HILLIARD LYONS

REINSTATING COVERAGE

Animal Health
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J.J.B. Hilliard, W.L. Lyons, LLC
June 20, 2017

Key Metrics

ZTS - NYSE (as of 06/19/17)		$63.03
Price Target		$77.00
52-Week Range		$45.28 - $63.49
Shares Outstanding (mm)		495.3
Market Cap. ($mm)		$30,935
1-Mo. Average Daily Volume (000's)		2,795
Institutional Ownership		97%
Debt / Total Capital		70.0%
ROE (TTM)		59.4%
Book Value / Share		$3.30
Price / Book Value		19.1x
Indicated Dividend / Yield	$0.42	0.7%
TTM Operating Margin		30.3%

Non-GAAP EPS FYE 12/31

	2016A	Prior 2017E	Curr. 2017E	Prior 2018E	Curr. 2018E
1Q	$0.48		$0.53A		$0.62
2Q	$0.49		$0.57		$0.65
3Q	$0.52		$0.64		$0.70
4Q	$0.47		$0.59		$0.65
Year	$1.96		$2.33		$2.61
P/E	32.2x		27.0x		24.1x

Figures may not add up due to rounding

Revenue ($b)

	2016A	Prior 2017E	Curr. 2017E	Prior 2018E	Curr. 2018E
1Q	$1.16		$1.23A		$1.31
2Q	$1.21		$1.29		$1.37
3Q	$1.24		$1.33		$1.40
4Q	$1.28		$1.38		$1.45
Year	$4.89		$5.22		$5.54

Company Description – *Based in Parsippany, New Jersey, Zoetis develops, manufactures, and markets pharmaceuticals and biologicals for both livestock and companion animals. The company also offers diagnostic products, genomic services, and other services to their customers, which primarily include livestock farmers, veterinarians, and pet owners. Most of the company's products aid in the healthcare of cats, dogs, equine, swine, beef and dairy cattle, sheep, poultry, and fish.*

Zoetis Inc.

ZTS – NYSE – Buy – 2

A Top Operator in an Industry with Solid Secular Growth; Reinstating Coverage with a Buy Rating

- **Attractive Industry:** The animal health industry is experiencing mid-to-upper single digit growth, primarily due to two factors: the humanization of pets and the productivity impetus for livestock producers. Consumers increasingly view their pets as a member of the family and are willing to spend accordingly. Increasing incomes around the world increase the demand for protein, yet producers continue to face headwinds and therefore turn to companies such as Zoetis to increase the productivity of their animals.
- **Top Operator:** By species, Zoetis is a top two company in each category with one exception: poultry. By therapeutic category, Zoetis is a top three company in each category with one exception: parasiticides.
- **The Complementary Business Opportunity:** Zoetis currently derives most of its revenue from pharmaceuticals and biologics, which is an estimated $30 billion market. However, the broader animal health market is over $100 billion. Zoetis intends to attack this much larger opportunity via diagnostics and genetics in the near term. We have confidence in management to be able to execute and in turn, outperform an already attractive market.
- **Outlook:** With ~6% revenue growth, margin expansion, and share buybacks, we believe Zoetis can generate double digit EPS growth. Our revenue estimate for FY17 is $5.22 billion and our operating EPS estimate is $2.33. Our revenue estimate for FY18 is $5.54 billion and our operating EPS estimate is $2.61.
- **Valuation and Opinion:** Zoetis is trading at 31.4X trailing twelve months EPS and 26.0X our next twelve months EPS estimate. Using both a P/E and DCF valuation method (see pages 23-24), we derive a $77 price target. With our bullish outlook for the company and the industry, confidence in the management team, and an attractive potential return to our price target, we are reinstating coverage with a Buy rating.

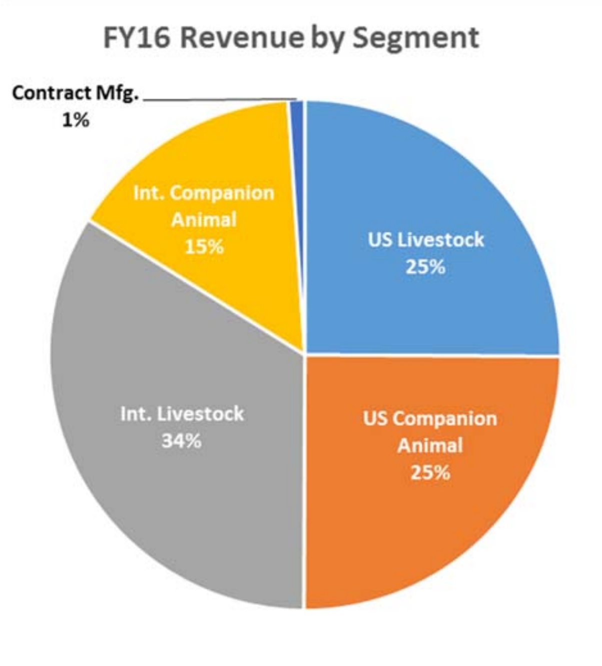
Note Important Disclosures on pages 27 and 28
Note Analyst Certification on page 27

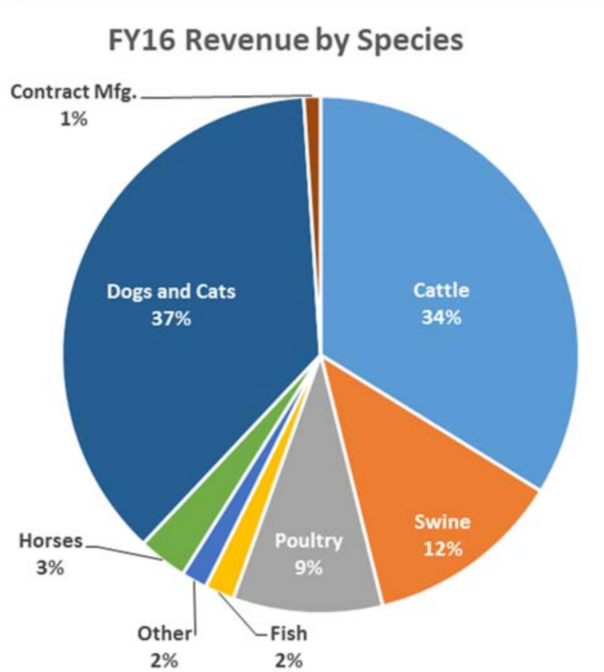
COMPANY OVERVIEW

Pfizer established a dedicated Animal Agriculture division in 1952 shortly after discovering the antibiotic terramycin. The division was officially named Pfizer Animal Health in 1988, and the company entered the companion animal market with the acquisition of SmithKline Beecham's Norden Laboratories in 1995. In 2012, Pfizer announced the spinoff of the animal health division, creating Zoetis with its public IPO in February of 2013. Since its spinoff, the company has made some noteworthy moves in the M&A space. In 2015, Zoetis acquired the animal health assets of Abbott Laboratories, KL Products, and Pharmaq. They followed up that busy year with the acquisition of Scandinavian Micro Biodevices in 2016. In addition to M&A, Zoetis has also launched a handful of key products since the IPO, which we will cover in more detail throughout the report.

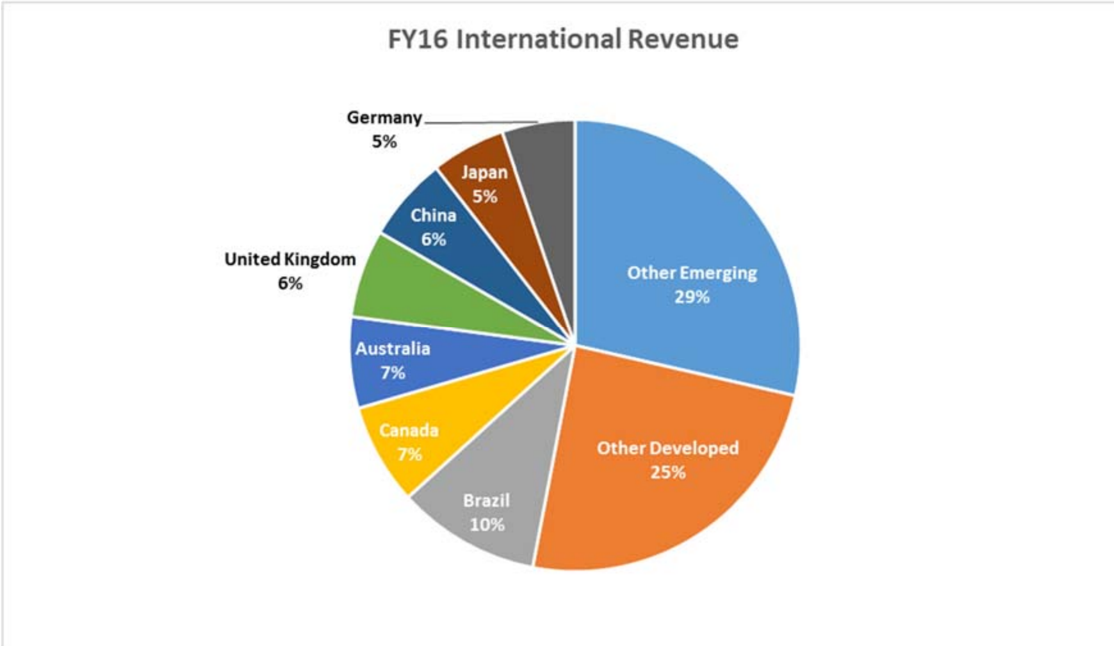
Zoetis, with around 9,000 employees worldwide, is the largest company in animal health, with a leading market share in multiple therapeutic categories and geographic areas, despite an industry backdrop of considerable consolidation over the past few years. The company has a direct sales force in approximately 45 countries, selling about 300 product lines in over 100 countries. Products include anti-infectives, vaccines, parasiticides, medicated feed additives, and other pharmaceutical products that range from pain treatment to dermatology. The company's 1,000 R&D employees work on over 200 R&D programs and the company holds roughly 4,800 patents with another 1,700 pending. Finally, the company's focus on manufacturing quality and supply consistency can be seen in its 25 manufacturing sites and 200 contract manufacturing relationships. We note the company has undergone a noteworthy efficiency program over the past couple of years that has resulted in the number of product lines reduced; countries with a direct sales force reduced from 75; R&D programs reduced from over 400; and the number of manufacturing sites reduced from 29, with more sites to be transitioned.

Zoetis currently reports results in two operating segments: United States and International. Additionally, the company also breaks revenue down into Livestock and Companion Animal segments, with further detail by species. Livestock includes cattle, swine, poultry, fish, and other. Companion Animal includes dogs and cats and horses. Zoetis also performs contract manufacturing for third parties in its Client Supply Services division. The pie charts below display last year's revenue breakdown.



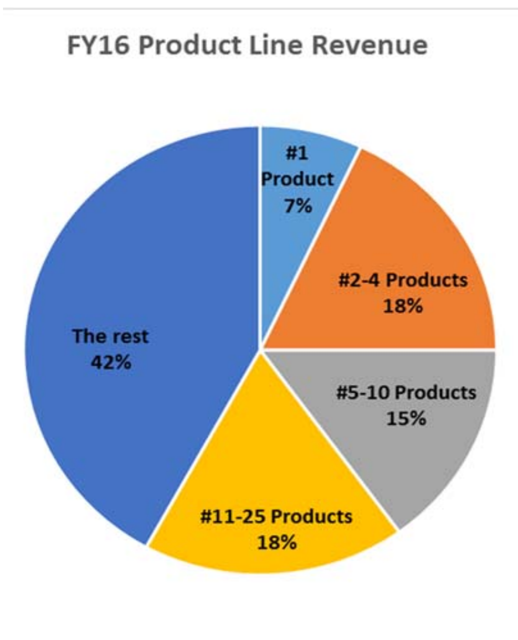


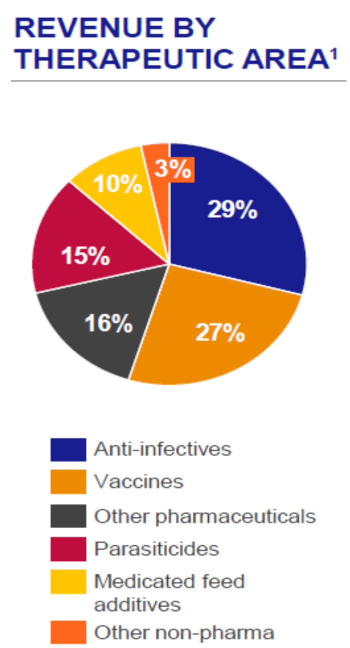
Source: Company Reports



Source: Company Reports

In addition to being well diversified by species and geography, the company is not highly dependent on a handful of products. While the company's top four products (ceftiofur, Revolution, Draxxin, and Apoquel) compose a substantial 25% of revenue, the rest of the company's top 25 products, each of which compose over 1% of revenue, collectively represent 33% of sales. This leaves the remaining product lines, each of which generate less than 1% of revenue, to comprise the remaining 42% of sales. This broad portfolio is one of many aspects that separate Zoetis from most human pharmaceutical companies. The graph below on the right displays a 2013 revenue breakdown by therapeutic area, also showing a balanced portfolio. The company does not provide ongoing detail by therapeutic category, so this data has likely shifted, but we don't believe it has experienced any substantial change.





Source: Company Reports; chart on the right is from 2014 Investor Day, based on 2013 revenue

The company's farm animal products are intended to aid livestock producers in keeping their investments safe and, in some cases, increase profitability. Zoetis sells a wide range of anti-infectives to prevent or treat bacterial or fungal infections, vaccines to prevent various diseases, parasiticides to prevent or kill external or internal parasites, and medicated feed additives (MFAs) to provide medicine to the animals through their food. **The company also sells reproductive products and sees diagnostics as a potential area of growth.** Zoetis is also seeing significant demand for their genomics services, which tell producers which animals would be best for reproduction or best for sale based on a variety of genetic traits. **Management, and the industry as a whole, point to the long-term growth opportunity from a growing global middle class demanding more protein – at a reasonable price – in the face of limited resources.**

Zoetis sells companion animal products primarily to veterinarians with the goal of improving and extending the lives of pets. The product lineup for pets also includes anti-infectives, vaccines, and parasiticides, as well as diagnostics, reproductive services, and veterinary clinic management services. **The primary sustainable and above-GDP growth driver in the pet business is the increasing spending per pet, as more people come to view their pets as part of the family. While developed markets definitely lead this trend, emerging markets are displaying increasing rates of pet ownership and spending per pet as well.**

Animal Health vs. Human Health

While we will expand on each of these themes throughout the report when they apply, we felt investors should be aware of some key differences between the animal health and human health businesses, especially considering Zoetis is a fairly unique asset in public markets. **Unlike human health, insurance and payers play virtually no role.** On the livestock side of the business, the economic value of pharmaceuticals are usually clear and quantifiable, especially compared to the inherent subjectivity and uncertainty related to human pharmaceuticals. The ultimate customer on the livestock side is also running a business, so economic value must be proven for commercial success. The companion animal side of the business is genuinely consumer-driven, as pet insurance, while growing, covers a minimal number of pets. Further, most consumers with pet insurance pay for services and products and then get reimbursed directly from the insurer, so the provider (veterinarian) does not have to haggle with the insurance company.

Another significant difference between the two markets is the role of generics. **Whereas generics dominate when the innovator drug loses exclusivity in human medicine, branded drugs typically retain a strong market share in animal health.** For example, sales of Zoetis' Rimadyl have grown 35% since losing patent protection in 2001, although the introduction of multiple generic versions caused the product line to shrink 6% last year. In some cases, generics aren't even developed. There are several reasons for this phenomenon, including distribution, brand loyalty (due to veterinary relationships and convenience), market size, and arguably the lack of a third party payer system. Because of the lack of generic threat, **R&D frequently focuses on enhancing existing products to further entrench the product in the market and extend its lifecycle. This, combined with less testing (no animal studies necessary, for example) and the use of discoveries from other industries, leads animal R&D to generally be cheaper and typically more predictable.**

Strategy

At the outset of its existence as a standalone company, Zoetis pledged to shareholders to grow revenue in line with or above market growth, expand margins, target value-added investment opportunities in both R&D and M&A, and return excess capital to shareholders. Its revenue growth strategy is based on leveraging the existing footprint and customer relationships, further penetrate emerging markets, expand the product portfolio, remain the partner of choice for access to new products or technologies, and expand into complimentary businesses such as genomics or diagnostics. Several years later, these initiatives still hold, and the company has leveraged its strategy to not only deliver but position itself for future success, in our opinion. Zoetis continues to strive to enhance what it believes are its competitive advantages – industry leading-sales force, research and development productivity, and manufacturing quality – to deliver value to customers and shareholders.

Zoetis pursues a commercial model that relies heavily on direct contact with the end customer, even in situations where a distributor is involved. Use of a distributor, and extent of direct contact, typically depends on market fragmentation, customer size, and geographical market differences. Sales to its two largest customers, both distributors, were 20% of total sales in 2016, down from 23% in 2015 but up from 15% in 2012. The direct contact emphasis is especially true on the companion animal side of the business, where Zoetis mixes direct sales and distributor usage but maintains relationships with veterinarians regardless of distribution status. Through this customer engagement, which can serve as both a marketing and educational opportunity, Zoetis creates demand. Zoetis also attempts to maintain direct relationships on the livestock side of the business but we believe direct contact is more tightly correlated with customer size in that segment. **These relationships are bolstered by technical services, such as business advice, workforce training, technical guidance, and digital tools. Finally, Zoetis' extensive portfolio covers most therapeutic categories and customer needs, which creates the convenience of a one-stop-shop experience that customers value.**

R&D funds are allocated according to a centralized portfolio management system that prioritizes aligning research with business objectives and incorporates leaders from different parts of the company. The four key criteria for investment include: strategic fit and importance to the current portfolio, technical feasibility, return on investment, and value to customers and the market. The last criterion is where the prioritization starts, and the company leverages its close relationship with customers and its global reach and scale to identify the most urgent and attractive opportunities. As an example of the footprint and high-touch salesforce advantage, Zoetis touts its emerging infectious disease program that, combined with its deep scientific knowledge, allow it to quickly create innovative solutions for evolving market demands. One illustration of this is the porcine epidemic diarrhea virus (PEDv) that was identified in the U.S. in April of 2013. By September of 2014, Zoetis already had a conditional license issued for their vaccine. While diseases can remain local, that is not always the case. The PEDv spread to several other parts of the globe, including Asia, which allowed Zoetis to leverage its footprint to generate even greater sales from the new product.

Due to the distinct characteristics of the animal health market, R&D is often focused on enhancing existing products rather than developing brand new products. In fact, **Zoetis spends roughly half of its R&D on lifecycle development, which includes new label claims, different forms or schedules of administration, combination with other products, or expansion to other species. The average lifespan for its top 24 products is approximately 30 years; furthermore, only 20% or so of the company's portfolio is still protected by patent.**

Zoetis views itself as a leader in animal health R&D. For both novel products and lifecycle enhancements, Zoetis obtained approximately one-fourth of all animal health medicine approvals granted by the FDA and approximately one-fifth of all animal health vaccine approvals granted by the USDA from 2004 to 2011. In addition to unique insights into end markets, Zoetis believes it has best-in-class internal capabilities and is the partner of choice for external alliances. As we noted earlier, the company has trimmed the number of R&D programs in order to concentrate resources and expertise to get products to market faster. Finally, Zoetis still has licensing rights to Pfizer's intellectual property, which could be a source of new ideas or treatment options.

Zoetis believes another key competitive advantage for the company is their high-quality manufacturing. Zoetis has 25 manufacturing sites in 12 countries across the world that account for approximately 65% of manufacturing spend, with another 200 contract manufacturing organizations in 30 countries accounting for the rest. With various regulatory and technological requirements separating different therapeutic categories, Zoetis has multiple sites manufacturing for each category, lowering supply disruption risk. Additionally, Zoetis often co-locates R&D with manufacturing sites, facilitating the smooth and efficient transfer of production processes from the lab to the line. Finally, in an industry with less supply certainty than most in healthcare, Zoetis has a strong reputation with customers, as seen in the following survey:

Source: Company Reports

Management

Zoetis is currently led by CEO Mr. Juan Ramón Alaix, who is also a Board member. He has led the company, including when it was Pfizer Animal Health, since 2006. Mr. Alaix joined Pfizer from Pharmacia in 2003 as a regional president. During the 1990s, he served in several management roles with Rhône-Poulenc Rorer. Mr. Alaix received a graduate degree in economics from the Universidad de Madrid.

Mr. Michael McCallister is the Chairman of the Board of Directors. Mr. McCallister was the CEO of Humana from 2000 to 2013 and served as the Chairman on the Board at Humana from 2010 to 2013. He is also currently on the Boards of AT&T, Fifth Third Bank, and Bellarmine University. Mr. McCallister holds an MBA degree from Pepperdine University.

Mr. Glenn David has been the CFO of Zoetis since 2014. Prior to assuming the role of CFO, Mr. David served as the senior vice president of Finance Operations for Zoetis. Prior to the IPO, he served in multiple finance roles including as the vice president for Global Finance for Pfizer Animal Health and as the vice president of Finance for the U.S. Primary Care franchise. Mr. David also helped integrate multiple acquisitions. Prior to joining Pfizer in 1999, he worked at multiple companies in the financial services industry. Mr. David obtained his bachelor’s degree from Binghamton University and an MBA in Finance/ Information Technology from New York University.

Mr. Alejandro Bernal is the group president for Strategy, Commercial, and Business Development. His prior role was the area president for Europe, Africa, and Middle East Region for Zoetis/ Pfizer Animal Health since 2010. From 2000-2010, Mr. Bernal worked in positions of increasing responsibility for various animal and geographic segments. Prior to joining Pfizer, he managed a large dairy operation for Aurora Dairy Corporation. Alejandro holds a doctorate in veterinary medicine from Universidad de Caldas in Colombia, a master's degree in physiology from Texas A&M University, and a Master of Business Administration from Universidad de los Andes (Colombia) and Manchester Business School (UK).

Dr. Catherine Knupp is the president of Research and Development and previously served as the vice president of Veterinary Medicine R&D at Pfizer Animal Health since 2005. Prior to joining Pfizer Animal Health, Dr. Knupp led Pfizer's Michigan laboratories in pharmacokinetics, dynamics and metabolism, and chaired Pfizer's Midwest Exploratory Development Management Team. She started her career at Bristol-Myers Squibb in drug metabolism and pharmacokinetics.

Ms. Kristin Peck is the president of U.S. Operations at Zoetis, overseeing both companion animal and livestock segments. Previously, Ms. Peck's experience as a group president spanned manufacturing, corporate development, marketing, and market research. At Pfizer, she served as executive vice president of Worldwide Business Development and Innovation. Prior to joining Pfizer, Ms. Peck focused on strategy and M&A for the pharmaceutical and financial service industries at the Boston Consulting Group. Her career began in private equity and real estate. Ms. Peck is a member of the Thomson Reuters' Board of Directors and a member of the Advisory Board for the Deming Center for Quality, Productivity and Competitiveness at Columbia Business School. Ms. Peck holds a bachelor's degree from Georgetown University and an MBA from Columbia Business School.

Mr. Clinton Lewis, Jr. is the president of International Operations at Zoetis. Previously, he served as president of U.S. Operations at Zoetis/ Pfizer Animal Health. Mr. Lewis joined Pfizer in 1988 as a sales rep and assumed roles of increasing responsibility across different areas of commercial operations before joining the animal health business in 2007. Mr. Lewis holds a bachelor's degree in biology from Fairfield University and an MBA in marketing from Fairleigh Dickinson University.

Overall, our view on management is constructive. We believe they have done an excellent job positioning the company to benefit from the industry tailwinds and outperform peers. The company's broad and deep portfolio and diversified footprint is impressive, in our opinion. The company's R&D productivity, operational execution/efficiency, commercial execution, strong reputation and close relationships, and focused, forward-looking strategy are signs of a well-managed company, in our opinion.

COMPETITION

The table to the right shows competitors that Zoetis may encounter, but we caution these companies aren't analogous. We will discuss competitive dynamics in our overview of each segment. As one can see based on our discussion and the table, Zoetis is a unique asset in the U.S. public market, in our view. We note Virbac and Vetoquinol are publicly traded on European markets.

Company	FY16 Animal Health Revenue	Business Difference (vs. ZTS)
Boehringer Ingelheim*	$4,193	Human Pharma
Elanco (Eli Lilly)	$3,158	Human Pharma
Merck Animal Health	$3,478	Human Pharma
Bayer	$1,620	Human Pharma and Agriculture
Ceva**	$911	Similar
Virbac	$907	Similar
Phibro***	$703	Livestock Focus
Vetoquinol	$373	Similar
Idexx	$1,649	Pet Diagnostics
Abaxis	$187	Human Diagnostics
Neogen****	$175	Food Safety
Heska	$130	Pet Diagnostics

**Estimate based on merger **2015 numbers; 2016 numbers not released yet*
****FYE 6/30 ****FYE 5/31*
Source: Company Reports and Hilliard Lyons Research

Companies above the double line are primarily engaged in animal pharmaceuticals and most directly compete with Zoetis. Boehringer Ingelheim (BI) vaulted to the number two spot with the acquisition of Sanofi's animal health division, Merial; the deal closed at the beginning of 2017. Elanco also picked up some divested vaccines from that deal. We believe

M&A from the top four players, including Zoetis, will have to be on a much smaller scale than witnessed in the BI-Merial merger. We note the attractive growth profile of the animal health industry has attracted plenty of capital and created numerous smaller companies in the space, including publicly traded Aratana Therapeutics and Kindred Biosciences.

We believe investors should be aware of the companies below the line due to Zoetis' desire to increase its presence in diagnostics. The company has a solid lineup of diagnostics for the companion animal segment but has not made a tremendous impact due to stiff competition. Going forward, the company expects to commit more time and capital toward diagnostics for livestock, a place where it believes point-of-care diagnostics has great potential.

Admittedly a bit anecdotal, we also want to highlight Zoetis' food safety products. The company has informed us they are no longer committing resources to this area, as they wish to focus on "products for live animals." We believe the willingness to abandon an otherwise attractive space shows management's discipline and focus on core competencies.

COMPANION ANIMAL OVERVIEW

United States – The Capital of Pet Spending

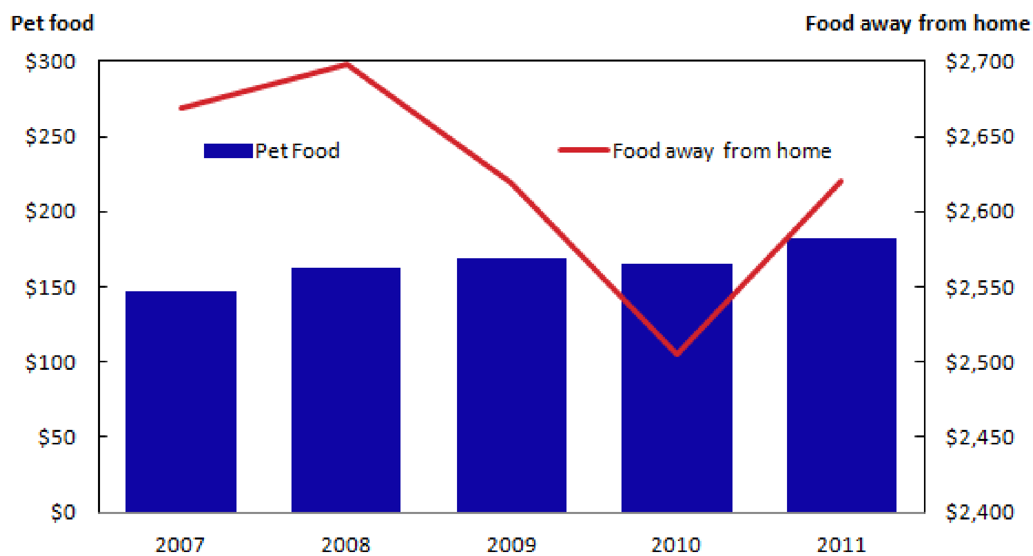
While the United States leads the world in the total number of pets, at least in terms of dogs and cats, investors may be surprised to learn several countries best the U.S. in the rate of ownership. According to survey data from GfK, Argentina, Mexico, and Brazil lead the world in pet ownership, as those countries are heavy dog owners. The top three countries for cat ownership are Russia, France, and U.S. We believe awareness of this fact is important when contemplating the long-term growth opportunities for the Companion Animal (CA) market.

At this point in time, however, **the U.S. is the clear leader in not only the total number of pets, but also easily surpasses other markets in total spending. According to data from the American Pet Products Association (APPA), Americans spent $66.75 billion on their pets in 2016, and this large market has grown at a CAGR of 5.7% over the past ten years and 7.1% over the past 20 years.** This solid and steady growth in pet spending has come as pet ownership rates have been relatively stable in recent years. **According to APPA, 68% of households owned a pet in 2016**, which is up from 56% in 1988 and 62% in 2008. However, we note this is flat from 2012. Moreover, investors should be aware of the widening gap in ownership estimates between the American Veterinary Medical Association (AVMA) and APPA. In its most recent report in 2012, AVMA tagged pet ownership rates much lower at 56%. In 2007, the AVMA estimated pet ownership at 57% versus the APPA 2008 estimate of 62%. Regardless of the actual number, we believe demographics in the United States will remain constructive to pet ownership for about another five to ten years before an acceleration of baby boomer aging places modest pressure on ownership rates. Data from the AVMA's 2013 U.S. Veterinary Workforce Study shows households headed by someone 65 and older have significantly lower ownership rates. However, we note numerous studies have shown there are health benefits to pet ownership, so perhaps the difference in ownership rates among the elderly will be less pronounced among the baby boomer generation. Additionally, the APPA 2017-2018 National Pet Owners Survey showed millennials surpassing baby boomers as pet owners. Industry participants believe the delaying of marriage and children by millennials increases the demand for pets and data from the Bureau of Labor Statistics show married couples without children spend the most on their pets.

Given our outlook for stable ownership rates in the intermediate term, we believe investors should pay more attention to spending dynamics rather than try to determine if the APPA or AVMA ownership estimates are more accurate. **Unsurprisingly, dogs and cats are undoubtedly the most important species to the industry in the United States**. While surpassed in total numbers by exotics (small animals, reptiles, and fish) and rivaled in veterinary intensity by equine, dogs and cats dominate other categories in total spending.

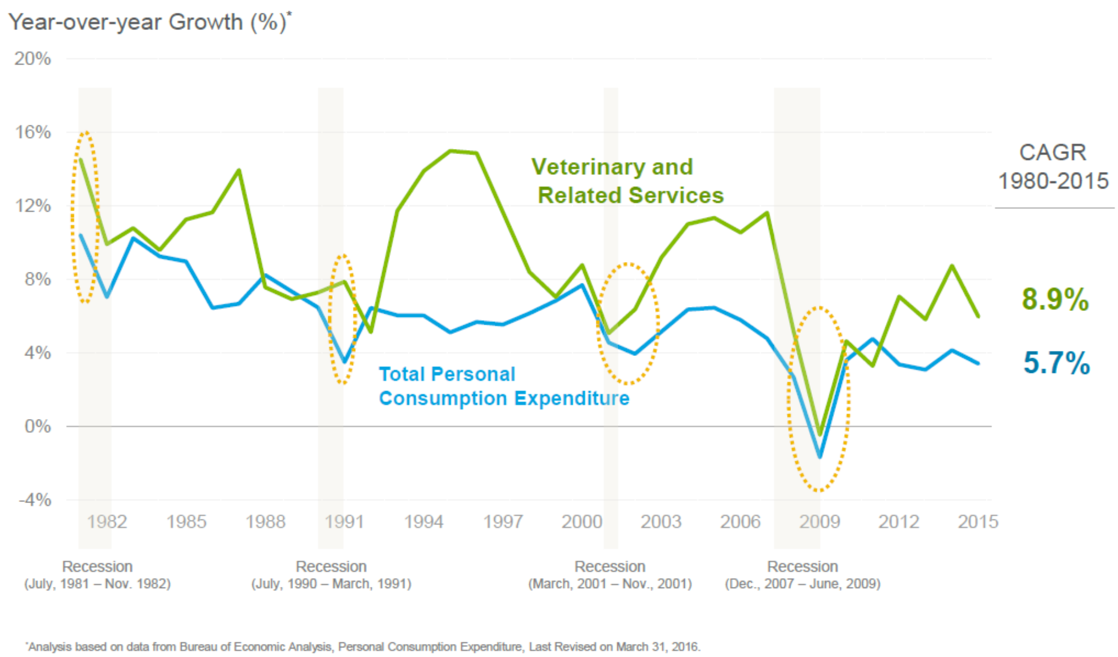
Pet food makes up the bulk of total pet spending at $28.2 billion, which has grown at a 7.0% CAGR since 2010 according to APPA. As consumer demand for their own food continues to shift to healthier and more nutritious options, spending on high quality pet food has rapidly mirrored the trend. According to Euromonitor International, “natural” products’ share of U.S. pet food has increased to 18% in 2015 versus 11% in 2011. **We believe this is a true reflection of what the CA industry touts as a recession-resistant trait: more people, Americans included but not exclusive, are viewing their pets as members of the family rather than just companions or property. Surveys vary widely, but well over half of pet owners (some surveys put it as high as 80%) now view pets as members of the family, and this viewpoint has been on a steady rise.** As industry members point out, the ever closer bond between owners and pets has occurred as pets have moved from outside to inside and ever closer. **According to the APPA, 40% of pets sleep in bed with the owner. This tight bond translates into economic decisions. An APPA survey revealed 74% of pet owners are not influenced by the economy when it comes to their pets.** The data bear this out when looking at spending habits during the financial crisis:

Average annual expenditures on pet food and food away from home, 2007–2011



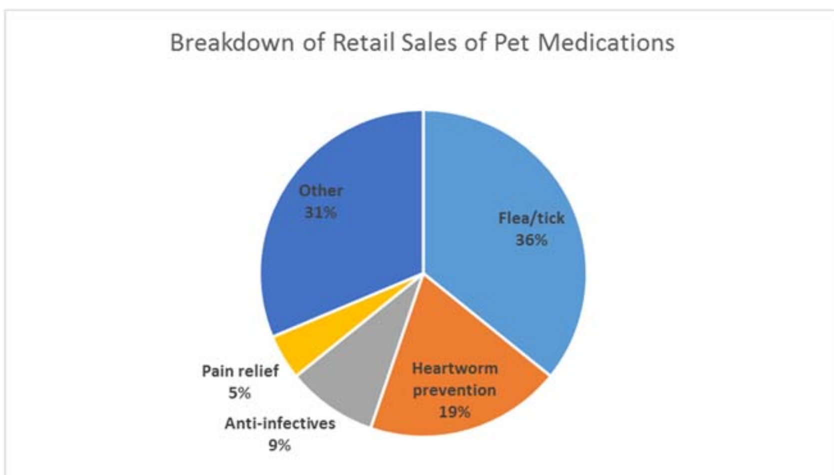
Source: U.S. Bureau of Labor Statistics.

This change in attitude makes the medical portion of the pet industry even more attractive, in our opinion. If more people view their pets as a part of the family and pay premium dollar for food, medical expenditures should be more recession-resistant than the rest of the CA industry, in our view. The “Other Services” portion of pet spending has grown at an 8.6% CAGR since 2010 to $5.8 billion last year. When considering this category includes “pet hotels,” we believe in the argument of recession-resistance in the medical portion of pet spending, as medical expenditures have extra cushion for consumers to cut back on pet spending elsewhere – if they do at all. For reference, approximately 78% of dog owners in the United States gave their dog(s) medications in 2010 as compared to 50% in 1998, and approximately 47% of cat owners in the United States treated their cat(s) with medications in 2010 as compared to 31% in 1998, according to the APPA.



Source: Idexx Corporate Presentation

Only during the financial crisis did pet owners show restraint in spending on their pet's health, as measured by veterinary and related services, but other recessions were mere blips in the growth rate. Coupled with growth in premium food and more pampering, the chart above provides additional reasoning to view pet healthcare as recession-resistant.



Source: Packaged Facts, 2011

The pet pharmaceutical market in the United States is likely around $8-$9 billion in annual sales, and the chart above gives a rough breakdown. **We note dogs garner the most healthcare dollars, as AVMA data consistently shows dog owners making more frequent visits to the vet, and other sources such as APPA confirm canines as having the highest per pet healthcare spend. While the chart above is a bit dated, the likely shifts in composition that are not reflected reveal another way the CA industry tracks human industries. Pets are now living longer with the increased healthcare and are developing more chronic conditions, much like humans.** According to Banfield Animal Hospital, diabetes diagnoses increased by 32% in dogs and 16% in cats from 2006 to 2010. The increasing prevalence of chronic disease and need for chronic treatments reinforces something that has been important to the industry for years: brand loyalty and durability.

U.S. Dynamics – Regulation

The CA pharmaceutical industry is regulated by several different agencies, depending on the product. **Ingested pharmaceuticals, animal feed/ pet food, and veterinary devices are regulated by the Center for Veterinary Medicine (CVM) within the FDA, biologics (including vaccines) are regulated by the USDA, and pesticides are regulated by the EPA. Pesticides, for the CA market, are generally limited to flea and tick products; when topical, these compounds are regulated by the EPA, while ingested flea and tick products are regulated by the FDA.** Companies must apply for registration with the EPA for new pesticides, new uses for existing pesticides, or changes to active ingredients in existing pesticides. These applications include service fees; description of the requested action; identity and quantity of all chemicals in the product; data on potential risks to human health and the environment; proof that the product manufacturing process is reliable; and labeling, including directions for use, contents, and appropriate warnings. Considerations for the EPA officials include the particular site or animal for which the pesticide will be used; storage and disposal practices; potential contamination of surface or ground water from leaching, runoff, and spray drift; and potential health risks to humans or other animals. After comprehensive review, the EPA discusses any modifications with the applicant and approves the label and registration if appropriate.

Veterinary devices do not require premarket approval unless radiation is emitted. However, the FDA still has regulatory oversight and can take action if a device is deemed misbranded or adulterated, including false or misleading claims or inadequate directions for use by the layperson. When directions cannot be written for the layperson, the device may only be used under the supervision of a licensed veterinarian. The FDA recommends that manufacturers and/or distributors of veterinary medical devices request a review of their product labeling and promotional literature.

The process for obtaining a new animal drug approval (NADA) is fairly similar to the human drug development process, but with some different acronyms and very different numbers. Upon selecting a lead compound, animal health companies proceed to proof of concept and pharmacokinetic and pharmacodynamic studies in their target animal species. At this point, the developer opens an Investigational New Animal Drug (INAD) file with the CVM and may begin field trials. Much like human clinical trials, the field trials evaluate safety and effectiveness, as well as establish manufacturing processes and controls. If the developer meets requirements, approval is granted. The process for getting a biologic approved by the Center for Veterinary Biologics (CVB) of the USDA is fairly similar, with the difference of additional diagnostic and manufacturing detail requirements. **The simplicity and speed of the approval process, relative to human clinical trials, lead new animal drug development to be substantially faster: 5-7 years versus 12-14 for humans.** Taking the crude assumption of $1.9 million spent per R&D program for Zoetis in 2016, the development costs would only be $9.5 to $13.5 million. This likely underestimates the cost of bringing a new molecular entity to market, considering Zoetis spends roughly 45% on lifecycle innovation, which is a shorter and therefore less expensive endeavor. We believe lifecycle innovation also has a higher rate of success, another missing factor in our estimate of costs for developing a brand new molecule. **A 2015 study by HealthforAnimals found the average time was 6.5 years and $22.5 million in development costs for a CA molecule.** Nevertheless, investors recognize animal drug development is far less expensive and time consuming than human drug development. The drugs are therefore less expensive and the “blockbusters” in animal health are $100 million in sales versus $1 billion in human health.

U.S. Dynamics – Distribution

Tens of millions in development costs and years of risky science obviously creates a solid barrier to entry for the industry, unlike the very competitive pet food market. However, the moats of Zoetis and other established players run much deeper than meets the eye, and this centers around the tight relationships with veterinarians. This pays off for the animal health industry due to a high rate of prescription filling at the veterinary clinic. According to Packaged Facts, 58% of all pet medications were sold in the clinic in 2014, although we note this number is down from 63% in 2011. Thanks to the relationship with veterinarians and no third party payer influences, animal health companies enjoy a low rate of generic dispensing, even when generics are on the market. According to IMS, **generic dispensing in the veterinary clinic was only 7% of all prescriptions filled.** We think the rate of generic dispensing in the vet clinic is unlikely to change significantly given the importance of dispensing to veterinary financials – according to Veterinary Practice News, **approximately 30% of vet clinic revenues are from drug sales**, with markups reaching 100% or higher in some cases. Further, only 14% of FDA-approved animal drugs have a generic version on market.

However, we note the decline in recent years in the vet clinic's hold on medication dispensing. That slip has occurred as big box retailers and online mail-order services have gained more clout. In 2010, Bayer made the decision to sell flea and tick products directly to retailers and websites, making them over-the-counter (OTC) options. The Bayer move resulted in a 5% decline in parasiticide produces dispensed by veterinarians. The success in pet food and OTC products and the attractive growth profile of the pet industry enticed many retailers and even traditional pharmacies to move into the pet pharmacy business. Online retailers, such as PetMed Express, also known as 1-800-PetMeds, also continue to make a push. While making a splash, especially in OTC parasiticides, progress has been moderate for the new entrants when it comes to prescription drugs. Some speculate it is a lack of knowledge that consumers can get prescriptions filled outside the vet clinic and others suggest consumers don't want to ask for a written prescription in fear of jeopardizing their relationship with the veterinarian. This debate has resulted in some legislative action. Currently, 36 states have adopted legislation that specifically or implicitly require veterinarians to provide their clients with a written prescription upon request. Many states adopted the AVMA's Principals of Veterinary Medical Ethics, which state a veterinarian shall honor a client's request for a prescription or veterinary feed directive in lieu of dispensing, but may charge a fee for this service. We note the veterinarian is not required to notify the client of the option to fill the prescription elsewhere and, by our interpretation, only three states do require upfront notification – Arizona, California, and Delaware.

Based on a review of state legislation, the lack of consumer awareness argument does not seem outlandish, and this prompted federal politicians to introduce the Fairness to Pet Owners Act in 2011 that mandated veterinarians to automatically provide copies of prescriptions to pet owners. Despite producing some bipartisan support and being reintroduced multiple times, the push has not developed enough traction. With multiple failures, we don't believe the bill will achieve success. Nevertheless, we encourage investors to be aware of proposed legislation – both at the state and federal level – regarding this matter, as it could be disruptive to the industry. Further, if legislation comes to fruition, we remind investors CA drugs are usually cheap in absolute dollar terms, and past experiences suggest generics enter the market at a moderate ~15-20% discount.

As we mentioned previously, Zoetis uses distributors in both segments while still maintaining a relationship with end customers. Data on the distributors is scarce in terms of what percent of products pass through them, but there is a clear trend ongoing: three large players are buying competitors and growing fast. Henry Schein ($3.3 billion in FY16 for its animal health segment), Patterson Companies ($2.9 billion), and MWI ($1.9 billion in 2015; acquired by AmerisourceBergen that year) are the dominant distributors. Schein is the most heavily weighted towards pets, claiming access to 75% of veterinarians in the U.S. with a 35% market share and 70% access with 20% market share in the EU. The other two appear fairly balanced in terms of companion animal versus livestock exposure. While the animal health distributor industry is far less consolidated than human health, it isn't difficult to see where it is trending, in our view. Thanks to Zoetis' scale and presence, we are not concerned about this trend and don't think continued consolidation will harm financials. In fact, in certain markets, this trend may help Zoetis expand their reach.

Another key consideration for investors is the consolidation of veterinary clinics. Over the past couple of decades, VCA and Banfield (owned by Mars) have been rolling up vet clinics and hospitals throughout the country. This culminated in the January acquisition of VCA by Mars, joining 800 VCA locations with 900 Banfield hospitals. When we asked Zoetis about the acquisition, they stated they believe the increase in purchasing power will be offset by volume and footprint increase. We agree, and remind investors that **the combined entity will still only be roughly 5% of all practices in the country and an estimated 7% of small animal practices, although it is likely the combined entity will have a market share higher than those numbers.** Based on data from the AVMA about the number of practices versus the number of firms, we estimate only 9% of all practices (11% of small animal practices) are part of a larger company. **While we expect consolidation to continue due to investor appetite and veterinary demographics (willing sellers), we don't believe it presents a problem for Zoetis at this point in time or in the near future.**

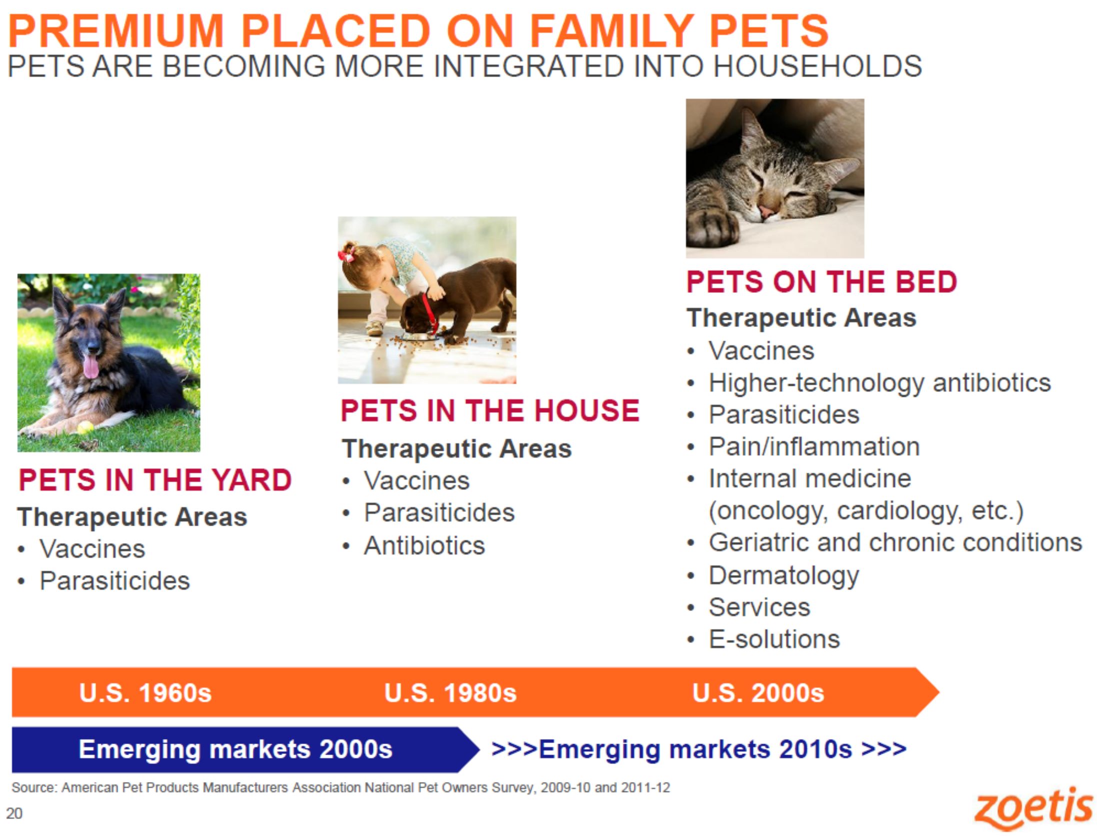
A final trend for investors to consider in the U.S. CA landscape is the growth of pet insurance. According to the North American Pet Health Insurance Association (NAPHIA), 1.6 million pets (1.4 million in the U.S.) were insured at the end of 2015, growth of 12.0% from 2014. Further, only 3% of those plans were accident only while the other 97% were accident and illness with embedded wellness plans. Accident plans averaged $160 in premiums and the accident and illness plans averaged $464 per pet, bringing the industry premiums to $774 million ($688.9 million in the U.S.). Those wellness plans ensure consistent revenue for veterinarians and animal health suppliers alike. **At this point in time, insurance growth is likely to help vet clinics and companies like Zoetis due to the prevalence of wellness plans. Further, with less than 1% of pets covered, the industry is nowhere near powerful enough to start looking like managed care and having pricing power.** However, rapid growth and the rise of disruptors like Trupanion, which gets reimbursed from the veterinarian unlike most of the industry, could change that dynamic over time. Thus, much like veterinary clinic consolidation, we are not concerned about pet insurance at the moment – we actually believe its growth is healthy for clinics and suppliers – but it is worth keeping an eye on, in our view.

International Differences

According to the International Federation for Animal Health (IFAH), the European animal health market is only about $6 billion, and that includes livestock. Estimates suggest the European market is roughly split down the middle between CA and livestock. **The European market has some characteristics that make the dynamics of the market noticeably different from the United States. First, Europe has a higher rate of cat ownership versus dogs, an important fact considering lower medical intensity for felines.** Additionally, pet ownership rates, while varying country to country, are lower than the U.S. Ownership rates for cats and dogs vary around 25% compared to 38% for cats and 48% for dogs in the U.S. Second, **veterinary generics, while still not rivaling their impact on human medicine, play a much larger role.** According to the European Group for Generic Veterinary Products (EGGVP), the veterinary generic industry generated about $1.5 billion in revenue in 2015 (including livestock). According to the Federation of Veterinarians of Europe (FVE), European vets only derive 13% of practice revenues from the sale of medications, roughly half the rate of U.S. clinics. The lower dependence on medicinal sales likely results in a greater willingness to embrace generics, in our view. Nevertheless, veterinarians still have a tight grip on dispensing, as 19 of 22 EGGVP members are "veterinary only" companies. **Finally, another key difference between the EU and U.S. is the prevalence of pet insurance. Pet insurance coverage ranges from a low of 5% in France to a high of 40% in Sweden, according to Trupanion investor presentations.**

The European regulatory framework runs fairly in line with the human pharmaceuticals market. The Committee for Veterinary Medicinal Products (CVMP), housed within the European Medicines Agency (EMA), reviews submissions for new drugs or vaccines and issues an opinion on approval. From there, the European Commission (EC) reviews the opinion and renders a decision for market authorization. A second option allows products to be registered in the EU via a decentralized route under the supervision of the Coordination Group for Mutual Recognition and Decentralized Procedures - Veterinary (CMDv), which is composed of one representative from each national regulatory agency. The CMDv reviews submissions and requests mutual recognition of the opinion from other members. Finally, products can be registered for an individual country with that country's regulatory authority. Investors should be aware most industry participants complain the EU requires more "defensive R&D" – re-registering old products to either meet new requirements or prevent them from being removed from the market.

Zoetis and peers point to emerging markets as a tremendous growth opportunity for the CA health market, and contrary to what some may assume, the groundwork is already in place for that to happen. Pet ownership rates vary significantly from country to country in the emerging world, but quite a few key markets show high levels of ownership. For example, Brazil is number two in total dog population in the world. Brazil also has the highest rate of small dog ownership in the world, and Mexico is not far behind in that metric. Although India has one of the lowest rates of pet ownership, Euromonitor data shows there was 58% growth in the number of canine pets from 2007 to 2012. The *Times of India* published an article about freshly prepared food delivery – for dogs. In sheer numbers, not ownership rates, Russia and China rank in the top four in cat and dog population in the world. **According to The Freedonia Group, pet spending in Brazil, Russia, and China has been growing over 15% in recent years. Thus, emerging markets have tremendous potential, but medicalization significantly lags the developed world, as one might expect. According to Zoetis, this gap is likely to close over time due to increasingly tight bonds developing between pets and owners in emerging markets:**



Source: Zoetis Investor Day presentation, November 2014

Key Products and Competitive Landscape

Brand	Therapeutic Area	Primary Species
Clavamox / Synulox	Antibiotic	Dogs & Cats
Convenia	Antibiotic	Dogs & Cats
Vangaurd L4	Vaccine	Dogs
Vangaurd line	Vaccine	Dogs
ProHeart	Parasiticide	Dogs
Revolution / Stronghold	Parasiticide	Dogs & Cats
Apoquel	Other - dermatitis	Dogs
Cerenia	Other - vomiting	Dogs & Cats
Rimadyl	Other - analgesia	Dogs

CA products over 1% of 2016 revenue; Source: Zoetis 10-K

We view the competitive landscape on the CA side of the business as more fragmented than the livestock business. Within this sprinkled landscape, we view Zoetis as having the broadest portfolio in CA and, frankly, it's not even close in our opinion. We acknowledge Merck Animal Health and Virbac for their well-rounded canine portfolio, but both competitors clearly trail in feline treatment breadth. The portfolio breadth is an important consideration when negotiating with a distributor. Additionally, veterinarians appreciate the numerous tools Zoetis provides them with and this reinforces brand loyalty and recognition. One interesting note for investors: we have read numerous articles in veterinary publications discussing the need to shake the perception that cats do not need as much medical attention and therefore increase visits from cats. If the veterinary profession can succeed, Zoetis' positioning in the feline field could be a lucrative opportunity.

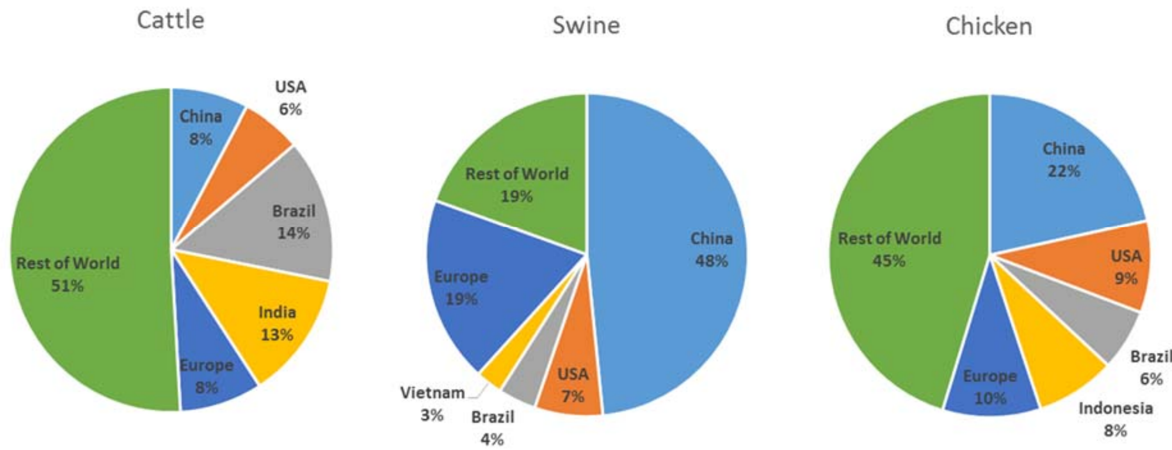
This portfolio breadth does not equate to strength in every therapeutic category though. **Zoetis fell behind the field in canine parasiticides, as competitors introduced chewable solutions** for flea, tick, and/or worm prevention that are obviously more convenient and typically more effective as well. However, Zoetis started playing catch-up last year with the introduction of **Simparica**, a monthly chewable for protection against fleas and ticks. We believe Simparica is a strong competitor in the space, but Zoetis will likely have to commit more marketing resources than usual to claw its way back towards the top of the CA parasiticide space. And while we do expect strong growth for Simparica, we don't anticipate the product will necessarily become a top seller. Overall, we view the introduction of chewables, which are regulated by the FDA and require a prescription, as a strong positive for the industry. We believe veterinarians are more likely to recommend the oral solution versus OTC topical solutions.

The weaker positioning in parasiticides is more than compensated for by strength in other areas, in our opinion. We view the Zoetis vaccine lineup as one of the most robust in the industry, although the competition has stiffened recently with relatively new products from competitors and acquisitions and divestitures shifting the landscape. We also view the wide range of options in Zoetis' antibiotic lineup as a strength that allows them to offer a one-stop shop for veterinarians.

When it comes to therapeutic categories outside of the core three (antibiotics, vaccines, and parasiticides), Zoetis has the most enviable portfolio in the industry, in our opinion. The "other" portfolio is led by Apoquel, the first Janus kinase inhibitor approved in the veterinary industry. Apoquel is indicated for the control of pruritus (itching) associated with allergic dermatitis and for the control of atopic dermatitis. Originally approved in the U.S. in 2013, Apoquel has since launched in Europe, Japan, Brazil, and Australia with more to come this year. The product generated $248 million in sales in 2016 and roughly $74 million in 1Q17. Complementing Apoquel is the recently approved Cytopoint, the first canine monoclonal antibody (a non-vaccine biologic). Cytopoint, which is approved only for atopic dermatitis, is administered subcutaneously once every four to eight weeks. Management has stated they believe the Apoquel/ Cytopoint lineup can generate $400 to $500 million annually within the next few years. Other noteworthy products include anti-vomiting medication Cerenia, pain medication Rimadyl, and noise-aversion treatment Sileo. The company also sells Palladia, the first approved (2009) canine cancer treatment. **As the humanization of pets continues and the innovation boom in human medicine gives animal health more targets, we expect specialty drugs to become a bigger part of Zoetis' CA portfolio.**

LIVESTOCK OVERVIEW

Global Overview



2014 share of live animal headcount; Source: Food and Agriculture Organization (FAO)

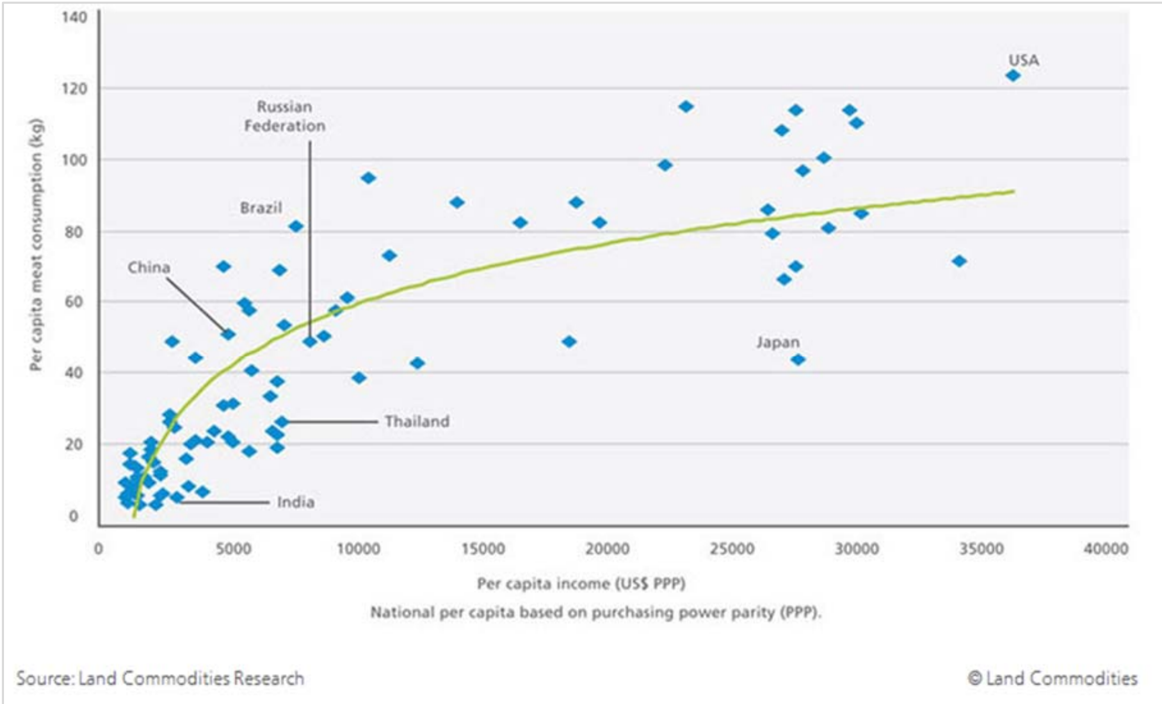
Data based on FY16	Cattle	Swine	Chicken
ZTS Global Market Position	1	2	5
US Rev./ Total Species Rev.	52%	33%	37%

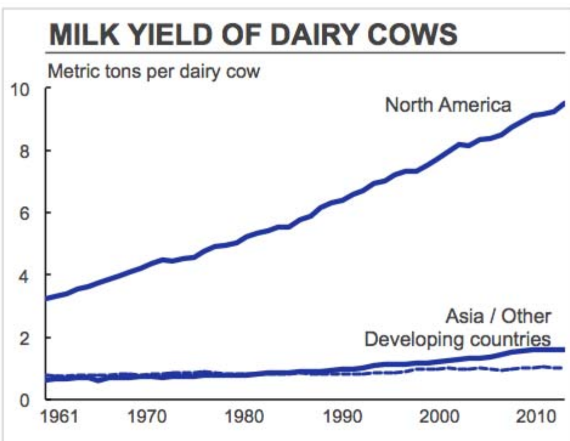
Source: Company Reports, Hilliard Lyons Research

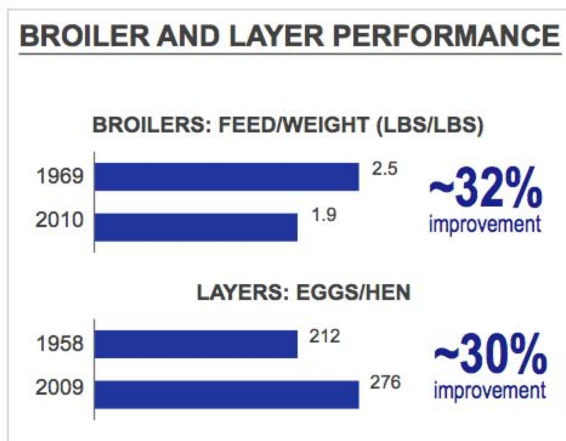
The cattle industry is not only fragmented on a global scale but typically on a local basis as well. For example, according to the National Cattlemen's Beef Association, 91% of beef farms and 80% of feedlots are family-owned or individually operated in the U.S. While that is not necessarily representative of volume market shares, it does indicate the difficulty in reaching the large number of customers. Thus, the cattle business is where Zoetis uses distributors the most on the livestock side of the business. The swine and poultry businesses are more consolidated, both geographically and by industry participants. As such, distributors are used less frequently and the transactions are more often business-to-business.

Although this is the more volatile side of the business due to the commodity exposure, the long-term growth story is not volatile, in our opinion. **There are clear and sustainable growth drivers for this market: the rising demand for protein from rising incomes in emerging markets, and the need to produce more with less land.** According to the World Health Organization, industrialized countries consumed 88.2 kilograms of meat and 212.2 kilograms of milk per year from 1997-1999, while developing countries only consumed 25.5 kg of meat and 44.6 kg of milk. The growing demand for protein is also bolstered by population growth as well. The productivity requirement makes companies like Zoetis very valuable to livestock producers. Farmers turn to Zoetis to protect their investments by keeping animals healthy and maximizing yield. And because all participants are subjected to a competitive commodity business, all products must provide economic value. **Despite the cyclical nature of the livestock business, Zoetis and competitors in animal health experience a lower level of volatility than the livestock industry as a whole because producers cut back on other supplies before reducing expenditures on medicines.** This isn't to say the animal health industry is completely immune to livestock prices and margins; antibiotics are typically among the first of Zoetis' portfolio to feel an impact.

Meat Consumption vs. Per Capita Income







Source: Zoetis Investor Day presentation, November 2014

Regulatory Considerations

Within the U.S., regulations generally follow the framework discussed in the CA section, with a few exceptions. For livestock medicines, the drug developer must prepare an Environmental Assessment describing how much of the drug is expected to get into the environment and any potential effects. Further, when medications are for a food-producing animal, the FDA also makes sure that food products made from treated animals—meat, milk, and eggs—are safe for people to eat, and the label must include information about when to discontinue before slaughter. We note the EU has similar measures to restrict residues. **These two key differences increase regulatory costs for developers. According to HealthforAnimals, the average time for a new livestock drug was about two more years and $8 million more dollars compared to a new CA drug.**

Another important consideration for the industry is the regulation of animal feed given the fact most animal health companies manufacture medicated feed additives (MFAs). In the U.S., if additives to animal feed (or even pet food) are intended to have therapeutic effect or affect the structure/ function of the body in a manner other than food (nutrition, aroma, or flavor), the additive is likely to be considered an "animal drug," also referred to as an MFA. Additives or supplements for animal feed that are not generally recognized as safe (GRAS) for use must be approved through a food additive petition (FAP). Typical feed ingredients such as forages, grains, and most minerals and vitamins are GRAS and do not have to go through an approval process.

However, for MFAs, the regulatory landscape in the U.S. has changed dramatically over the past several years due to concerns about antimicrobial resistance. **The previous Veterinary Feed Directive (VFD) required livestock farmers to obtain permission from a licensed veterinarian when using an MFA that is labeled as a VFD drug.** The updated VFD greatly expands what is considered a VFD drug and adds the requirement of an established veterinarian-client-patient-relationship (VCPR) for veterinarian authorization. **Medically important antibiotics (MIAs – those often used in humans as well) are now banned for production purposes, such as growth promotion or feed efficiency, and therefore limited to therapeutic use** (mostly in sick animals but in certain cases for preventative measures). This measure and the bulk of the new VFD rule went into effect in October of 2015. The full impact of the new VFD was felt at the end of 2016 with Guidance #213. This forced label changes to MIAs, eliminating all growth claims, and **moved all over-the-counter MIAs to VFD requirements**. Further, all MFAs that are considered Category II drugs require a withdrawal period if they are not regulated on a no-residue basis (i.e. zero residue may remain in animal or byproducts). **The VFD regulations are expected to hit the poultry and swine businesses the hardest, as those two species are more likely to consume MFAs.**

Zoetis sold $1.3 billion in antibacterials to livestock producers in 2016, but management has noted multiple times that they view only about $300 million at risk due to antibiotic resistance concerns. It is important to remember not all antibiotics used for production purposes are used in humans or for diseases that affect humans. Further, reduction in antibacterial usage forces farmers to turn to vaccines and selective breeding using genomics as alternative preventative measures. Zoetis is a top player in both and is committing additional resources in the face of VFD.

Broadly speaking, when it comes to animal feed, EU regulations are far more stringent, but when it comes to antibacterial use, the EU has long banned it for growth promotion (2006). However, the EU previously did not take steps beyond that ban, and its regulatory bodies are in the process of considering updates. Some measures being considered are stern, including additional restrictions on preventative use, restrictions on collective treatment, and/or bans on antibacterials used in humans. It should also be noted some countries, such as France, Sweden, and Denmark, have already implemented stricter measures.

Key Products and Competitive Landscape

Brand	Therapeutic Area	Primary Species
Ceftiofur injectables	Antibiotic	Cattle, swine
Draxxin	Antibiotic	Cattle, swine
Spectramast	Antibiotic	Cattle
Terramycin	Antibiotic	Cattle, poultry, swine
Bovi-Shield	Vaccine	Cattle
Rispoval	Vaccine	Cattle
Suvaxyn / Fostera	Vaccine	Swine
Cydectin	Parasiticide	Cattle
Dectomax	Parasiticide	Cattle, swine
Aureomycin	MFA	Cattle, poultry, swine
BMD	MFA	Poultry, swine
Lasalocid	MFA	Poultry, cattle
Lincomycin	MFA	Poultry, swine
Eazi-Breed CIDR	Other - reproduction	Cattle
Embrex devices	Other - injecting	Poultry
Lutalyse	Other - reproduction	Cattle, swine

Livestock products over 1% of 2016 revenue; Source: Zoetis 10-K

The livestock side of the animal health industry reflects its more consolidated customer base, in our opinion. However, there are still a fair number of competitors, so we still view a broad portfolio as a competitive advantage. **Within the cattle and swine space, the competition is fierce but Zoetis has managed to navigate the landscape thanks to a robust portfolio and additional services.** Other competitors are roughly in line with Zoetis in portfolio breadth in cattle and swine, in our opinion. However, **we believe the service side of the business is what allows Zoetis to lead the market. Consultative services and genomics (cattle only), which are becoming increasingly important**, are some examples that illustrate Zoetis' value to customers. We do note formidable competition from Neogen in cattle genomics. However, with the agri-genomics market growing north of 10%, both companies can manage to achieve strong growth, in our view.

The poultry business has been a source of weakness for Zoetis over the past few years, as their market position fell from #2 in 2014 to #5 in 2016. While part of that was from product rationalization from the efficiency initiative, there has been some international weakness and competitive pressure. Management noted trade problems in Japan in 2Q16. We expect Zoetis to continue to focus on core products and markets, as well as introduce new innovations, to gain back market share. **Given the B2B situation in poultry, however, we expect the push back toward the top to be fairly dependent on new innovations.** We also point to the services of competitors, such as Elanco's Agri Stats data platform, as a tough moat to overcome. Speaking of new innovations, investors should be aware **that the USDA issued a conditional license to Zoetis for an avian flu vaccine** in March of 2016. While management does not expect it to be a significant contributor at this time, another scare could change that, in our opinion; there have been confirmed cases internationally this year. Another way to get new products to the poultry market could be through acquisitions, such as the 2015 purchase of KL Products, which provides automation solutions to hatcheries.

For key products, there are some concerns for investors. Draxxin patents start expiring in May 2018 in Canada and Australia, November 2018 in Europe, and May 2019 in the United States. This is a concern, but we believe the company has managed previous patent expirations well, especially in the livestock segment. **Additionally, lincomycin (sold as Lincomix in the U.S.) and Aureomycin are now VFD drugs.**

TRENDS & FINANCIALS

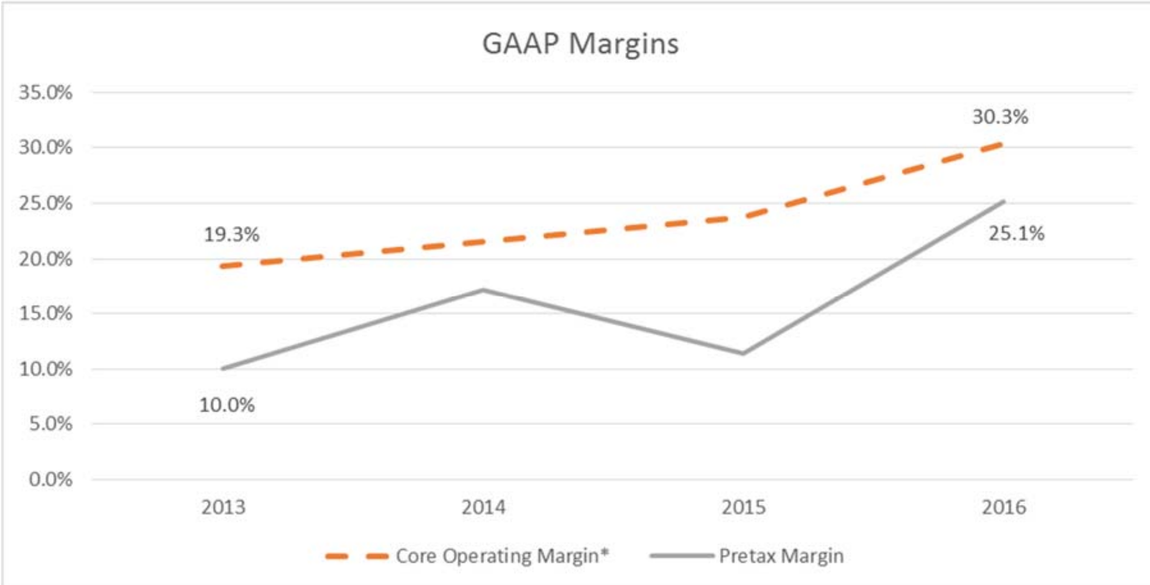
Recent Macro Trends

- Companion Animal – Idexx, which provides practice management to veterinary clinics, suggests practice revenue is growing in the upper-single digits, and consumption surveys from the Bureau of Economic Analysis agree. The American Animal Hospital Association stated 35% of hospitals were growing revenue over 10% versus only 15% experiencing a decline in revenue in 2015.
- Cattle – U.S. milk prices appeared to have bottomed in May of 2016 and looked to be sustaining a rally. However, that reversed course in February and the decline has continued through the end of May. The USDA all grades data for live slaughtered steer shows a nice recovery from the September 2016 bottom. 2015 and 2016 were rough years, as prices plummeted ~41% from peak to trough. The USDA projections point to a rising cattle headcount in the U.S. through 2019 before reversing. We focus on U.S. prices given its importance to Zoetis' cattle business and the fact that cattle prices, while spreads can emerge between geographies from time to time, tend to converge over time.
- Swine – Producer-sold live slaughtered swine prices in the U.S. have been range-bound for the past three years after a multi-year uptrend that began in August of 2008. Chinese pork prices continue to be well above U.S. prices, a trend that began as early as 2006 but the spread grew considerably after Chinese inventories started falling rapidly in 2014 following a change in government policy.
- Poultry – Egg prices appear to have stabilized after spiking and then crashing following the avian flu outbreak in 2015. Fresh whole chicken retail prices have been range-bound after dipping in the fall of 2015.

Zoetis Trends

From a top-line perspective, Zoetis has seen a moderate but noticeable shift toward the CA segment, which has grown from 34% of revenues in 2014 to 40% in 2016, largely on the back of strength in the U.S. Within the CA portfolio, there has been a clear trend toward dogs and cats, as the equine segment has declined the past two years. Within the livestock portfolio, cattle has taken on a bigger role despite the macro headwinds discussed above; Zoetis has remained the number market leader in cattle for the past three years. The modest increase in weighting (56% of livestock revenue in 2014 versus 57% in 2016) is the result of a larger currency impact, industry issues, and competitive pressures in swine and poultry leading to struggles there. Within swine, the launch of a competitive vaccine in 2016 led to a ~16% decline in the U.S. However, Zoetis has already remedied this problem with a combination vaccine launch, which helped stem the bleeding. That, plus strong performance in China, led the swine category to increase (+9.6%) for the first time in six quarters. Within poultry, the international segment declined ~20% and the U.S. declined ~8% in 2016. Another important shift in the livestock business came with the acquisition of Pharmaq in November 2015, marking Zoetis' entry into the aquaculture industry. The Nordic company contributed $90 million in revenue in 2016.

Also impacting the revenue mix was the efficiency initiative the company has embarked on since announcing it with 1Q15 earnings. Despite producing a headwind to revenue as some products were culled, the efficiency initiative clearly paid dividends to the bottom line. The company has completed an ERP implementation, eliminated 5,000 SKUs (stock keeping units), and exited eight manufacturing sites. With the revenue headwinds dissipating after this quarter (2Q17), the efficiency is largely complete. The company has stated there are still two more manufacturing sites to exit, which management believes will deliver another ~200 bps to the gross margin by 2020.



*Source: Company Reports; *Core margin only includes CGS, SG&A, and R&D expenses*

Financial Condition and Capital Allocation

Zoetis' balance sheet is solid, in our view. We view Zoetis as comfortably liquid, with a current ratio of 2.0X and a quick ratio of 1.1X. Total debt/equity finished 1Q17 at 3.7X, one of the lowest in the company's short history. FY16 long-term debt/ EBITDA was 2.7X. The company has stated their goal is to keep gross debt/ EBITDA in the 2.5-3.0X range. Given the consistency of the business and the secular growth story, we are comfortable with this range. Interest payments and the dividend remain well-covered, in our opinion. EBITDA/ net interest was 9.8X in 2016, and free cash flow to equity/ dividend payments was 2.2X in 2016.

Cash flow from operations grew 7% in FY16, and free cash flow grew 15%. The return on average assets for FY16 was 10.7%, and **the return on average equity was an impressive 61.6%**. The company's cash conversion cycle remains slow at well over 300 days due to slow inventory turnover. Several reasons for the slow inventory turnover include seasonality, specialized local needs, and some batch manufacturing. The company has committed to improving that metric.

Zoetis initiated a dividend not long after going public, raising it 15% in 2015, 14% in 2016, and is indicated for 11% this year. The 2016 payout ratio was 23% on a GAAP basis and 19% on a non-GAAP basis. Despite numerous questions from analysts, **management remains committed to a balanced capital return approach and in fact has skewed more toward share repurchases.** The company announced an initial repurchase program in November 2014 for $500 million. When that concluded at the end of 2016, Zoetis announced another share repurchase for $1.5 billion**. Management has stated the share repurchase programs give them more capital flexibility so that when M&A opportunities arise, the company has plenty of uncommitted cash on hand. Given Zoetis' M&A opportunities (more on that below), we strongly agree with management's philosophy.** Management stated on the 1Q17 earnings call that they expect to grow the dividend in line with or faster than adjusted net income. Thus, seems fair to expect the payout ratio to stay around 20% and perhaps creep higher over time. **With our outlook for earnings, we believe investors can expect dividend growth in the low-to-mid double digits in the near term.**

OUTLOOK & ESTIMATES

Outlook

Our outlook for Zoetis is positive. Although M&A is mostly confined to bolt-on acquisitions due to antitrust concerns, we still believe it will be an important contributor. We also believe devices and services will become more significant contributors over time in the livestock segment. A recent example of both themes is the August 2016 acquisition of Scandinavian Micro Biodevices. The company's point-of-care diagnostics should become more valuable to livestock producers whose investments are arguably at higher risk with the VFD regulatory change. **Another non-pharma offering we are bullish on is genomics.** Informed breeding is likely to be a key factor for increasing productivity for animals that are no longer allowed to take antibiotics for growth. **Zoetis' genomic services are offered for cattle only, but we think it is likely the company will expand into the other livestock segments through internal R&D and/or M&A.**

Within CA, we think Zoetis will become the largest player (currently #2) on the back of the dermatology portfolio and to a lesser extent, Simparica. Further, the company is strongly committed to aiding the humanization of pets with investments in biologics. Outside of vaccines, biologics are a new introduction to the CA market, and we believe their complicated nature will strengthen the veterinarian's hold on the prescription market. That, in turn, will build more goodwill for Zoetis, in our opinion. M&A is playing a role here too. Zoetis recently acquired Nexvet Biopharma, which has a monoclonal antibody (a type of biologic) pipeline asset for chronic pain. While some of the luxuries we heap upon our pets makes us worry about "peak pet," we believe medical spending on pets is likely to grow and still hold up in tougher economic situations, given that the focus for those expenditures is based on extending the lives of the furry companions. Further, pet spending only makes up 1% of total consumer spending in the U.S. (although it is admittedly higher for actual owners), so an increasing weighting towards pet expenditures is definitely feasible, in our view.

Over the intermediate term, we expect the following for Zoetis:

- Companion Animal – we expect Zoetis to outperform the high single digit growth market given the company's impressive portfolio and the strength of new and upcoming product launches.
- Cattle – we expect Zoetis to perform roughly in line with the market from a pharmaceutical standpoint. However, we believe diagnostics and genomics will allow the company to outpace the market and therefore maintain their top position.
- Swine – we believe the company can modestly outperform the market due to recent vaccine introductions and strong operations in the massive Chinese market. The company grew Chinese revenues 18% last year and 37% in 1Q17. Admittedly, some of this growth likely included strength in other animal segments as well.
- Poultry – we expect market outperformance more as a result of a turnaround from recent struggles rather than any particular catalyst. We think it could be a slow grind higher in terms of market position in this segment.

Estimates

Given a bullish outlook and confidence in management, we anticipate strong growth for Zoetis. For FY17, we estimate $5.22 billion in revenue, which is at the top end of guidance ($5.10 - $5.23). We expect revenue growth to be driven by double-digit growth in the CA segment, aided by a solid recovery in the livestock segment. With the efficiency initiative wrapping up, we expect continued profit margin expansion, particularly driven by the gross margin. Our GAAP EPS estimate is $2.13 (guidance of $2.08 - $2.20) and our non-GAAP EPS estimate is $2.33 (guidance of $2.26 - $2.36). Zoetis removes purchase accounting adjustments, acquisition-related items, and certain significant items such as restructuring expenses among other items it views as a one-time expense to arrive at the non-GAAP figure.

Turning to FY18, we expect Apoquel growth to start slowing but still be in the mid-teens, and we estimate the drug will reach the $400 million mark. With that strength, we believe CA revenue growth will be in the upper-single digits. We also anticipate a strengthening recovery in cattle to bode well for the livestock segment, leading to mid-single digit growth. We estimate $5.54 billion in revenue for FY18. We expect the gross margin to continue to expand with manufacturing footprint rationalization and Apoquel growth. We think Zoetis can continue to have revenues outpace SG&A and R&D growth, but with the efficiency initiative complete, we think these expenses will not continue to deliver the significant operating leverage they contributed in the past. Our GAAP EPS estimate is $2.44 and our non-GAAP EPS estimate is $2.61. We acknowledge our estimate is below the Street FY18 consensus of $2.66. While we are a bit concerned about the Street's margin expansion assumptions, we are undeterred in our final opinion on the stock.

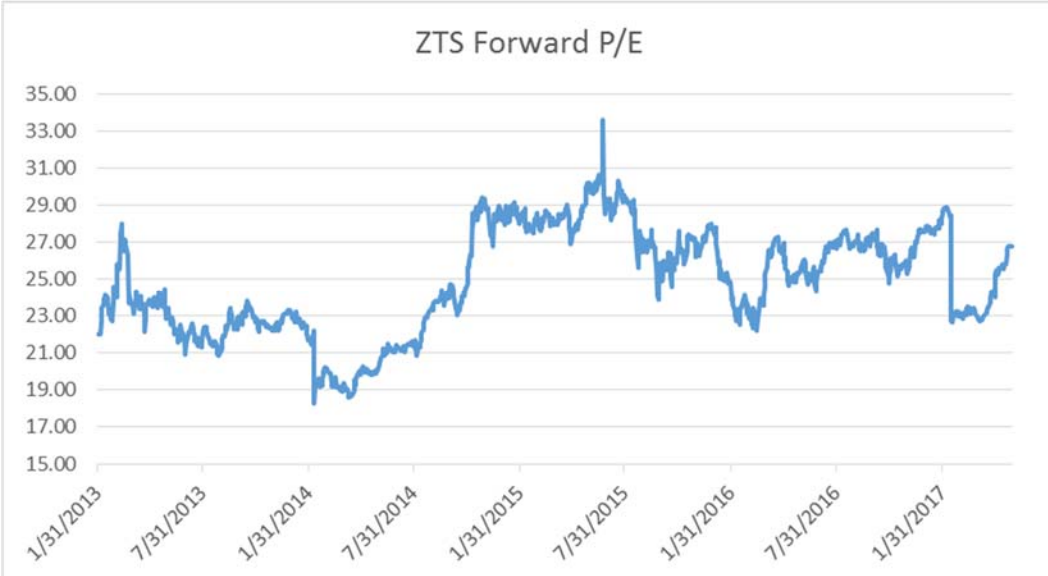
VALUATION, OPINION, & SUITABILITY

Valuation

Zoetis has a limited trading history but has consistently traded at a premium to the broader market. However, the entire animal health industry trades at a substantial premium to the market, as seen in the table below.

	Zoetis	**Average ex. ZTS**	**Idexx Labs**	**Neogen**	**Abaxis**	**Heska**	**Phibro**
Ticker	**ZTS**		**IDXX**	**NEOG**	**ABAX**	**HSKA**	**PAHC**
Price (as of 06/19/17)	$63.03		$164.38	$68.38	$51.55	$93.85	$36.55
Market Cap ($mm)	$30,935		$14,486	$2,607	$1,168	$668	$685
Total Revenue (TTM)	$4,957	$657	$1,820	$353	$221	$133	$759
Trailing P/E	31.4	48.0	60.7	63.3	41.9	50.2	24.0
Forward P/E	26.4	45.5	53.2	54.5	42.4	53.0	24.6
Price/ Book	18.3	7.6	-	5.9	4.6	8.1	11.7
Price/ Free Cash Flow	100.1	135.4	53.7	123.5	90.5	273.9	-
EV/EBITDA	19.0	26.3	34.8	32.9	20.4	32.5	10.8
Indicated Dividend Yield	0.7%	0.5%	0%	0%	1.1%	0.4%	1.1%
FY16 Payout Ratio	20.0%	17.2%	0%	0%	44.0%	16.0%	26.0%
ROE (TTM)	61.6%	25.0%	-	9.8%	13.0%	17.6%	59.4%
NTM Expected Rev. Growth	6.3%	8.8%	9.0%	12.0%	10.3%	10.4%	2.6%
NTM Expected EPS Growth	18.9%	4.3%	14.0%	15.7%	-0.8%	-5.3%	-2.0%
TTM Gross Margin (%)	68.5	49.4	59.7	51.4	55.4	45.2	35.3
TTM Operating Margin (%)	28.6	16.6	20.3	17.5	19.6	13.0	12.5
TTM Net Profit Margin (%)	17.2	11.7	13.5	11.7	14.4	10.4	8.5
R&D/ Revenues (FY16)	7.7%	4.2%	5.7%	3.1%	9.0%	1.7%	1.5%
Debt/ Total Capital (%)	70.0	17.3	-	0.0	0.0	0.0	69.0
Current Ratio (FY16)	3.0	4.3	0.9	8.7	7.0	1.7	3.2
Business differences (vs. ZTS)			Pet Diagnostics	Food Diagnostics	Human Diagnostics	Pet Diagnostics	Livestock focus

Source: Thomson Reuters, Hilliard Lyons Research



Source: Thomson Reuters

The forward P/E of Zoetis has bounced around considerably over its short trading life, but we note a significant boost when activist investor Bill Ackman took a position in November of 2014. We believe this event focused investors on the potential for margin expansion (the company subsequently announced the efficiency initiative), as well as the **substantial returns on average equity (45.5% average over past four years) the company can generate.**

Thus, to determine our price target, we took the average P/E seen since the Ackman stake was announced (~26.7X) and looked at a DCF model as well to incorporate impressive cash flow generation. Applying the 26.7X multiple to our 2H18 / 1H19 non-GAAP EPS estimate, we derive a $74 price target. Using a WACC of 9.3% and a two-stage growth model for free cash flow to equity, we calculate an $80 price target. We use the two-stage growth model due to confidence in the intermediate outlook for the company. However, we think it would be too aggressive to use our 7% growth rate (used for five years beyond our FY19 estimates) into perpetuity. Thus, our second stage growth rate assumption is a much more conservative 3%. Taking the average of these two valuation methodologies, we derive a $77 price target.

With our bullish outlook for the company and the industry, confidence in the management team, and an attractive return to our price target, we are reinstating coverage with a Buy rating.

Suitability

Zoetis is well diversified in terms of products, customer base, and geographies. Their industry has an attractive secular growth profile and the CA segment is recession-resistant, in our view. However, the company's livestock customer base is subjected to commodity cycles. Further, Zoetis has a limited history as a publicly traded company and is fairly levered. Finally, we view the company's status as a growth stock as another risk to consider. Given these factors, our suitability rating is a 2.

RISKS & CONSIDERATIONS

- **Dependence on livestock industry** – Zoetis derives a significant amount of revenue from customers in or associated with the agricultural industry, which is subject to many factors beyond their control, such as weather or disease outbreaks.
- **Changes in consumer attitudes –** The companion animal business is dependent on consumers continuing to view their pets as a member of the family and treating them accordingly. A change in this attitude could halt the humanization of pets and harm Zoetis' outlook.
- **Competition –** The animal health business is highly competitive and attracts significant capital and new competitors. Innovative new products or solutions from competitors could displace Zoetis products.
- **Integration of acquisitions** – Zoetis has been fairly acquisitive throughout its history, and we anticipate that to continue. Failure to successfully integrate acquisitions could lead to financial results below expectations.
- **Failure of R&D and/or new products** – Zoetis also internally develops new products and product lines. Failure to successfully develop and sell new products could harm profitability.
- **Legal** – Product lawsuits are common in the health care sector. An unfavorable court decision could hamper the ability to market a product, whether a current patent under Zoetis is successfully challenged or Zoetis is determined to have infringed upon the patent of a competitor.
- **Regulatory** – Most Zoetis products must go through various regulatory agencies for approval. Further, the companion animal market could undergo a significant shift if any new regulations are introduced regarding veterinary prescription practices. On the other side of the business, the livestock industry is also subjected to significant regulatory requirements and oversight. These situations create uncertainty for both Zoetis and its customers.
- **Emerging markets exposure –** Zoetis derives a significant portion of its revenues (~22% in 2016) from emerging markets. These markets tend to be riskier due to political, economic, and/or currency instability.

ZOETIS INC.										ZTS: BUY
In millions	2014	2015	2016	1Q17 A	2Q17 E	3Q17 E	4Q17 E	2017 E	2018 E	2019 E
*Fiscal Period End**	12/31/2014	12/31/2015	12/31/2016	4/2/2017	7/2/2017	10/1/2017	12/31/2017	12/31/2017	12/31/2018	12/31/2019
Income Statement										
Livestock	3,103	2,958	2,881	703	695	769	839	3,006	3,178	3,360
Companion Animal	1,632	1,756	1,956	517	578	541	528	2,164	2,312	2,454
Other	50	51	51	11	12	16	10	49	50	51
Total Revenue	**4,785**	**4,765**	**4,888**	**1,231**	**1,285**	**1,326**	**1,377**	**5,219**	**5,540**	**5,865**
Gross Profit	**3,068**	**3,027**	**3,222**	**788**	**860**	**915**	**907**	**3,469**	**3,729**	**3,970**
Gross Margin %	*64.1%*	*63.5%*	*65.9%*	*64.0%*	*66.9%*	*69.0%*	*65.9%*	*66.5%*	*67.3%*	*67.7%*
SG&A	1,643	1,532	1,364	309	329	342	365	1,345	1,384	1,439
R&D	396	364	376	90	86	89	107	372	386	402
Core Operating Income	**1,029**	**1,131**	**1,482**	**389**	**445**	**484**	**435**	**1,752**	**1,959**	**2,129**
Core Operating Margin %	*21.5%*	*23.7%*	*30.3%*	*31.6%*	*34.6%*	*36.5%*	*31.6%*	*33.6%*	*35.4%*	*36.3%*
Non-core Expenses**	209	586	254	52	73	66	64	255	258	255
GAAP Pretax Income	**820**	**545**	**1,228**	**337**	**372**	**418**	**371**	**1,497**	**1,701**	**1,874**
GAAP Pretax Margin %	*17.1%*	*11.4%*	*25.1%*	*27.4%*	*28.9%*	*31.5%*	*26.9%*	*28.7%*	*30.7%*	*32.0%*
Effective Tax Rate	*28.4%*	*37.8%*	*33.3%*	*29.1%*	*30.5%*	*30.5%*	*29.0%*	*29.8%*	*29.8%*	*29.6%*
GAAP Net Income***	**583**	**339**	**821**	**238**	**258**	**290**	**263**	**1,049**	**1,194**	**1,319**
Non-GAAP Adjustments	207	550	154	23	26	26	26	101	84	82
Non-GAAP Net Income	**790**	**889**	**975**	**261**	**284**	**316**	**289**	**1,150**	**1,278**	**1,401**
Diluted Shares O/S	502.0	502.0	498.2	495.3	494.1	492.8	491.6	493.4	488.7	484.6
GAAP Diluted EPS	**$ 1.16**	**$ 0.68**	**$ 1.65**	**$ 0.48**	**$ 0.52**	**$ 0.59**	**$ 0.54**	**$ 2.13**	**$ 2.44**	**$ 2.72**
Non-GAAP Diluted EPS	**$ 1.57**	**$ 1.77**	**$ 1.96**	**$ 0.53**	**$ 0.57**	**$ 0.64**	**$ 0.59**	**$ 2.33**	**$ 2.61**	**$ 2.89**
Dividends per share	**$ 0.288**	**$ 0.332**	**$ 0.380**	**$ 0.105**	**$ 0.105**	**$ 0.105**	**$ 0.105**	**$ 0.420**	**$ 0.480**	**$ 0.560**
Balance Sheet										
Cash and Equivalents	882	1,154	727	629	816	1,025	1,165	1,165	2,098	2,799
Other Current Assets	2,583	2,676	2,663	2,754	2,704	2,689	2,829	2,829	2,854	2,948
Total Current Assets	**3,465**	**3,830**	**3,390**	**3,383**	**3,520**	**3,715**	**3,994**	**3,994**	**4,952**	**5,747**
Net PP&E	1,318	1,307	1,381	1,368	1,390	1,406	1,421	1,421	1,495	1,574
Other Assets	1,805	2,776	2,878	2,898	2,876	2,855	2,834	2,834	2,802	2,772
Total Assets	**6,588**	**7,913**	**7,649**	**7,649**	**7,785**	**7,976**	**8,249**	**8,249**	**9,249**	**10,092**
Current Liabilities	1,086	1,781	1,117	1,730	1,735	1,765	1,906	1,906	1,232	1,795
Non-Current Liabilities	4,165	5,041	5,033	4,284	4,285	4,286	4,287	4,287	5,291	4,795
Total Liabilities	**5,251**	**6,822**	**6,150**	**6,014**	**6,020**	**6,051**	**6,193**	**6,193**	**6,523**	**6,590**
Total Shareholders' Equity	**1,337**	**1,091**	**1,499**	**1,635**	**1,766**	**1,924**	**2,056**	**2,056**	**2,726**	**3,502**
Cash Flow Statement										
Cash Flow from Operations	626	664	713	119	417	434	364	1,334	1,638	1,687
Cash Flow from Investing	(187)	(1,115)	(214)	(48)	(60)	(55)	(55)	(218)	(235)	(249)
Cash Flow from Financing	(154)	755	(903)	(176)	(170)	(170)	(170)	(685)	(470)	(737)
Free Cash Flow to Equity	**446**	**1,557**	**94**	**77**	**357**	**379**	**309**	**1,122**	**1,653**	**1,438**

**Zoetis fiscal periods end on Sundays, with the exception of year-end, which is always December 31st*
***Includes amortization, restructuring and M&A costs, net interest expense, and other expenses*
****Includes allocation to non-controlling interests, which are not shown in this table*
Source: Company Reports and Hilliard Lyons estimates

Additional information is available upon request.

Price of other stocks mentioned: Pfizer Inc. (PFE - $33.22)
Abbott Laboratories (ABT - $48.89)
Humana Inc. (HUM - $235.49)
AT&T Inc. (T - $38.91)

Fifth Third Bancorp (FITB - $25.59)
Bristol-Myers Squibb (BMY - $55.22) - Long-term Buy, $65 PT
Eli Lilly & Co. (LLY - $82.34) - Long-term Buy, $93 PT
Merck & Co. (MRK - $63.68)
Sanofi (SNY - $48.57)
Bayer (BAYRY - $137.71)
Idexx Laboratories (IDXX - $164.38)
Abaxis Inc. (ABAX - $51.55)
Heska Corp. (HSKA - $93.85)
Neogen Corp. (NEOG - $68.38) – Neutral
Phibro Animal Health Corp (PAHC - $36.55)
Aratana Therapeutics (PETX - $6.78)
Kindred Biosciences (KIN - $7.00)
Quintiles IMS Holdings (Q - $87.87)
PetMed Express (PETS - $38.33)
Henry Schein (HSIC - $185.06)
Patterson Companies (PDCO - $47.23)
AmerisourceBergen Corp. (ABC - $93.75)
VCA Inc. (WOOF - $92.60)
Trupanion Inc. (TRUP - $20.57)
Thomson Reuters Corp. (TRI - $46.69)

Analyst Certification

I, Kurt A. Kemper, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject company(ies) and its (their) securities. I also certify that I have not been, am not, and will not be receiving direct or indirect compensation in exchange for expressing the specific recommendation(s) in this report.

Important Disclosures

Hilliard Lyons' analysts receive bonus compensation based on Hilliard Lyons' profitability. They do not receive direct payments from investment banking activity.

Definitions of Ratings:
Buy - We believe the stock has significant total return potential in the coming 12 months.
Long-term Buy - We believe the stock is an above average holding in its sector, and expect solid returns to be realized over a longer time frame than our Buy rated issues, typically 2-3 years.
Neutral - We believe the stock is an average holding in its sector, is currently fully valued, and may be used as a source of funds if better opportunities arise.
Underperform - We believe the stock is vulnerable to a price set back in the next 12 months.

Definitions of Suitabilities:
1. A large cap, core holding with a solid history.
2. A historically secure company which could be cyclical, has a shorter history than a "1" or is subject to event driven setbacks.
3. An above average risk/reward ratio could be due to small size, lack of product diversity, sporadic earnings or high leverage.
4. Speculative, due to small size, inconsistent profitability, erratic revenue, volatility, low trading volume or a narrow customer or product base

	Hilliard Lyons Recommended Issues		Investment Banking Provided in Past 12 Mo.	
Rating	**# of Stocks Covered**	**% of Stocks Covered**	**Banking**	**No Banking**
Buy	34	27%	12%	88%
Hold/Neutral	80	65%	8%	93%
Sell	10	8%	0%	100%

As of 7 June 2017

Other Disclosures

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