures or Acquisitions.

In terms of organic growth, Zoetis puts a strong emphasis on **Research & Development**, as a way of broader its current medicines' portfolio, by adding new species, getting new markets' approval, or better formulations. These R&D efforts are a way of Zoetis dealing with the generics' threat, given that the company is constantly upgrading its products, thus being more challenging and costly for generic producers to reproduce them. For example, the first product in the *Ceftiofur* [27] Injectable line was approved for treating a respiratory disease affecting bovines.

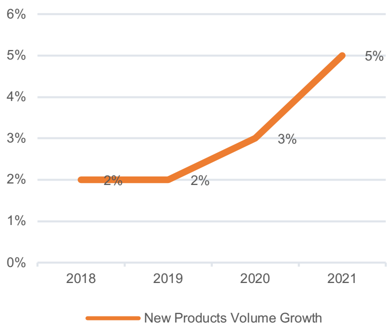
[25] Elanco is, after Zoetis, the world biggest animal health company, and it is focused on manufacturing and commercializing medicines and vaccines for both Livestock and Companion Animal' segment
[26] The 2019-FDA study (*Generic Competition and Drug Prices: New Evidence linking greater generics competition and lower generic drug prices*) concluded that generic medicines, with 6 or more generic competitors, face price reductions of more than 95% compared to brand-name prices, while if there is only one generic producer, the generic price is only 39% lower than its brand-name medicine
[27] Ceftiofur (Livestock Anti-Infective) is a 'broad-spectrum antibiotic against gram-positive and gran-negative bacteria'

Figure 11 – Return on Research Capital (2021) with a 3-year lag



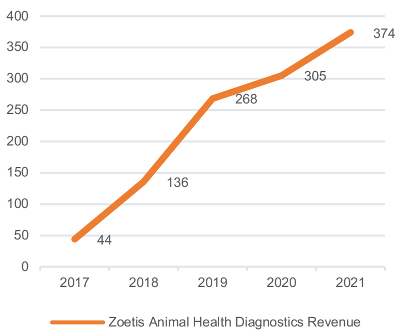
Source: Zoetis & Peers Reports

Figure 12 – Zoetis 'New Products' Volume Growth Contribution



Source: Zoetis Reports

Figure 13 – Zoetis Diagnostics Revenue Evolution



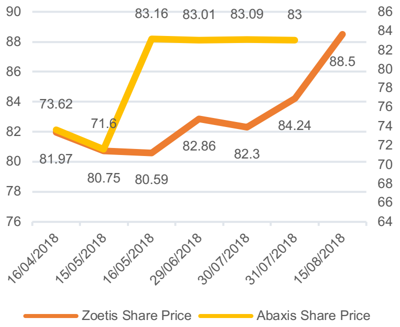
Source: Zoetis Reports

However, through several studies, Zoetis was able to expand this line into additional cattle claims, species, and markets [28]. Also, it is relevant to mention the fact that Zoetis adopts the 'first to know and fast to market' philosophy when it comes to the development of new medicines, as a way of enjoying 'first-mover advantage', while conquering market share faster than any competitor. Successful examples of this practice include the first Covid-19 vaccine to be administrated to more than 100 mammals, and the first equine vaccine for West Nile virus in the U.S. All these **R&D** efforts are comprised in more than **300 programs**, which were responsible for generating more than 1000 new products and lifecycle innovations, during the last five years. Its track record of innovation allowed Zoetis to develop 1/3 of animal health industry largest blockbuster [29] product lines. To better understand R&D as an inorganic growth strategy, a 7-year RORC [30] analysis (Appendix 1) was computed for Zoetis and some peers. For the year of 2021, Zoetis' RORC was 12.7, with a 3-year lag, which means that for every dollar invested in R&D, after 3 years, the company would receive $12.7 in gross profit (Figure 11). This indicator has been consistently climbing since 2018, where it was 10.75, thus reflecting how Zoetis' R&D investments are becoming relatively more effective, which is proved by the growing contribution of 'New Products' to Zoetis' volume growth (Figure 12 & Appendix 2). Additionally, IDEXX, in 2021, was the only peer with a higher RORC than Zoetis, showing how the competitor spent wisely on R&D, latter getting its rewards.

Regarding inorganic growth, **Acquisitions**, technology licensing agreements, strategic alliances or even divestures play an important role in Zoetis' strategy, allowing to break into new animal health areas or tacking new geographic markets, eventually consolidating as their leader (Appendix 4). For example, on 31 July 2018, Zoetis successfully **acquired Abaxis**, thus allowing the company to **enter into the Veterinary Diagnostics** unit. The acquisition was completed for a price of $83 per share in cash, thus $2 billion in aggregate. According to Juan Ramón Alaix, Zoetis former CEO, it reflected the company's expectation that "the diagnostics segment will continue to grow faster than the animal health industry overall" [31]. In addition to Abaxis' acquisition, Zoetis completed **several agreements** to further **consolidate its presence in the Veterinary Diagnostics** field. Also, to further complement its Diagnostics' offer, in **2019**, Zoetis **broke into** the **Reference Labs business**, through the acquisition of **Phoenix Labs**. Indeed,

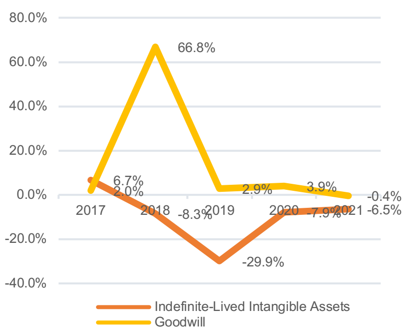
[28] Nowadays, Ceftiofur line includes new brands like Excede, Excenel, and Naxcel which are responsible of targeting other cattle species
[29] A blockbuster is a product or product line that has generated, at least, $100 millions in annual revenue. As of 2021, some examples of Zoetis' blockbusters are Apoquel, Cerenia, ProHeart, Simparica
[30] Return on Research Capital = Gross Profit (t) / R&D Expense (t-n), n=years of lag
[31] From 2022 to 2030, the global Veterinary Diagnostics market is expected to grow at a 11.2% CAGR, according to Grand View Research: *Veterinary Diagnostics Market Size, Share & Trend Analysis report 2022-2030*

Figure 14 – Zoetis Vs Abaxis Share Price Evolution



Source: Bloomberg

Figure 15 – Zoetis Indefinite-Lived Intangible Assets Vs Goodwill Growth



Source: Zoetis Reports

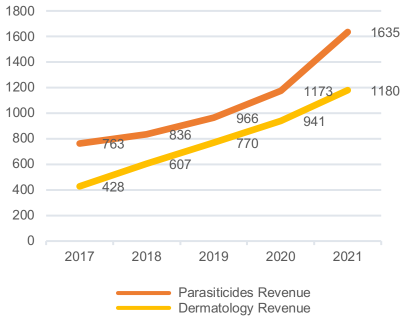
this inorganic growth efforts resulted in Zoetis' Diagnostics segment experience a substantial revenue growth of 750%, from 2017 to 2021 (Figure 13). Besides the revenue impact, it is fundamental to understand how the market incorporates the announcement and respective completion of Zoetis' acquisitions, in its share price assessment. For this reason, and taking into consideration its major dimension, Zoetis and Abaxis (ABAX) share prices' were analysed in some different dates: 16 April 2018 – which was a month prior to the acquisition' announcement – 16 May 2018 – which was the announcement' day – 29 June 2018 – which was a month prior to the acquisition' completion – 31 July 2018 – acquisition completion day, and – 15 August 2018 – marking some days after the acquisition' completion date. In fact, it is possible to infer that **Abaxis' share price increased** by more than 100% due to the announcement, showing Abaxis' **shareholders positive reaction** to being acquired by Zoetis. Along with Abaxis, **Zoetis' shareholders** also **positively incorporate the announcement news** on their market assessment and, indeed, it is possible to infer how this acquisition, **besides generating revenue growth** for Zoetis' Diagnostics, **also created value**, as from 31 July 2018, Zoetis' share price continued to experience an increase (Figure 14).

Zoetis' current growth strategy, among others, **relies on organic efforts** as a way of staying at the **bleeding-edge of innovation**, by upgrading their 'In-Line' products or creating new ones, while putting further away the generics threat. However, in the **long-run**, it is anticipated that **Zoetis' Growth Strategy** will increasingly **rely less on organic efforts** due to the conviction that, through time, stricter regulations, licensing, and market authorizations, will turn **R&D more costly**. This reason, combined with the idea that, with more market players, the pricing power of each reduces, turns each company' margin, from **R&D-derived products, lower**. All of this, lead these **organic strategies** to be **less attractive** and **risky**, as Zoetis would need to practise higher prices to achieve its current margins. This phenomenon will, in turn, **increase the attractiveness of acquisitions as a way of growing** inorganically, therefore, in the medium and long-run, it is anticipated that the company will pursue this trend. Indeed, this **strategy shift** is justified by the idea that, **in the future, it will compensate more, for Zoetis, acquiring companies, and absorb all their pipelines and R&D programmes, rather than creating their own R&D-derived products** [32]. Moreover, it is possible to conclude that, from 2017 to 2021, **'Goodwill' growth** – which mainly results from acquisitions – was substantially **higher than 'Indefinite-Lived Intangible Assets'** – which are associated with R&D efforts (Figure 15). In

[32] For example, in 2021, Elanco acquired Kindred Biosciences – as a way of deepening its presence in the Animal Dermatology segment – which allow Elanco to absorb three different Dermatology blockbusters, without having incurred in R&D expenses to develop them

fact, the decrease in 'Indefinite-Lived Intangible Assets' growth has highly driven by a decrease of 'In-Process Research & Development' (IPR&D). This 'IPR&D' caption represents all assets that resulted from R&D efforts, but have not yet received regulatory approval, in a major market. Taking all of this into consideration, it can be concluded that the slowdown in 'IPR&D' growth, combined with 'Goodwill' growth, reflects the **increasing relevance of Zoetis' inorganic growth**, comparing with organic, which is a trend expected to continue and consolidate in the future.

Figure 16 – Zoetis Parasiticides and Dermatology Revenue Evolution



Source: Zoetis Reports

Figure 17 – Zoetis 2021 Top-5 Products

Top-5 Products 2021	Animal Health Business Segment
Apoquel	Companion Animal Dermatology
Simparica	Companion Animal Parasiticides
Revolution	Companion Animal Parasiticides
Cytopoint	Companion Animal Dermatology
Ceftiofur	Livestock Anti-Infective

Source: Zoetis Reports

In addition to this, Zoetis future growth strategy is expected to involve **greater investment, and position consolidation** in the Companion Animal field, particularly in the **Veterinary Diagnostics business** segment. Also, it is extremely relevant to refer that, since 2017, the **5 products** that most contributed to Zoetis' revenue belonged to the **Companion Animal' Dermatology and Parasiticides**' segments, and both these Zoetis units have been increasing their revenues (Figure 16). In the case of 2021, four out of the Top-5 products were either Companion Animal Dermatology or Parasiticides' medicines [33] (Figure 17). Considering this, it is anticipated that, **besides Diagnostics**, Zoetis will also **grow through its pets Dermatology and Parasiticides**' units, eventually by acquiring companies in these fields. In fact, the Veterinary Dermatology market is expected to grow at a CAGR of 9.2%, from 2021 to 2028, and Zoetis, alongside Virbac and Elanco, is currently one of its main players. Furthermore, the Animal Parasiticide market is forecasted to grow at a CAGR of 7.4%, from 2022 to 2029 [34], which further justifies Zoetis' future growth through these segments.

Macroeconomic Environment

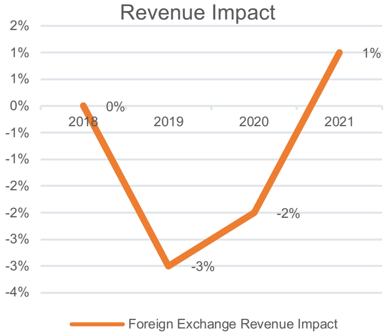
While the majority of sectors have been affected by economic downturns, the **animal health industry** shows to be **'recession-proof'** [35]. North America is the largest animal health market, with its **GDP** exhibiting a growing trend since 2007, with negative growth rates only in 2009 and 2020 (World Bank). Despite exhibiting more oscillations, the Asia-Pacific region only registered negative GDP growth rates in 2009 and 2020, considering the 2007-2021 period. The global **inflation rate**, which is key to pricing, rose to 4.7%, in 2021. By the end of 2022, world inflation is expected to be at 7.4% (IMF, 2000-2027).

[33] Currently, no Apoquel or Cytopoint generic versions were approved by FDA. Simparica also does not have any generic approved, however Revolution already has some generics, such as Selarid (by Norbrook Laboratories), Selehold (by KRKA), Senergy (by Virbac), and Revolt (by Aurora Pharmaceuticals)
[34] Grand View Research: *Veterinary Dermatology Drugs Market Size, Share and Trends (2021-2028) and Veterinary Parasiticides Market Size*
[35] Yahoo Finance*: Pet Health has 'proven to be recession resistant' 2022* – According to Zoetis CFO, Wetteny Joseph, "if you look at animal health historically, it has proven to be recession resistant"

Russia-Ukraine war has materially impacted food commodities' prices

Also, the **Russia-Ukraine war** has been leading several **agricultural commodities** to **surge their prices** [36] which is threatening global food supply. In fact, the war and consequent businesses disruptions, aligned with soar inflation rates, might led animal health companies' to face hardship when collecting amounts due from clients, thus increasing its receivables and inventories. Moreover, this industry' clients, especially those more affected by the economic slowdown, might choose to purchase lower-cost alternatives or even contribute to pet ownership trend' decrease. However, and according to Zoetis' reports, for any livestock producer, the cost of medicines is lower when compared to any other costs a farmer might have. Simultaneously, pet owners state their preference for reducing other types of spending, before cutting on their pets' health care. Both factors combined might allow these companies, to a certain extent, to incorporate economic challenges on their pricing, and partially mitigating negative impacts on results. It is relevant to refer that animal health industry' revenues are exposed to changes in foreign **exchange rates**. For example, in 2021, 44% of Zoetis' total revenue was denominated in foreign currencies [37]. This shows how U.S. companies, with businesses in foreign regions, are exposed to exchange rates volatility [38]. In the case of Zoetis, movements in foreign exchange rates negatively affected Zoetis' revenue by -3% and -2%, in 2019 and 2020, respectively (Figure 18). Lastly, **interest rates** movements also impact companies. Zoetis' outstanding debt is mainly fixed-rate, however its commercial paper and revolving credit facility is subject to interest rates' fluctuations. To protect against this, the company employs forward-starting interest rate swaps, thus being able to minimize the impact on its debt issuances.

Figure 18 – Zoetis Foreign Exchange Revenue Impact



Source: Zoetis Reports

Past Analysis

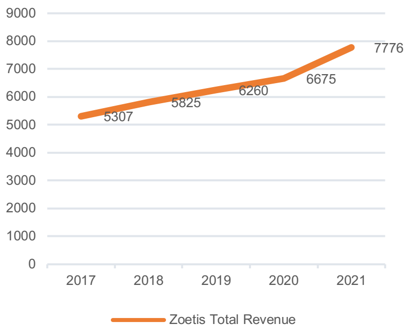
Development Track

Pfizer is Zoetis' former parent company

On 1st February 2013, **Pfizer**, through an IPO, was able to **sell about 86.1 million Zoetis' shares** for US$ 2.2 billion, despite keeping an 83% controlling stake in the new standalone company. Later that year, Pfizer announced its plans to sell the remaining stake. According to Reuters [39], this would represent a key step for Pfizer to further strengthen its position in the prescription drug business which offered, by far, higher margins than animal health.

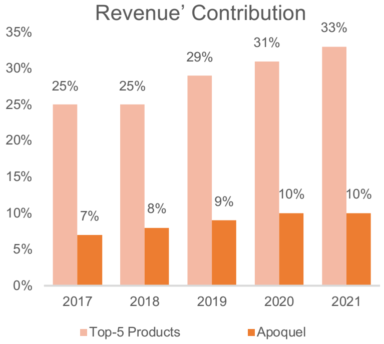
[36] In January 2022, cereal prices rose by 33%, considering January 2020 levels and, by March 2022, the Cereal Price Index reached its highest level ever. Russia and Ukraine are, respectively, the 1st and 5th largest wheat exporters, accounting for 20% and 10% of global exports, so both play a key role in supplying wheat to global markets. The lack of supply due to war disruption naturally surges up prices
[37] For the first three quarters of 2022, 43% of Zoetis' revenue was denominated in foreign currencies
[38] According to 2022 Zoetis quarterly reports, the yearly revenue growth was unfavourably impacted in 3% by changes in foreign currency values relative to the U.S. dollar, comparing to the homologous period
[39] Reuters, May 2013 – *Pfizer to spin off Zoetis stake to shareholders*

Figure 19 – Zoetis' Total Revenue



Source: Zoetis Reports

Figure 20 – Top-5 Products & Apoquel Revenue' Contribution



Source: Zoetis Reports

Figure 21 – Operational Growth Vs Revenue Growth

Source: Zoetis Reports

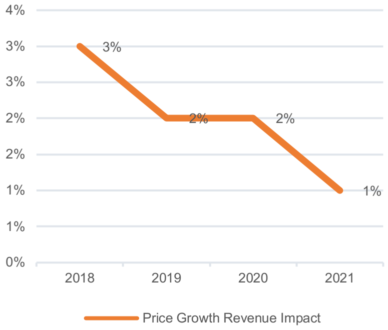
Income Statement

In general terms, Zoetis' **revenue** witnessed an **increase of around 47%**, rising from $5.3 billion, in **2017** to $7.8 billion, in **2021** (Figure 19). Comparing with 2020, revenue increased by 16% mainly driven by Parasiticides (+40%), Dermatology (+25%), and Animal Health Diagnostics (+23%). In fact, 2021 was the year that most contributed to a revenue' increase. It might also be relevant to state that, **Zoetis' Top-5 products** contributed, in 2021, 33% to total sales, and this **contribution has been increasing since 2017**, where it was of just 25% (Figure 20). Both in 2020 and 2021, *Apoquel* (Dermatology) was the medicine that most contributed to revenue (10%), while *Simparica* (Parasiticide) was the 2nd one (6% in 2020 and 10% in 2021), and both products have been increasing their revenue' contribution over the years. It is important to add that the **Covid-19 pandemic**, mainly, affected Zoetis' Livestock business given that several farmers were forced to close facilities or substantially reduce production levels, thus impacting medicines demand. However, the biggest impact was not felt at a revenue level which, despite the slowdown in 2020, relative to 2019, grew significantly in 2021. Instead, Covid-19 impact was **most evident at a supply chain level**, as it led to products shipment' delays, labour shortages, among others, that were already felt in 2022, and are expected to continue through the medium-run [40].

From 2017 to 2021, **operational growth [41] of revenues** was mainly driven by volume growth from **'In-Line' products** [42] (Figure 21 & Appendix 2). The **volume growth** from **'In-Line'** products contributed to **60% of the operational growth of revenues**, verified in 2021, followed by **'New Products'** which **contributed around 33%** to revenue' growth. The **volume growth** of both **'In-Line'** and **'New Products'** has **been increasing for the past years**, showing how Zoetis efforts – R&D, acquisitions, and licensing – are, from a commercial point of view, generating positive effects, that remain through the medium and long-run. Besides that, **Zoetis revenues** have been **growing through price growth**, however, during last years, this growth was in a **lower percentage, due to competition from lower-cost alternatives** (Figure 22). Furthermore, in 2018 and 2019, Abaxis acquisition contributed to a 2% growth in revenues, and Zoetis' more recent acquisitions, in 2020, contributed 1% to the operational revenue growth while, in 2021, acquisitions had no major impact in Zoetis' revenue growth [43]. Lastly, **changes in foreign exchange rates** also significantly **impacted Zoetis' total revenue**

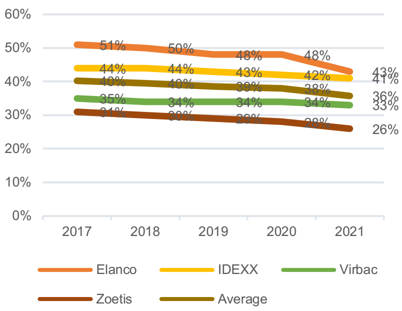
[40] According to Zoetis Q1 2022 report, "the Covid-19 pandemic has and may continue to impact our global supply chain as we continue to experience disruptions or delays in shipments of certain materials and components of our products."
[41] Operational Revenue Growth (a non-GAAP financial measure) is defined as revenue growth, excluding foreign exchange' impact
[42] In-Line Products are those that were licensed in the market, in previous years
[43] It is important to refer that Zoetis acquisitions real impact' cannot only be measured considering these percentages, as they reflect 'Recent Acquisitions' effects, without their medium to long-term impact, namely in terms of new products or new markets' expansion

Figure 22 – Zoetis Price Growth Revenue Impact



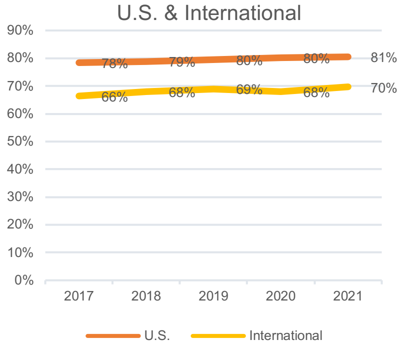
Source: Zoetis Reports

Figure 23 – Zoetis & Peers Cost of Sales Expenses Evolution



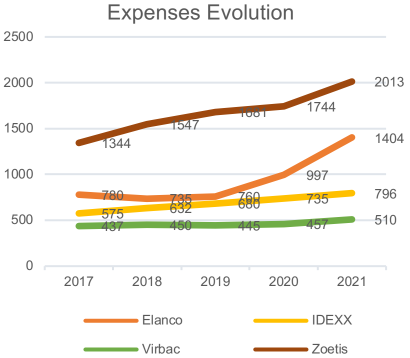
Source: Zoetis Reports

Figure 24 – Zoetis Gross Margin U.S. & International



Source: Zoetis Reports

Figure 25 – Zoetis & Peers SG&A Expenses Evolution



Source: Zoetis Reports

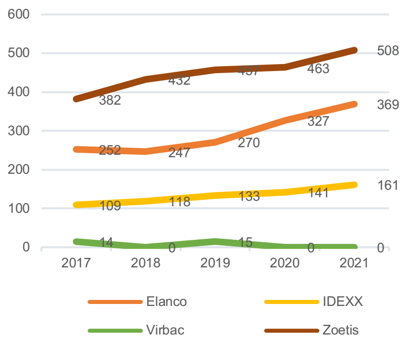
growth, as the International segment represents more than 45% of its total revenue.

In terms of **Costs**, from **2017** to **2021**, total costs **decreased as a percentage of revenue** from 65.8% to 61.9%, respectively. This decline was mainly driven by a **decrease in 'Cost of Sales'** as a percentage of revenue, which resulted from more favourable product mix and a decline in manufacturing costs (Figure 23). Zoetis' industry peers also witnessed an **increase** on their **gross margin**, which is partially justified by the acquisition activity, and consolidation trend. For example, in 2021, Elanco suffered a decrease in its 'Cost of Sales', as a percentage of revenue, to 43% comparing with 51%, in 2017. Indeed, this might be due to the inclusion of Bayer Animal Health products – which offer higher margins –, on Elanco's portfolio. Comparing with some peers, it is possible to infer how **Zoetis**, within the analysed period, **outperformed the industry as 'Cost of Sales' caption weighted less** in total revenues. Additionally, in both geographies – U.S. and International – **Zoetis improved** its **gross margins**, especially in the International segment, growing from 66%, in 2017 to 70%, in 2021 (Figure 24).

Despite the overall cost' management improvement, the '**SG&A**' caption behaved the opposite way, **increasing its weight in total revenue**, from 25.1%, in 2017, to 25.7%, in 2021. From 2017 to 2021, SG&A expenses grew by almost 50%, due to increased spending with acquisitions, higher advertising and promotional investments – associated with new products' development and new geographies' expansion –, as well as increases in certain compensation-related costs. When comparing to some industry peers, Zoetis is the one with highest SG&A expenses, followed by Elanco, which registered, from 2017 to 2021, the highest growth of these cost caption – around 80%. However, all peers, from 2017 to 2021, increased their SG&A expenses which is justified by greater promotional investments, and compensation-related costs (Figure 25). The 'compensation-costs' increase is a consequence of the 'skills shortage' and talent gap that is, currently, shaping the Health Care industry, as the Pharmaceutical workforce expertise is not yet aligned with the new 'manufacturing world', characterized by innovation and the usage of cutting-edge technology.

Regarding Zoetis' **R&D**, it **increased around 33%**, from 2017 to 2021, as a result of both the inclusion of acquired companies, in Zoetis' business, and several project investments. The behaviour of 'Compensation-related Costs' caption also contributed to 'R&D' expenses' growth. Zoetis registered its R&D highest value in 2018, due to Abaxis acquisition, and **all peers, except Virbac, grew their R&D expenses**, from 2017 to 2021 (Figure 26). Moreover, it is relevant to mention that

Figure 26 – Zoetis & Peers R&D Expenses Evolution



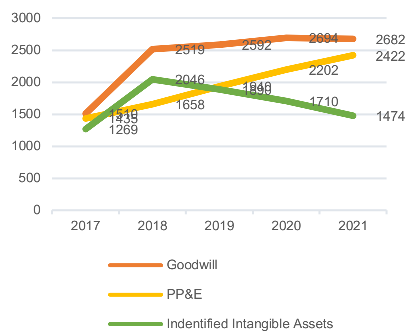
Source: Zoetis Reports

Figure 27 – Zoetis & Peers EBITDA Margin (2021)

EBITDA Margin	2021
Corcept Therapeutics	35%
Elanco Animal Health	9%
Harmony Biosciences	35%
IDEXX Laboratories	33%
Pacira Biosciences	24%
Prestige Consumer	35%
Supernus Pharmaceuticals	22%
Virbac	19%
Zoetis	37%
Average	28%

Source: Zoetis & Peers Reports

Figure 28 – Zoetis Goodwill, PP&E, and Identified Intangible Assets Evolution



Source: Zoetis Reports

foreign exchange' movements impacted Zoetis' costs, in a very irregular way [44], but were not the main driver of total costs. For example, in 2018 and 2020, changes in foreign currencies, relative to U.S. dollar, had a negative impact on Zoetis' costs however, in both years, Costs of Sales decreased, as a percentage of revenue, precisely showing how Costs of Sales are not exclusively driven by these foreign currencies' fluctuations. Additionally, it is important to explain that Zoetis' controls its foreign exchange risk, in part, through operational means, by managing same-currency revenue in relation to same-currency costs, and same-currency assets in relation with same-currency liabilities. This risk is, also weakened by foreign currency forward-exchange contracts, which are used to offset the potential earnings' effect, arising from operations, on short-term foreign currency assets and liabilities.

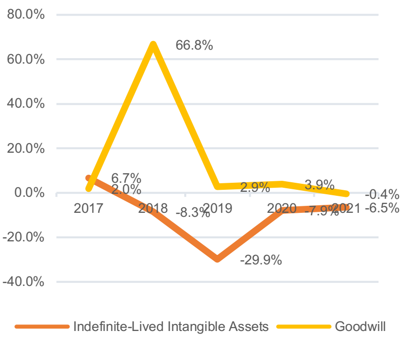
Regarding **EBITDA Margin, it increased** from 34%, in 2017, to 37%, in 2021 due to a 47% Revenue' increase, and a 61% EBITDA' increase, within the same period. Furthermore, Net Income grew from $864 million, in 2017 to $2037, in 2021. This happened as a consequence of a 29% Core Result' increase, despite slightly offset by a 70% decrease in Non-Core Result, from 2017 to 2021. Comparing with health care industry' peers – both animal and human health – it is possible to conclude that, in 2021, **Zoetis registered the highest EBITDA Margin**, with a value of 37% (Figure 27). In 2021, Elanco had an EBITDA Margin of 9% which is quite below the peer's average of 28%. This reflects Elanco's high involvement in the generics business, where the pricing power is lower, so operating margins are also lower.

Balance Sheet

From 2017 to 2021, '**Total Assets**' increased around 62%, driven by the growth in 'Excess Cash' (+123%), 'Goodwill' (+78%), and 'Property, Plant, and Equipment' (+69%) (Figure 28). The **growth in 'Goodwill'** was mainly due to the inclusion of **acquisitions** such as, Abaxis, in Zoetis' business. Regarding **'PP&E'**, the **growth** resulted, primarily, from the **increase in capital spending**, slightly offset by the disposal of manufacturing sites in Brazil, and China, in 2018, as part of the company's efficiency program. It is relevant to mention that the closure of these two facilities followed the acquisition of two companies, in Brazil and China, in 2017, which might indicate that Zoetis is improving its operational efficiency through acquisitions, that allow the introduction of more profitable products. Also, it should be added that Zoetis' PP&E was significantly affected by Abaxis acquisition, in 2018. Lastly, the **growth of 'Excess Cash'** resulted from the company's **strategy to strengthen its liquidity position** and, M&A activity' role

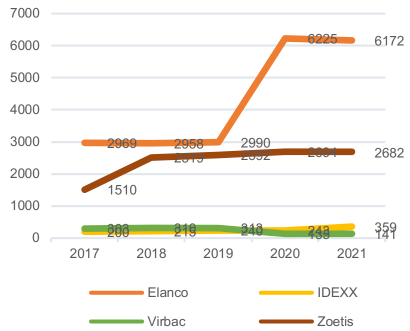
[44] It is not possible to compute the exact impact of foreign exchange' movements, in Zoetis' Costs, due to the lack of information

Figure 29 – Zoetis Indefinite-Lived Intangible Assets & Goodwill Growth



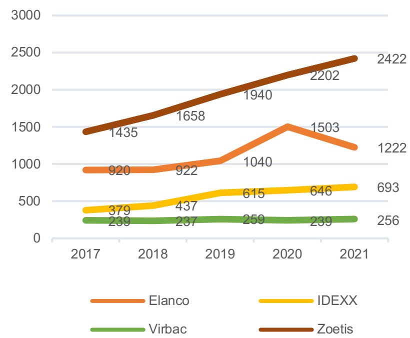
Source: Zoetis Reports

Figure 30 – Zoetis & Peers Goodwill Evolution



Source: Zoetis & Peers Reports

Figure 31 – Zoetis & Peers PP&E Evolution



Source: Zoetis & Peers Reports

Figure 32 – Zoetis Cash Conversion Cycle Evolution

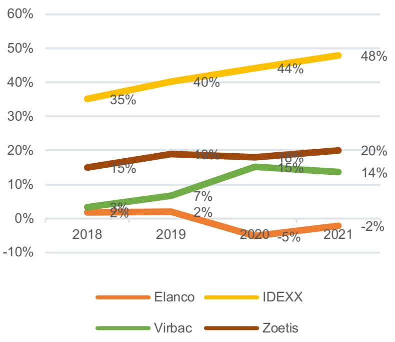
	2017	2018	2019	2020	2021
Cash Conversion Cycle	331	289	286	288	317

Source: Zoetis Reports

in the animal health industry further emphasizes Zoetis' need to properly monitor its liquidity position. It is also important to refer that, in 2021, assets increased but at a lower rate when compared to other years, given that 'PP&E', 'Goodwill', and 'Intangible Assets' investments growth experienced a slowdown, comparing with other analysed years. Indeed, this is justified by the uncertainty triggered by the recent macroeconomic events, coupled with the supply-chain constraints due to the pandemic. Concerning **Intangible Assets**, excluding 'Goodwill', it is possible to infer that this caption witnessed a **16% increase**, from 2017 to 2021, mainly **due to the 'Developed Technology Rights'** growth. Despite this, **both 'Brands and Trademarks' and 'In-Process Research & Development' (IPR&D) had decrease**, from 2017 to 2021. The majority of these IPR&D assets were acquired when Zoetis completed Nexvet acquisition, in 2017 (Appendix 4). The **decrease** in this **IPR&D caption**, couple with 'Goodwill' **growth**, reflects the increasing **relevance of Zoetis' inorganic growth,** which is anticipated to conquer greater power in Zoetis' future strategy (Figure 29). When comparing to animal health peers, it is possible to point **Elanco** as the only one peer with **higher 'Goodwill' values**, in all analysed years, **comparing to Zoetis**, having registered a growth of 108%, from 2019 to 2020, which was a consequence of Bayer's acquisition. Zoetis' 'Goodwill', from 2017 to 2018, registered a growth of 69% due to Abaxis acquisition, in 2018 (Figure 30). In terms of **'PP&E'**, **Zoetis** is, among its peers, the one with the **highest 'PP&E'** value, for every year, and it is also the one where 'PP&E' grew at a faster rate, which was a result of increasing capital spending (Figure 31).

Regarding '**Total Liabilities**', from 2017 to 2021, its **growth was around 24%** lower than the growth verified for 'Total Assets'. In fact, 'Total Liabilities' increased mainly due to a 33% **growth of 'Long-Term Debt'** paired with a 67% **growth of 'Accounts Payable'**. The verified growth in debt was highly related with acquisition activity, and, for instance, in 2018, 'Long-Term Debt' increased 30%, compared with 2017, to fund the cash portion in the company's most expensive acquisition – Abaxis. After 2018, debt remained practically constant until 2021, as the acquisitions carried by Zoetis were much smaller, in size. The **growth in 'Accounts Payable'** is justified by Zoetis' **extension** of its **average payable period**. The **average holding period**, particularly from 2019 to 2020, **increased** significantly as an attempt to mitigate the supply chain constraints, that lead to stock shortages, and the delays with material purchases and product shipment, triggered by the Covid-19 pandemic. Zoetis, **from 2017 to 2021**, was able to **improve its cash conversion cycle**, by reducing it, given that, despite the unfavourable increase in the average holding period, the **average collection period decreased**, while the average payable period increased (Figure 32).

Figure 33 – Zoetis & Peers ROIC Evolution

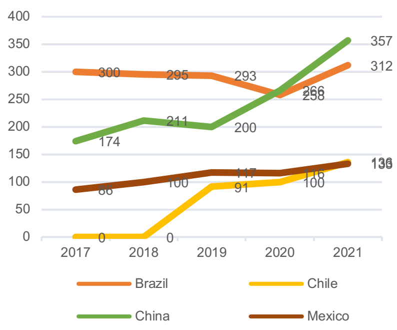


Source: Zoetis & Peers Reports

In terms of '**Total Equity**', from 2017 to 2021, it **increased by more than 150%**, as a consequence of a substantial **growth of 'Retained Earnings'**, within the same period. Also, Zoetis' **payout ratio increased** from 0.28, in 2018, to 0.29, in 2021, and 'Net Income' grew almost 136%, from 2017 to 2021. Moreover, the company had **improved its financial autonomy**, from a 0.36 to 0.69 ratio, in 2017 and 2021, respectively. In addition, **Net Debt to EBITDA decreased**, which means that Zoetis is able to offer more debt coverage, thus improving its capitalization ratio, which grew from 0.33, in 2017 to 0.56, in 2021. Finally, Zoetis **ROIC also increased from 15%, in 2018 to 20%, in 2021** which was mainly a consequence of core operational margin improvement – from 24%, in 2018 to 28%, in 2021. In 2018, relative to 2017, the assets turnover substantially declined due to Abaxis' acquisition, however, from that year onwards, this indicator grew. When comparing to animal health peers, **Zoetis** is the company with the **highest values** for **ROIC**, in every year, **after IDEXX Laboratories** (Figure 33). It is interesting to notice that **Elanco** is the player with the **lowest ROIC** values being, in 2020 and 2021, showing how the company is poorly allocating its capital investments. Lastly, one the most important measures in the Health Care industry is the Return on Research Capital (RORC), as these industry' companies growth strongly rely on their capacity to develop new products and innovate. When comparing to animal health peers, it is possible to infer that **Zoetis RORC** is positioned **above the industry average**.

Analysis & Forecast

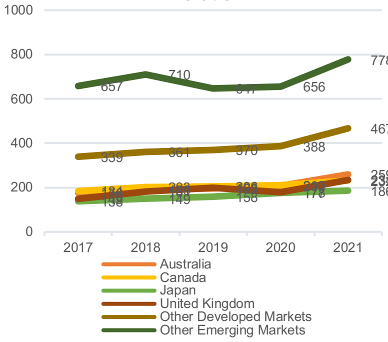
Figure 34 – Key Emerging Markets Revenue Evolution



Source: Zoetis Reports

The main market of Zoetis is the **U.S.** having **contributed, in 2021, to 52%** of revenue, and this percentage **has been increasing since 2017**, where it was 49%. Despite this U.S. revenue' dominance, the **International segment** is composed by countries where Zoetis sees a lot of **future opportunities**, mainly in **emerging economies** such as Brazil, China, Chile, and Mexico. In fact, from 2020 to 2021, the revenues generated by each region increased significantly – Brazil (21%), China (34%), Chile (36%), and Mexico (15%) (Figure 34). Asides from the main segments - U.S. and International - Zoetis also subsegments its revenues in Companion Animal and Livestock. **Livestock' revenues** represented, in 2021, 38% of total revenue, however this percentage has **been decreasing since 2017**, where it was 57%. On the other hand, **Companion Animal' revenues strongly increased through the years**, and, in 2021, represented 61% of total revenue, while in 2017, this percentage was just 42%. From 2017 to 2021, Livestock' year-over-year growth rate was, on average, -0.8%, and Companion Animal' was 21%.

Figure 35 – Others Revenue Evolution



Source: Zoetis Reports

First of all, it is relevant to state that **Zoetis' forecast model** was **divided into two geographic groups** – U.S. and International – and **within each, revenues' generated by Livestock and Companion Animal** were estimated, with different forecast techniques. The **International** section was further divided in **'Others'** – where Australia, Canada, Japan, United Kingdom, Other Developed Markets, and Other Emerging Markets were incorporated (Figure 35) [45] – and **'Key Emerging Markets'** – which comprises Brazil, Chile, China, and Mexico. This sub-division was employed as a way of distinguishing between countries that, although strongly contributing to Zoetis' revenue, are already more explored and mature, and the 'Key Emerging Markets' encompassing regions where Zoetis still has several growth opportunities.

Livestock

Regarding Livestock, the forecast model takes into account several drivers i) **Livestock Production**, ii) **GDP per Capita** iii) Zoetis**' Expected Market Share Evolution** for each region, iv) **Impact** of **Generic Competition**, and the v) **Impact** of **Covid-19** pandemic and **Russia-Ukraine war**.

Firstly, **Livestock Production** was considered given that, by indicating the quantity of livestock produced in each country, not only shows the **demand for animal-based products**, but also the existence of **conditions for fertile and high-scale production**. In a very simplified way, if Livestock Production is increasing, in a specific region, then there is a business opportunity for Zoetis commercializing its medicines. Secondly, the **GDP per Capita** is a way of reflecting **Zoetis clients' purchasing power**, as well as their willingness to buy the company' products. In fact, an increase in Livestock Production is not enough to deduce, with certain, a positive impact on Zoetis' sales. However, by combining this indicator with the GDP per Capita, then it is legit to deduce that Livestock producers' willingness, to purchase Zoetis' medicines, will increase, as the two main segment-drivers increase. Moreover, the **more economically developed a given country** is, the **more its habitants will be looking for higher-quality food**, due to greater awareness regarding food safety' importance. A larger demand for better animal-based food will likely create more business opportunities for Zoetis, given that the company supplies those farmers looking for the best-quality medicines, for their livestock. In addition to this, it is relevant to highlight that as food safety' concerns increase, mainly in more developed regions, the **stricter licensing and regulations** become. Consequently, this will **benefit companies**

[45] 'Other Developed Markets' were forecasted taking into consideration the performance of EU' countries as a good proxy. For 'Other Emerging Markets', the Indian and Africa Sub-Saharan performance was taken as a good proxy to project their behaviour. The 'Other Emerging Markets', despite being developing countries, do not represent major business opportunities for Zoetis

that are known for **meeting all quality and safety standards**, such as Zoetis, given that Livestock producers will tend to buy much more from them. Despite this, and regarding food safety, it is relevant to add that, especially in developed economies, consumers are becoming more aware about the risks of antibiotics' resistance, which is highly connected with livestock production [46]. In reality, the usage of these drugs on animals, not only makes them more resistant to antibiotics, reducing their effectiveness, but also encourages the resistance on animal-derived food' final consumers – humans.

When **applying the two upper mentioned indicators**, it is possible to infer that they are **not able to completely explain Zoetis' historic performance**. This happened **since no firm-specific factors**, affecting Zoetis Livestock' behaviour, are being **considered**, such as the **impact of generic competition** or the increasing **unfavourable conditions in dairy and beef end-markets**. These unfavourable conditions are, among other factors, related with the rising input costs for farmers with, for example, fertilizers [47], seed and pesticides, and the dry weather conditions that have a severe impact on grassland and rangeland productivity, both resulting in a reduction of farmers' margins. Additionally, any climate change, such as droughts and floods, will contribute to reduce grazing and cropping' productivity, while further accelerating soils' natural degradation process. As a way of accounting for these events, an **average of the differences**, for each historic year, **between the actual Livestock growth rate**, according to Zoetis' past financial performance, and the **growth rate that would occur, if the forecasting formula** (considering the GDP per Capital and Livestock Production) was **perfectly accurate**, was computed. These calculations would culminate in a **-6% Evolution** for the **U.S.** – showing how the forecasting model overvalues in 6% the real U.S. Zoetis' historic Livestock performance –, **5% for 'Key Emerging Markets'** [48], and **2%** for **'Others'** [49] – both exhibiting these segments' undervaluation by the forecasting formula. The model predicts that, from 2023F onwards, the upper mentioned evolutions will be incorporated in the forecasting formula. By following these steps, the model would start considering circumstances that, although strongly impacting Zoetis, were not being taken into account. It is relevant to explain that this lower-cost medicines' market is becoming

[46] In more developed countries, such as the U.S. and EU, regulations are becoming stricter regarding the use of antibiotics in livestock production, leading to a decrease in antibiotics' demand, which partially offsets the positive impact of stricter regulation on Zoetis' sales. In fact, according to the USDA, antibiotics for livestock accounted for a decreasing share in new drugs' approvals, in 2019, comparing to 2018

[47] According to the United States Department of Agriculture (USDA), fertilizer expenses increased 12% from 2021 to 2022, after an increase of 17%, from 2020 to 2021. Russia, accounts for 14% of global fertilizer exports, and the suspension of its international trading relations has been strongly impacting fertilizer prices, thus global food markets

[48] The 5% annual evolution for 'Key Emerging Markets' is in line with Zoetis' perception of these regions as high-potential ones

[49] Both for 'Others' and 'Key Emerging Markets', the years of 2019 and 2020 were excluded from the average as these geographies were severely affected by the Covid-19 pandemic (the GDP per Capita projections are uncappable of completely predicting the pandemic' major impact), and by the African Swine Fever (which mainly affected China) – both situations resulted in outliers

more and more attractive, in recent years, thus more companies are attempting to penetrate, and explore it [50]. The growing size and attractiveness of this market, combined with the privileged access to technologies, mainly in the U.S., is allowing generic producers to conquer greater weight in the animal health industry, so people are starting to consume more of these alternatives. All of this is translated into an average, later incorporated in the forecast. For example, by applying the 5% for 'Key Emerging Markets', the model predicts that these geographic group' revenues will grow at a faster pace than the industry overall (which is assumed to be mainly driven by Livestock Production and GDP per Capita). In fact, it is believed that Zoetis, through the expansion of its fish, cattle, and poultry portfolios, resulting from constant R&D efforts and target acquisitions, will be able to sustain the evolution predicted for 'Key Emerging Markets' – 5% –, and for 'Others' – 2%. However, **from 2029F onwards**, these **predicted evolutions are expected to converge to half** – 'Key Emerging Markets' with ~3% and 'Others' with 1% – since, not only greater competition from generics is anticipated, leading Zoetis to lose market share, but also due to the company' long-term future investments, in this business segment, becoming less significant. This idea is justified by the natural slowdown that the Livestock industry will experience, in the long-term, given that Livestock Production – one of the industry' main drivers – will grow at lower rates, comparing to the uninterrupted growth over the last decades [51]. Indeed, animal-proteins are significantly more resource-intensive and environmental impactful than plant-proteins [52] which, emphasized by greater resource constraints, anticipates a shift in consumer patterns, much faster in developed countries, mainly U.S., from animal-based food to more 'green' alternatives [53].

The **fourth indicator** is the **Competition from Generics**. For this purpose, the **Anti-Infective *Draxxin*** [54], which is one of the company's main Livestock medicines, was used to estimate the **future impact of its generics on Zoetis' U.S. performance** [55]. It is relevant to keep in mind that, currently the U.S. is the

[50] AGDUFA (Animal Generic Drug User Fee Act – initially signed in 2008, and reauthorized in 2018 – aims to improve FDA's performance in reviewing new generic animal drugs, ensuring that medicines are effective and safe
[51] According to OCDE, in 2021, consumers on OCDE countries consumed around 146kg of red meat, poultry, and dairy products – 450g per day – which is 5x the amount recommended. The OCDE study highlights the link between animal-protein overconsumption, mainly red meats, and several diseases such as diabetes, cancer, strokes, among others
[52] For example, considering FAIRR 2019 study, agricultural was responsible for around 70% of water usage, and livestock production accounted for around 1/3. 98% of this livestock usage is applied in animal feeding production which leads to high-scale water pollution, due to fertilizers excessive application. Additionally, the United Nations stated that livestock production accounts for 14.5% of GHG emissions, with beef and dairy accounting for 1/3 of this
[53] According to a FAIRR (Farm Animal Investment Risk & Return) study, in 2019, sales of alternative-meat products accounted for less than 1% of total meat sales, in the U.S., but are growing at an annual rate of 24.5%
[54] Draxxin is a single-dose low volume antibiotic for the treatment and prevention of bovine and swine respiratory disease, infectious bovine keratoconjunctivitis, and bovine foot rot. Draxxin has been one of Livestock' best-selling products, however, in 2021, it has left the Top-5 due to generics
[55] Firstly, an estimate of Draxxin' revenues was computed, both for 2020 and 2021. According to Zoetis' information, in 2020, the Top-5 products (those mostly contributing to total revenues - Apoquel, Simparica, Revolution, Draxxin, and Ceftiofur Injectable) contributed 31% to total revenue, and from this, 10% derived from Apoquel, and 6% from Simparica. Having this in mind, for forecasting purposes, it was

region most affected by generics, and these alternatives have been strongly impacting *Draxxin*' revenues for the past years, something expected to continue. Having in mind that, in 2020, *Draxxin*' generated 5% of Zoetis' revenue, then it is possible to estimate *Draxxin*' revenues, in 2020. According to information released by the company, in 2021, U.S. *Draxxin* revenues dropped 12%, [56] relative to 2020, thus it was possible to also estimated *Draxxin'* 2021 revenues. alternatives on Zoetis' Livestock performance. However, *Draxxin'* generics did not and will not affect Zoetis' Livestock performance, in the same way, for every operational year. For this reason, **for 2022E and the first forecasted year (2023F), *Draxxin*' revenues** are expected to **decrease by 15%.** This value was defined given that *Draxxin*' U.S. patents expired in 2021, and, the possible appearance of generic alternatives, do not have the biggest impact on company' revenues, right on the first year of patents' expiration. Instead, Zoetis' revenues will be more impacted on the second and third year, after *Draxxin* patent' expiration, depending on generics' market penetration speed as well as locals' willingness to change their animals' consumption for alternative solutions. **From 2023F onwards**, the forecasting model predicts that **generics will lead to a lower reduction of 12% in Zoetis' *Draxxin*' revenue** [57]. Indeed, this -12% of revenue impact, due to *Draxxin*' generics, is kept though the long-run, until and including 2027F, as a proxy to account for other generic alternatives that might appear, given that some Zoetis' products will lose their patent in upcoming years, which might impact the company's performance [58]. Taking this into consideration, the **U.S. impact of *Draxxin*' generics** was estimated as the **expected decrease in revenue**, according to each year, **times the weight *Draxxin*' had on Livestock revenues**, in 2021 [59]. All of these calculations culminated in -4% of impact for the first forecasted year (2023F), followed by -3% for the remaining years.

Lastly, the GDP per Capita projection, employed throughout the forecast, does not completely consider the current macroeconomic context, highly responsible for several businesses disruptions. Logically, the recent events have major impact in any company's future performance, thus they must be considered in the forecast

made the assumption that, the three remaining medicines (Revolution, Draxxin, and Ceftiofur) contributed equally to the 15%, so, in 2020, Draxxin was assumed to have generated 5% of Zoetis' total revenue

[56] Zoetis' 2021 report stated that Draxxin' revenues decreased 12%, in the U.S., comparing to 2020, due to generics. The U.S. is, by far, Draxxin's main market thus, for the purposes of this Equity Research, Draxxin was assumed to only be commercialized in that region, therefore the impact of its generics was only computed for the U.S.

[57] The 12% decrease was chosen taking into consideration the medicines' decrease in 2021, considering 2020, due to the emergence of generic alternatives

[58] Considering Zoetis' 2022 Third Quarter report, the sales of poultry products declined due to, among other factors, an expanded use of Zoamix' generics, which is a Livestock Medicated Feed Additive

[59] The Draxxin' weight in U.S. Livestock revenue was estimated to be 28%. Logically, the weight of Draxxin in revenue will decrease over time thus, the impact of its generics on Zoetis' will also decrease. However, for forecasting purposes, this percentage was kept equal being used as a proxy for other Zoetis' Livestock products that might suffer from generic competition (e.g., Zoamix), leading to a decline in the company's revenue

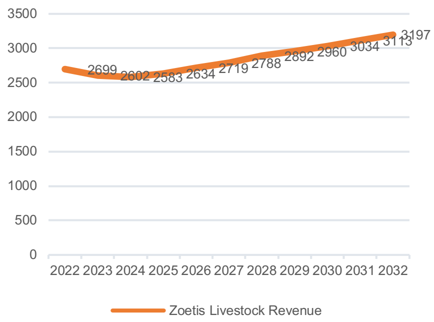
model. For U.S. and International, the **revenues** generated by **Livestock and Companion Animal** were subject to an **estimation for the joint impact of the Covid-19 pandemic and the recent Russia-Ukraine war**. For the year of 2022, the effect of these macroeconomic events was estimated by the difference between the real 2022 growth – based on 2022' quarters information, released by Zoetis –, and the growth that 2022 would experience if the models' forecasting formula (composed by GDP per Capita, Livestock Production, and *Draxxin*'s generics impact) was applied. By incorporating these reasoning in the formula, the model is able to reflect the effects of recent market conditions in Zoetis' revenue. Simultaneously, these differences remain since the part of the company's performance, that is not completely explained by the forecasting formula', derives from the impact Covid-19 continues to have in 2022 coupled with the Russia-Ukraine conflict' effects. For 2023F, the Covid-19 & Russia-Ukraine business' impact is assumed to be half of 2022, and, for 2024F, a quarter of 2022. From that year onwards, this effect is anticipated to have a null impact on Zoetis' Livestock performance.

Again, it is imperative to highlight that all the value drivers and forecast techniques were only applied from 2023F onwards, for U.S. and International segments [60]. The year of 2022 was estimated based on Zoetis' released information for its first three quarters. The fourth quarter was computed as an average of the previous three, and 2022' total revenue was calculated as the sum of the four quarters. By following these steps, a much more accurate estimation for 2022' total revenue was obtained as it was based on that year's actual information. Moreover, it accounts for macro factors currently impacting Zoetis, such as inflation rate and exchange rate levels.

The forecasting model is built on the following assumptions: **Livestock Production** accounted for **50%** of the forecasting formula, with the **remaining 50%** being attributed to the **GDP per Capita**. As a way of tailoring the model to Zoetis' current situation, it is key to incorporate other factors that have been strongly affecting Zoetis' Livestock performance, for the past years, and that are expected to continue for some time. For this reason, **for every forecasted year, the model takes into account the expected growth for each geographic region** – U.S. (-4% for every forecasted year), 'Key Emerging Markets' (5%, and 3% in the long-run), and 'Others' (2%, and 1% in the long-run). In the **case of U.S., this growth is followed by *Draxxin*' generics impact** – Higher (-4%) in 2023F, and from that onwards, it is anticipated to remain at Lower levels (-3%). This forecasted

[60] All other data, besides U.S. and International segments' revenue, for the year of 2022, was estimated using the model's forecasting techniques given the lack of information disclosed by Zoetis, in its 2022 quarter reports

Figure 36 – Zoetis Livestock Revenue Forecast



Source: Zoetis Valuation Model

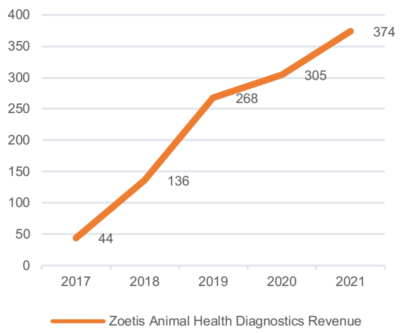
performance is in line (Figure 36) with the idea that, despite the negative impact on Zoetis' Livestock unit, mainly due to generics competition in the U.S., this industry' drivers, especially in emerging countries, are sustainably growing, with an emphasis on the GDP per Capita alongside its evolution' effects on the improvement of population living standards. This is evident by, for example, the demand for better food nutrition, and the focus on food safety which is expected to allow Zoetis' to sustain its Livestock segment' growth, while offsetting the impact of one of pharmaceutical business main threats – generics – in the U.S.

Companion Animal

Regarding Companion Animal, the forecast model considers four explanatory indicators: i) **Pet Care Market** ii) **Diagnostics Market**, iii) Zoetis' **Expected Market Share Evolution** for each region, and the v) **Impact** of **Covid-19** pandemic and **Russia-Ukraine war**.

Starting with the first one, the **Pet Care Market** size was considered a powerful indicator of Zoetis Companion Animal' future performance. In fact, the **growth of the industry where the segment belongs** is a good proxy for the future performance of the company's Companion Animal' unit itself, considering Zoetis leading position. Moreover, it is relevant to highlight this **indicator' high explanatory power** as it **comprises other factors also impacting the industry**. For example, pet ownership rate which is, naturally, related with the GDP per Capita that, in turn, is a key tool to predict how pet owners' might be willing to spend more on their animals' care, as well as the number of pets, and even inflation levels.

Figure 37 – Zoetis Diagnostics Unit Revenue Evolution



Source: Zoetis Reports

Secondly, the **Diagnostics Market Size** was considered an indicator of Companion Animal' future performance since it is **Zoetis' fastest-growing product category** (Figure 37). Additionally, the company has **strong intentions** of further **deepen its Diagnostics portfolio** – which was initiated with Abaxis acquisition, in 2018 – during upcoming years, thus it is fundamental to incorporate that goal in the forecast. In fact, the Diagnostics sector is expected to grow at a faster pace, comparing with the animal health industry overall [61], due to tech advancements and Artificial Intelligence introduction, which is in line with Zoetis' constant R&D investments. For these reasons, the way Diagnostics market behaves will be crucial to predict Zoetis' future growth.

The **third indicator** is **Zoetis' future market share** evolution, for **each geographic region**. Following the same reasoning employed in Livestock, the

[61] The animal health industry is expected to grow at a 10% CAGR, from 2022 to 2030, while the Veterinary Diagnostics industry is expected to grow at a 11.2% CAGR, during the same time

growth rate was estimated as the **average of the differences**, from 2018 to 2021, between the **actual Companion Animal' growth rate**, according to Zoetis' historic financial performance, and the **growth rates that would occur if the model's forecasting formula** (composed by Pet Care Market and Diagnostics Market Size) was **perfectly accurate**. These calculations would result in a **13% yearly evolution** for **U.S., 9%** for **'Key Emerging Markets'**, and **10%** for **'Others'** [62] – highlighting how the three regions, mainly the U.S., were being undervalued by the forecasting formula's application, since no company-specific factors were being considered. In fact, **these differences exist** due to the fact that, within the analysed historic period, **Zoetis' Companion Animal** segment experienced a **growth above the market**, which was a consequence of successfully-completed acquisitions, allowing the company to break into new business segments and markets, price growth, new product launches, among others. Moreover, from 2017 to 2021, Zoetis witnessed an unprecedent **increase** in its **Dermatology segment**, due to *Apoquel* [63] and *Cytopoint*, coupled with a **rise of Parasiticides'** products sales, namely *Simparica* [64] and *Revolution* [65], and the entrance in the Diagnostics segment, and the Reference Labs business.

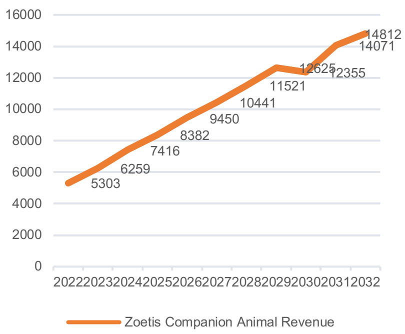
As in Livestock, **these averages were considered** in the forecasting formula due to the strong **conviction that this' Zoetis segment will continue to grow beyond the market**, during upcoming years. However, **in the U.S.,** from **2024F until 2029F** the **evolution growth is expected to converge to one-third** – ~4% –, and **from 2029F onwards, no 'above-the-industry' growth is anticipated**, since it is believed that Zoetis might start to suffer from generic competition. Additionally, this phenomena is justified by the idea that Zoetis' strong Diagnostics' growth, which allowed the experience of significant revenue' increase, is likely to dimmish throughout the years. For **'Key Emerging Markets'**, the **evolution** of 9% is **expected to remain up to, and including, 2028F**, and, **from 2029F to 2030F is anticipated to converge to 3%** – similar to the U.S. forecast –, from which is expected to end. Comparing with the U.S., the **above-industry growth for emerging regions is expected to last longer, as these countries' animal health businesses are much less developed**, so the pet industry does not have the same level of consolidation. For this exact reason, the appearance of generic alternatives to Zoetis' Companion Animal products is only expected to have a significant impact on its performance from 2030F onwards, given that these

[62] All these positive averages are in line with the idea that, the constant R&D investments, and targeted acquisitions, aligned with the fact that Companion Animal' industry main drivers are, and will continue to experience a strong growth, gives room for Zoetis to grow and further consolidate its position in the pet industry
[63] Apoquel (Companion Animal' Dermatology) controls allergic and atopic dermatitis in dogs
[64] Simparica (Companion Animal' Parasiticide) is a monthly chewable tablet for dogs to control fleas and ticks
[65] Revolution (Companion Animal' Parasiticide) for fleas, heartworm disease, and ear mites protection in dogs and cats

medicines take several time to penetrate the market and conquer consumers' trust. This process might even be delayed by Zoetis' strong efforts to gain market share, in these regions. Lastly, for **'Others'** region, the **evolution of 10% is expected to remain until, and including, 2026F** and, from **2027F to 2029F, the evolution is anticipated to decrease by one-third**, converging to 3%, and from that year onwards is anticipated to end, precisely showing the loss of Zoetis Companion Animal' market power through time. It is relevant to mention that the U.S. is currently, and it is anticipated to remain, through some time, the most developed market in terms of Companion Animal' health solutions and innovation. For this, it is expected to be the region where Zoetis will suffer an early revenue' decrease, due to the conviction that U.S. Companion Animal' generics industry will be the first to properly consolidate, and to have a player presented as leader.

Lastly, the **impact of both Covid-19 pandemic** and the **Russia-Ukraine war**, was incorporated in Companion Animal' revenue forecast. The same reasoning of Livestock was employed for this segment as, for 2022, the impact of these events was given by the different between Companion Animal' actual 2022 growth, and the growth that would be verified if the model's formula (composed by Pet Care Market and Diagnostics Market) was applied. By performing these steps, the model's accuracy will increase given that, the part of 2022' Companion Animal revenue that the model is uncappable to explain, is related with the effects that the recent events had on Zoetis' business. For 2023F, the Covid-19 & Russia-Ukraine' impact is assumed to be half of 2022, and, for 2024F, a quarter of 2022. From that year onwards, this effect is anticipated to have a zero impact on Zoetis' Companion Animal performance. Likewise in the Livestock segment, U.S. and International 2022' revenues were based considering the first, second, and third quarter revenues of that year, while the fourth quarter was estimated as an average of the previous three [66].

Figure 38 – Zoetis Companion Animal Revenue Forecast



Source: Zoetis Valuation Model

Taking all this information into account, the forecasting model is built on the following assumptions: first, **Diagnostics Market** accounts for **10%** of the forecasting formula, with the remaining **90%** being attributed to **Pet Care Market,** considering its significant explanatory power. Zoetis Diagnostics' field is mainly driven by the Companion Animal' segment, thus, for forecasting purposes, it was made the assumption that its revenue was exclusively generated by the pets business. Therefore, in 2021, Diagnostics represented 8% of Companion Animal'

[66] The information regarding the fourth quarter of 2022 will only be released by February 2023 thus, for the purposes of this Equity Research report, its revenues were assumed to be the average of the other 2022' quarters

total revenue [67]. Considering the upper mentioned steps, these calculations are followed by Zoetis' expected evolution, for each region. All of this would culminate in Zoetis Companion Animal' revenue increase by 11%, in 2022E, followed by 18%, in 2023F and then, from 2024F to 2029F grow at a yearly average of 12%, followed by an average of 5% yearly growth, from 2030F to 2032F (Figure 38).

Valuation

Cost of Capital & Growth

Figure 39 – Zoetis Cost of Capital Components

	2021
Tax Rate	18.20%
Mkt Cap. (in $USD)	115.31m
D/EV	0.03
D/Equity	0.03
Raw Beta	0.974
SE of Raw Beta	0.068
Debt Beta	0.557
Unlevered Beta	0.996
Risk-Free Rate	1.64%
Average MRP	5.50%
Cost of Debt	4.70%
Cost of Equity	7%
Cost of Equity (w/ Raw Beta)	7%
Unlevered Cost of Capital	7.12%

Source: Bloomberg & Statista

First, to compute the **Risk-Free rate**, **10-Years U.S. Treasury Bills** (USGG10YR) were used, given that the cash-flows, discounted in the model, are denominated in U.S. dollars, and the maturity of the models' cash-flows is 12 years. It is important to mention that, despite Zoetis being a pharmaceutical company, which could result in being less affected by the macroeconomic context and volatility, the **Animal Health** is a more specific segment, that is more **exposed to systematic risk**. For this reason, the **S&P500 index** was used to properly represent the market where Zoetis is inserted, and it provides the company a **well-diversified market portfolio**. Regarding the **Cost of Equity**, first the **raw levered Beta** was computed, both for Zoetis and its peers. For this calculation, the stock returns were regressed, using a 3-year time horizon which, in this case, was from 2019 to 2021, and weekly historical prices. As a way of offsetting possible errors in the estimate obtained, due to the limited number of observations used in the regression model (N=157), the **adjusted Beta was computed**, for Zoetis and peers [68], using the **reversion to the mean** (2/3*Beta+1/3*1), thus allowing to find a much more accurate result. After, and taking into consideration each company' capital structure, the Beta of Zoetis and its peers was unlevered. It is relevant to add that Zoetis unlevered Beta, used to estimate the company's cost of capital, resulted from a median computation considering Zoetis' own unlevered Beta alongside its peers. Indeed, **Zoetis' unlevered raw Beta** (1.0) is **slightly above** its **peers average** (0.9). As a matter of fact, all the peers used for this analysis, had unlevered Betas ranging between 0.7 and 1.1, except Corcept Therapeutics, which had an unlevered raw Beta of 0.5. This can be justified by the fact that Corcept Therapeutics is only present in the Human Health industry, being market leader in

[67] Taking into consideration the Valuation Model' drivers, the Veterinary Diagnostics is expected to grow at a faster pace than the Pet Care Market. For this reason, it was made the assumption that the 8% weight this field currently represents in Zoetis' business will no longer be applicable, as it is expected to increase. Having this in mind, for valuation purposes, and to account for Zoetis Diagnostics' growing importance, this weight was assumed as 10%

[68] Concerning the peers selection, it is important to mention that, in the U.S., there is lack of animal health companies only dedicated to the animal business, with a similar size to Zoetis, for example, in terms of EV. The selected companies, despite being smaller, end up being more similar to Zoetis, than big pharmaceutical groups, that also engage in animal health. Moreover, the majority of peers selected, are companies that have operations in business segments that share several synergies with the animal health business. For instance, Pacira Biosciences, due to the application in dogs of its technologies applied in humans, is considered an animal health partner

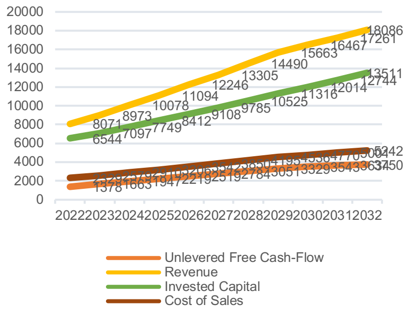
Source: Bloomberg

Figure 40 – Zoetis Cost of Debt

	Zoetis Bond (US98978VAV53)
Coupon	5.60%
Maturity	11/16/32
Years to Maturity	9.93
Price (in $USD)	107.05
Payment Period	2
Yield-to-Maturity	4.70%
Implied Debt Beta (w/CAPM)	0.56

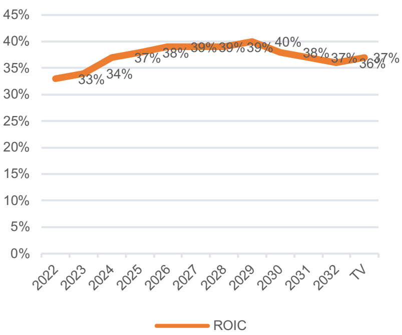
Source: Bloomberg

Figure 41 – Zoetis UFCFs, Revenue, Invested Capital & Cost of Sales Forecast Evolution



Source: Zoetis Valuation Model

Figure 42 – Zoetis ROIC Forecast Evolution



Source: Zoetis Valuation Model

a niche segment – Cortisol Modulators – which has relatively few competitors, thus making the company more resilient in terms of market volatility. Elanco and IDEXX Laboratories are the companies with unlevered raw Beta being more similar to Zoetis', which is expected considering that the three of them engage in the animal health industry, therefore their risk profiles are quite similar. In terms of **Cost of Debt**, it was estimated through a **bond issued by Zoetis**, with maturity in the year of 2032, and a semiannual coupon of 5.60% (Figure 40). This resulted in a yield-to-maturity of 4.70%, considering the current price of $107 [69]. The implied **Debt Beta** was calculated using the **CAPM model** was 0.56. The model's **Market Risk Premium** was estimated by making use of a Statista analysis stating that, in 2021, the U.S. average market risk premium was 5.50% [70]. Considering all of the upper mentioned information, the adjusted levered Beta of 1.0, the Debt Beta of 0.56, Risk-Free rate of 1.64%, Market Risk Premium of 5.50%, coupled with the Net Debt to Market Capitalization ratio of 0.03, resulted in an **unlevered Cost of Capital of 7.12%.**

As a way of calculating **each year' Enterprise Value**, an **Adjusted Present Value model** was created. Actually, Zoetis' capital structure changes substantially during the analysed period, and no constant-WACC exists, thus making this model a much more reliable option to be applied. The Net Debt to Equity ratio, for instance was anticipated to grow from 1.32, in 2020 to 1.07, in 2032. The **Terminal Growth Rate** was computed as the average growth verified in the unlevered cash-flow of the last two forecasted years – 2031F and 2032F. For the first forecasted years, it is possible to infer how **Unlevered Cash-Flows are expected to grow in line with Zoetis'** revenue, costs and investment projections (Figure 41). However, from 2028F onwards, the ROIC starts to decrease (Figure 42), as company' investments start generating lower returns, due to the slowdown in the growth of some of this industry' value drivers, paired with greater competition that will, naturally, impact Zoetis' long-term future market share.

Sensitivity Analysis

As a way of complementing the valuation analysis, additional scenarios were computed to obtain a more 'realistic' valuation price. Considering the unpredictable long-term impact of Zoetis' future acquisitions, and its capacity to mitigate the generics threat, **three different scenarios** were created – **Pessimistic Scenario** (Bear), **Base Scenario**, and **Optimistic Scenario** (Bull) [71]. 'How will inorganic

[69] The bond price, according to Bloomberg database, as of 12 December 2022
[70] Statista: *Average Market Risk Premium in the United States from 2011 to 2022* (May 2022)
[71] This analysis does not include 'Key Emerging Markets' group, for Revenue and Cost of Sales' calculations, as the contribution of acquisitions anticipates higher growth rates

growth sustain Zoetis' position in the market?' is the question the three scenarios aim to answer. In the **Base Scenario**, given that, for the long-term [72], a significant decrease in growth rates was assumed in most geographic markets – namely the U.S. and 'Others' – the impact of acquisitions was considered irrelevant. This scenario predicts **revenues to increase from 2028F to 2032F**, at an **average growth rate of 6%**, and a **terminal growth of 3%** – resulting in a **$138 share price**. In terms of **Optimistic Scenario**, the acquisitions made by Zoetis will generate both revenue and cost synergies. For the long-term, 1% is added to the revenues growth rate, in the U.S., while half of 1% is added to 'Others' revenue growth. The 1% results from the average of acquisitions contribution to Zoetis' revenue growth, from 2017 to 2021[73] (Appendix 2), while the 0.5% for 'Others' is due to the expectation that these acquisitions will mainly happen in the U.S. Indeed, this means that, Livestock Precision Farming investments could be a 'game-changer' for Zoetis, in the long-term, while, for Companion Animal segment, Reference Labs, and Diagnostics will be crucial areas for Zoetis to growth, while consolidating its leading position, through the long-run. In addition, these acquisitions are anticipated to generate cost synergies, allowing Zoetis to improve its Cost of Sales (as % of revenue) that, in 2021, was 27%, eventually offsetting the impact on its margins – International offers lower operational margins than U.S. –, due to increased International' weight. This leads to an **average growth of 7%,** through the last 5 years of forecast, and a **5% terminal growth rate.** Lastly, in the **Pessimist Scenario**, Zoetis' acquisitions are expected to negatively impact revenues, as it anticipates Zoetis' to deviate from its revenue sources in the Companion Animal' segment – 'In-Line Products' – thus failing to catch synergies. It is important to notice that this scenario only applies to the pets segment, as Livestock performance is expected through a more predictable scenario. This led to a **5% average revenue growth**, followed by a **2% terminal growth**. For all the scenarios analysis, to each scenario a probability was attributed considering Human Health industry' example, and for each of them different cash conversion cycles are anticipated. All in all, **Zoetis final price** was valued at **$168 per share** (Appendix 5).

Multiples Valuation

The following multiples were used to better understand Zoetis' stock valuation – **EV/Revenue, EV/EBIT, P/E, and P/Sales** [74]. Looking at **EV/Revenue**, **Zoetis** (15.25x) is **above its peers' average** (8.29x), and the **P/Sales** (14.89x) is also

[72] For the purposes of this Equity Research report, long-term was considered to be the period from 2028F until 2032F considering that, in the Base Scenario, revenues start to decrease from that year onwards
[73] Abaxis' impact was excluded as it would create an outlier, and this size-acquisitions are not expected to happen again
[74] Elanco was excluded from this analysis as it was perceived as an outlier, considering its lower multiples comparing with other peers

above the average (8.18x), verified among competitors, which is justified by Zoetis' higher margins comparing to other companies. Indeed, Zoetis had the highest EBITDA margin and ROE among all peers, substantially outperforming the average. IDEXX has slightly performed above its peers and has a lower EBITDA Margin than Zoetis. Considering **EV/EBIT** [75], Zoetis (42.89x) is **also above the peers-average** (30.29x), and IDEXX is significantly above this average (60.42x). Considering this, it can be inferred that higher multiples in these companies are associated with them being solely focused on the animal health industry, thus being more difficult to compare them with others. Finally, by analyzing **P/E ratio**, Zoetis also **outperforms the industry** with ratios of 51.69x and 39.45x, respectively, but is below IDEXX Laboratories (76.15x). This Zoetis' P/E ratio is considered relatively high when compared to average, however, different from the majority of peers, Zoetis solely acts in the animal health industry, which could be combined by the impressive EPS' growing rate, experienced from 2017 to 2021. The median of these multiples would result in $121.6 per Zoetis' share, which could indicate its undervaluation, however, it must be highlighted the limitations associated with relative valuations given that, in this case, very few companies used for this analysis had similar EV, margins or business models to Zoetis.

[75] EV/EBIT is a better indicator than EV/EBITDA as in capital-intensive industries, depreciations represent an economic cost

Appendix

Appendix 1 – Return on Research Capital
Zoetis & Animal Health Peers (N = 3 years)

	2018	2019	2020	2021
Elanco	5.26	6.02	6.76	10.91
IDEXX Laboratories	12.42	13.52	14.41	16.01
Merck & Co.	4.82	2.78	4.04	4.69
Virbac	38.33	56.73	44.14	N/A
Zoetis	10.75	11.35	12.09	12.67
Average	**14.32**	**18.08**	**16.29**	**11.07**

Appendix 2 – Zoetis Operational Growth & Revenue Growth

	2018	2019	2020	2021
In-Line Products Volume Growth	3%	4%	3%	9%
New Products Volume Growth	2%	2%	3%	5%
Price Growth	3%	2%	2%	1%
Recent Acquisitions	2%	2%	1%	0%
Operational Growth	**10%**	**10%**	**9%**	**15%**
Foreign Exchange	0%	-3%	-2%	1%
Total Revenue Growth	**10%**	**7%**	**7%**	**16%**

Appendix 3 – Zoetis & Peers Total Cost, Cost of Sales,
SG&A & R&D Analysis

Total Costs	**2017**	**2018**	**2019**	**2020**	**2021**
Zoetis	63%	64%	63%	61%	59%
Elanco	86%	82%	81%	88%	81%
Virbac	88%	86%	83%	83%	81%
IDEXX	79%	78%	77%	74%	71%
Average	**79%**	**78%**	**76%**	**77%**	**73%**
Cost of Sales					
Zoetis	31%	30%	29%	28%	26%
Elanco	51%	50%	48%	48%	43%
Virbac	35%	34%	34%	34%	33%
IDEXX	44%	44%	43%	42%	41%
Average	**40%**	**40%**	**39%**	**38%**	**36%**
SG&A					
Zoetis	25%	27%	27%	26%	26%
Elanco	27%	24%	25%	30%	29%
Virbac	51%	52%	47%	49%	48%
IDEXX	29%	29%	28%	27%	25%
Average	**33%**	**33%**	**32%**	**33%**	**32%**
R&D					
Zoetis	7%	7%	7%	7%	7%
Elanco	9%	8%	9%	10%	8%
Virbac	2%	0%	2%	0%	0%
IDEXX	6%	5%	6%	5 %	5%
Average	**6%**	**5%**	**6%**	**6%**	**5%**

Appendix 4 – Timeline of Zoetis Acquisitions between 2017 and 2021

2017

Guoyuan Animal Health
Why? Dedicated to manufacturing and distribution of swine Vaccines, in China. The acquisition would allow Zoetis to follow the animal health' industry development in China

Business Segment -> Livestock

Location -> China

Nexvet
Why? Therapeutics company with a strong pipeline of monoclonal antibody therapies (mAb) for Companion Animal. The acquisition allows Zoetis to deepen its pipeline of solution for chronic pain management in dogs and cats, due to its strong R&D programs

Business Segment -> Companion Animal

Location -> Brazil

2018

Abaxis
Why? Market leader in the Animal Health Diagnostics segment. Abaxis developed the *'VetScan'* line, allowing Zoetis to gain access to it as well as all the company' knowledge regarding the Diagnostics business

Business Segment -> Livestock

Location -> U.S.

2019

Platinum Performance
Why? Health company focused on animal nutrition, having marked Zoetis' entrance into the Horse field. The acquisition allows Zoetis to enter into a new specie segment, while deepen R&D expertise

Business Segment -> Companion Animal

Location -> U.S.

Phoenix Lab
Why? Company focused on the Reference Lab business. Complements Zoetis existing Veterinary Diagnostic capabilities given the strong synergies between Reference Lab and Diagnostics businesses by offering 'all-in-1-place' tests, lab-specialists, etc

Business Segment -> Companion Animal

Location -> U.S.

ZNLabs
Why? Laboratory company. Further consolidates Zoetis' Diagnostics knowledge by expanding its Reference Labs' network

Business Segment -> Companion Animal

Location -> U.S.

2020

Fish Vet Group
Why? World's leading Vaccines and Diagnostics company, focused on the aquaculture business. The acquisition enhances Zoetis geographic reach – by entering into new markets – and its Diagnostics expertise – by expanding the offer of medicines to new species

Business Segment -> Livestock

Location -> Scotland

Virtual Recall
Why? Healthtech company that developed a software with the aim of improving communication with pet owners

Business Segment -> Companion Animal

Location -> United Kingdom

Performance Livestock Analytics
Why? Healthtech company that offers a cloud-based data management software. The company aims to accelerate livestock farming processes, turning farmers operations more sustainable and efficient

Business Segment -> Livestock

Location -> U.S.

Ethos Diagnostics Science
Why? Veterinarian reference lab company, which allows Zoetis to continue enhancing its presence in the Veterinary Diagnostics business

Business Segment -> Companion Animal

Location -> U.S.

2021

Jurox
Why? This acquisition was initiated in 2021, but only completed in September 2022. The company is responsible for the manufacturing, development, and commercialization of medicines for Livestock and Companion Animal' segments. The acquisition allows Zoetis to access a portfolio of high-quality animal health products, such as *Alfaxan* – leader anaesthetic for pets –, as well as the company's R&D expertise. Additionally, allows Zoetis to further consolidate its presence in Australia – where Jurox is a well-established player

Business Segment -> Livestock & Companion Animal

Appendix 5 – Scenario Analysis

Case Selection	Bull	Base	Bear
Share Price	236	138	92
Weight	40%	40%	20%
Target Price	168		20

Dividend	1
Share Price	153

Capital Gain	10%

Disclosures and Disclaimers

Report Recommendations

Buy	Expected total return (including expected capital gains and expected dividend yield) of more than 10% over a 12-month period.
Hold	Expected total return (including expected capital gains and expected dividend yield) between 0% and 10% over a 12-month period.
Sell	Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period.

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