Market Leaders vs. Underperformers

A Historical Analysis of Top Equities and Negative Performers

Prepared by the Guava Capital 2023 Intern Class:

William Grawemeyer: wgrawemeyer@uchicago.edu
Ellen Hou: ellenhou@wharton.upenn.edu

For Questions and Inquiries Please Contact: info@guavacapital.com

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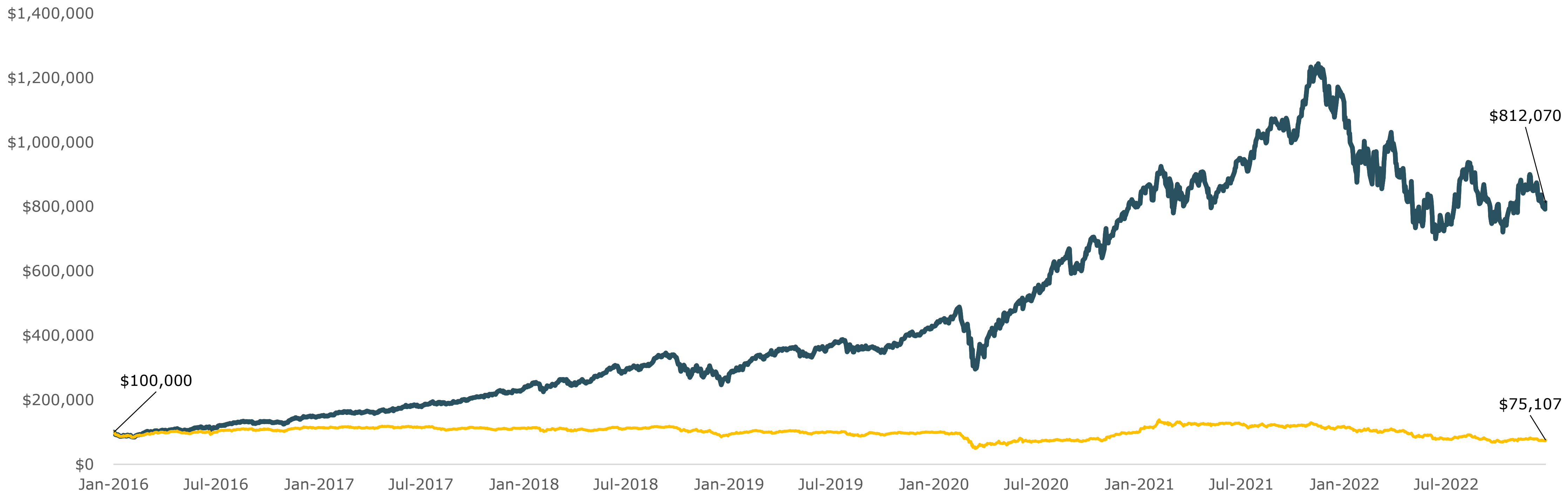
Project Overview

General Overview & Purpose

This project creates and analyzes cohorts of 35 of the best and worst performing companies during the period of January 2016 to December 2022 based on total shareholder return. Using Hamilton Helmer's 7 Powers framework, we examine how each company developed and maintained its competitive advantage during that period. We identify common traits among top performers and cross-reference them against underperforming companies to understand where they faltered.

Despite perceived competitive advantages in 2016, companies like Intel and Under Armour underperformed, while others like Saia and Etsy exceeded expectations. The project underscores how the direction of a company's competitive advantage can differentiate a 700+% return from a 25% loss in value over seven-years.

$100,000 Invested in a Portfolio of Top 35 & Bottom 35 Companies*



*$100,000 weighted portfolio was initially equally split in all top 35 companies and all bottom 35 companies

Stock Selection Process

Stock Universe
All companies that actively traded on the NYSE and NASDAQ during the specified time period

Time Frame
01/01/2016 through 12/31/2022

Country of Domicile
United States

Market Cap (as of 2016)
Greater than $500 million USD as of 01/01/2016

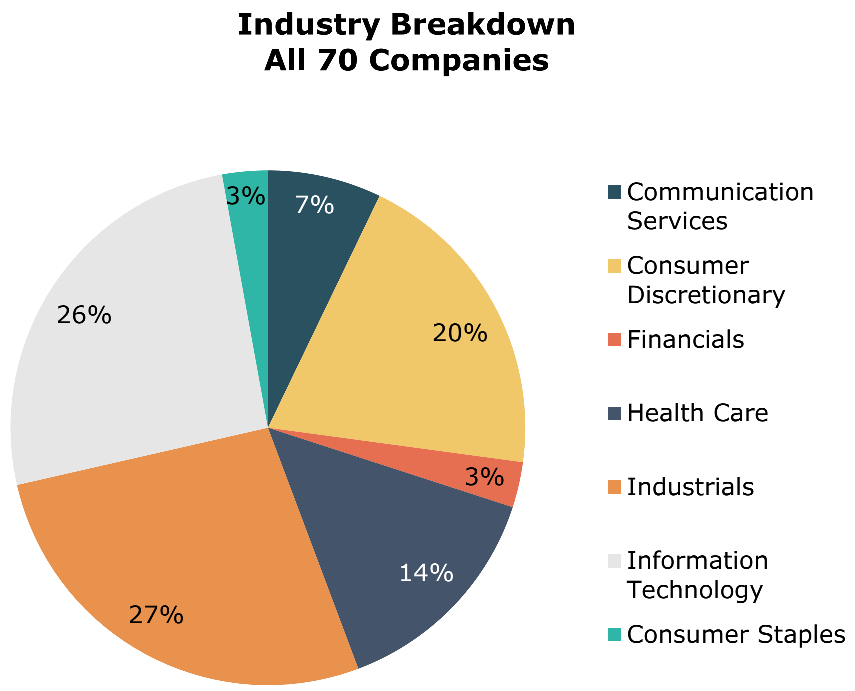
Best Performance Definition
Highest total shareholder return over the seven-year period

Industry Exclusions (BICS Sectors)
Utilities, Biotechnology, Oil & Gas Producers, Materials, Government, Banking, Real Estate Investment Trusts

Industry Breakdown

Industry Screen Criteria

We screened for companies using Bloomberg in the following GICS sectors: Communication Services, Consumer discretionary, Consumer Services, Consumer Staples, Financials, Health Care, Industrials, Information Technology, and Real Estate. Our screen excluded the Energy, Materials, and Utilities sectors.



Total Observed Companies vs. Investable Universe

Our investable universe consisted of 1,053 stocks across 9 GICS sectors that met our initial screening criteria.

	Total Observed Companies (70)	Investable Universe
Communication Services	7.14%	6.27%
Consumer Discretionary	20.00%	19.56%
Financials	2.86%	17.00%
Health Care	14.29%	8.93%
Industrials	27.14%	23.74%
Information Technology	25.71%	15.67%
Consumer Staples	2.86%	7.69%
Real Estate	0.00%	1.14%

Over-represented

Under-Represented

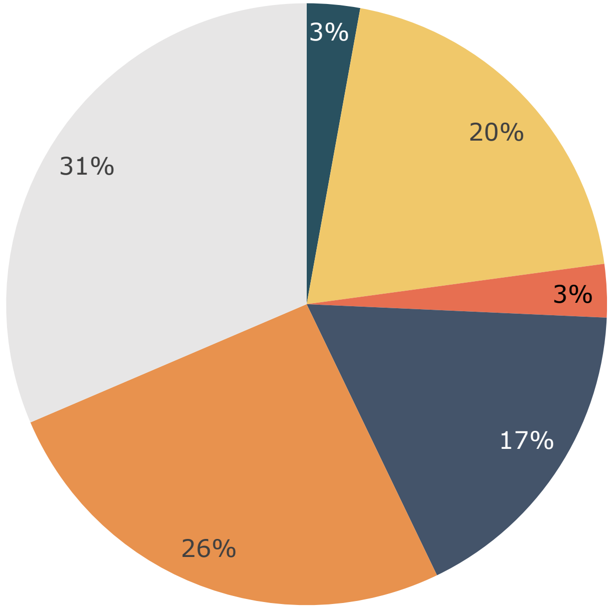
Industry Breakdown cont.

When selecting our Top 35 Companies, we excluded certain stocks that were in over-represented industries in the top performers screen to prevent over-saturation of singular sectors. For example, we excluded certain semiconductor companies to ensure that our Top 35 set was well-distributed across industries.

To understand the effects of survivorship bias, we hand-picked the Bottom 35 Companies from the negative performing stock screen to roughly match the industry breakdown of the Top 35 Companies we selected.

Industry Breakdown
Top 35 Companies

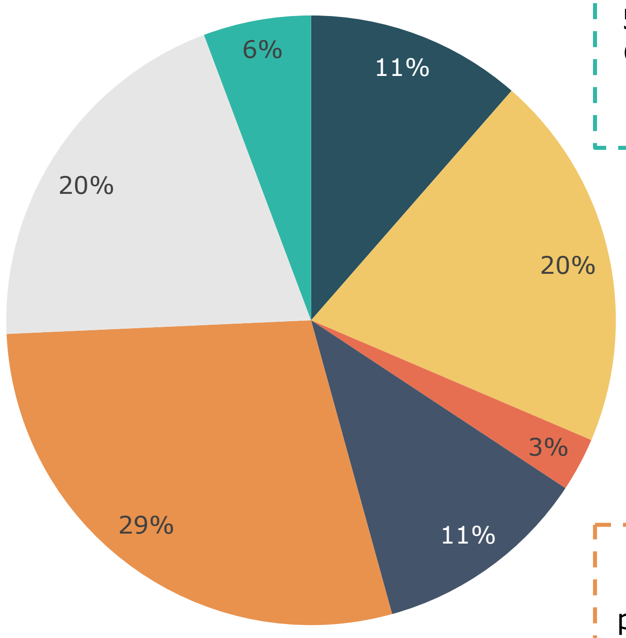
Information Technology represented 31.43% of the Top 35 Companies, while they only represented 20% of the bottom performers



Health Care was over-represented in the top performers relative to the negative performers, making up 17.14% of the top compared to 11.34% of the bottom

Industry Breakdown
Bottom 35 Companies

The Consumer Staples sector represented 5.71% of the Bottom 25 Companies, while it was not present in the top performers



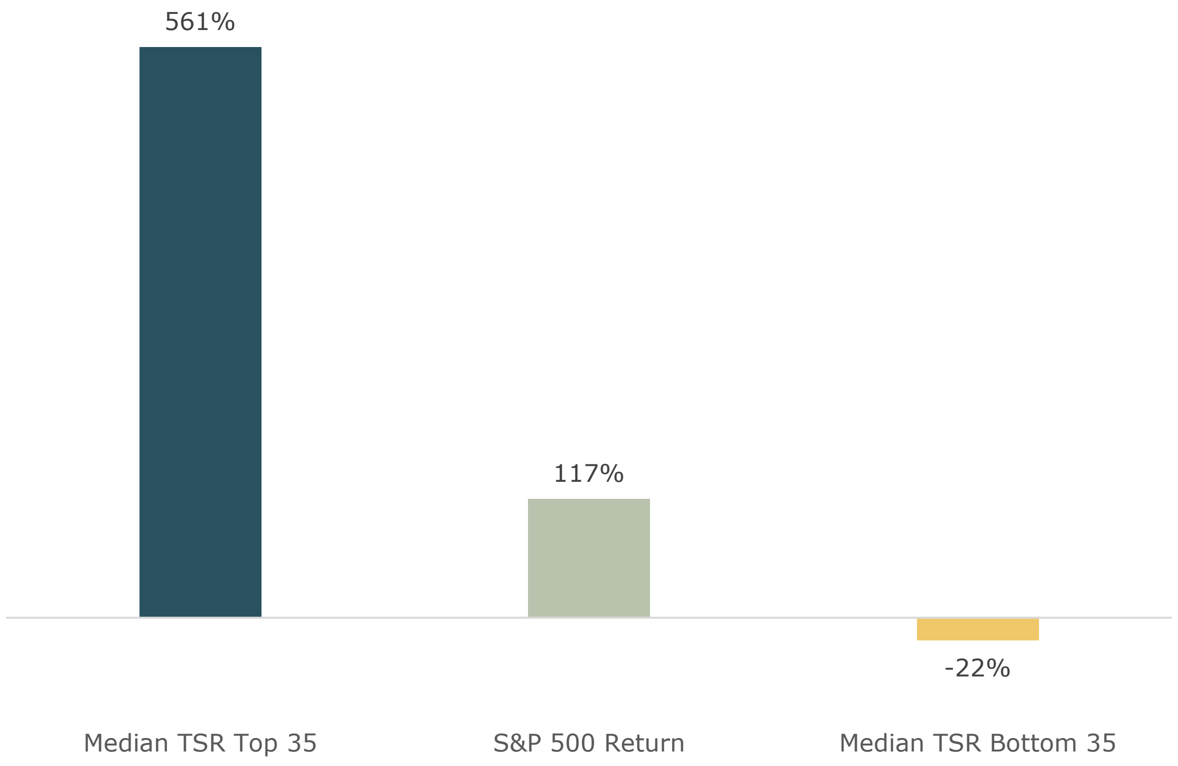
Industrials made up 28.57% of the under-performers, compared to 25.71% of the top

Communication Services | Consumer Discretionary | Financials | Health Care | Industrials | Information Technology | Consumer Staples

Shareholder Return Comparison

Total Shareholder Return

The analysis period is primarily characterized by a bull market, with the S&P 500 posting a 117% gain. The median return for the Top 35 cohort was 561%, outperforming the S&P 500 by 444%. The median return for bottom 35 companies was -22%, underperforming the S&P 500 by 139%.



Notable Companies

Advanced Micro Devices (AMD): saw an increase of over 2,238% since 2016, making the company the highest performer of our top 35 list.

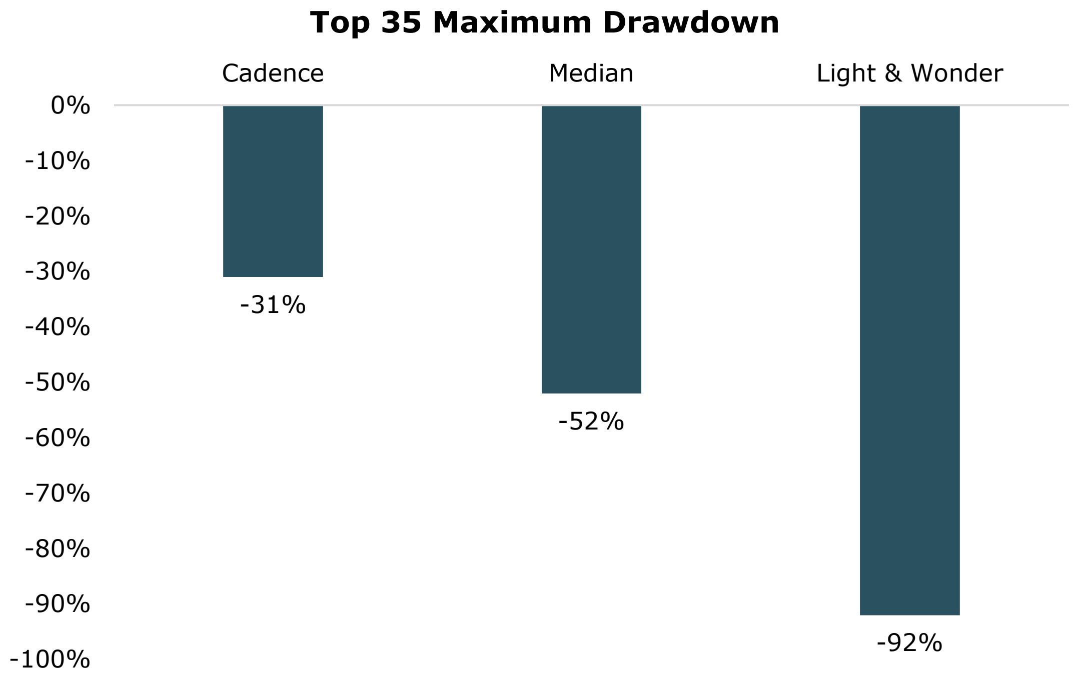
Yelp (YELP): drew down only 0.9% over the seven-year period yet underperformed the S&P 500 index by nearly 120%.

Tripadvisor (TRIP): was the worst performing company of the project, decreasing 78% from 2016 to 2022 and underperforming the index by 195%.

Drawdown Comparison – Top 35

Volatility

When investing in a long-term horizon, investors must stay cognizant of the possibility of sustaining their positions through periods of volatility. Despite each of the top 35 companies returning over 400% over a seven-year period, all 35 companies also saw large drawdowns in share price. The median drawdown was roughly -52% with 11 companies dropping over -60% at some point during the time frame. Investors must stay confidant and trust the fundamental analysis of a company through these largescale drawdown to realize 400+% returns. No company exhibited a drop of less than 30% over the analysis period. Volatility will always exist in financial markets, and it is therefore important to be able to withstand sudden price movements for long-term benefits.



Notable Companies

Cadence (CDNS): was the company with the least extreme drawdown, yet still lost over 30% of its value in a two-month period despite displaying a TSR of 682.5% over the seven-years.

Tesla (TSLA): exhibited extreme volatility, with 15 drawdowns of 20+% and five 40+% drawdowns during the period, yet the stock still returned 727% for investors who weathered the many storms.

Light & Wonder (LNW): saw a 92% drawdown before rebounding with a ~750% increase in share price from the company’s lows.

Nvidia (NVDA): The second highest performing company of the past seven-years saw two massive 55+% drawdowns on top of six 20+% drawdowns. Investors who had the tolerance to hold NVDA through this volatility realized returns of over 1,700%.

High Level Takeaways – Top 35

Recurring Themes	Notable Companies

Niche Market Dominance

40% of companies, 14 out of the top 35, exhibited niche market dominance in their industries. In dominating a specific industry vertical, companies can create monopolistic advantages while evading government scrutiny. Companies who dominate their niche often have substantial pricing power because they face less competition, allowing them to maintain higher profit margins. The semiconductor industry, for instance, became extremely fragmented over the period, with specific companies dominating an industry vertical.

Etsy (ETSY): achieved niche market dominance in the handmade goods sector by focusing on a previously untapped market, establishing a strong base of buyers and sellers, and offering an alternative to homogenized products from competitors like Amazon.

KLA (KLAC): has dominated the semiconductor process control industry, a crucial niche market in advanced semiconductor manufacturing, through innovation, increased R&D spending, and maintaining 4x the market share of its closest competitors.

Product Innovation

Innovation proved to be a crucial determinant of shareholder return, with 8 of the top 35 companies exhibiting product innovation for the purpose of staying ahead of their competitors, breaking into new markets, and maintaining their competitive position within an advancing industry. Companies who offer innovative products that are better than competitors derive shareholder return through increasing revenues and market expansion, as more customers desire the best product on the market at any given time.

Insulet (PODD): exhibited vast product innovation through its Omnipod diabetes management system. The sleek and easy-to-use device quickly began to dominate markets and carve out market share for Insulet.

Builders FirstSource (BFS): revolutionized the homebuilding industry through software solutions and pre-cut home frames that has made the building process much more efficient for their customers. Their flagship READY-Frame product has improved the homebuilding process and drove shareholder return for BFS.

Industry Tailwinds

40% of the Top 35 performers, or 14 of the 35 companies, saw significant shareholder return attributed to industry tailwinds. In particular, the semiconductor, informational technology, diabetes care, used car, infrastructure, agriculture, and residential building markets saw significant growth throughout the period. Numerous companies in the observed set benefitted from increasing customer bases, commodity price increases, government spending, rapid technological innovation, etc.

Advanced Micro Devices (AMD): benefitted immensely from the global chip shortage. It started in 2020 and carried on into 2022 due to lockdowns from the COVID-19 pandemic coupled with rapid technological innovation. At its peak, global semiconductor revenue saw 26.3% growth in 2021 alone.

John Deere (DE): benefitted from increased in food commodity prices due to farmers making up majority of their customer base. As food prices increased in 2020, so did farm net income, and Deere benefitted from higher farm spending.

High Level Takeaways – Bottom 35

Recurring Themes

Increased Competition

In the absence of a strong moat, many companies began to suffer from increased competition. Competition, by nature, erodes profits. Companies who could not defend their profits ceded them to a competitor. 22 of our bottom 35, ~63%, fell victim to increased competition with an indefensible moat.

Lack of Innovation

11 of our bottom 35 companies, ~31%, exhibited a lack of innovation in their core product offerings. Companies who did not innovate to stay on the cutting-edge of their industry saw competitors erode profit margins. While many companies see initial success in their new products, they must continue to innovate and develop to maintain profits and a stable customer base.

Operational Inefficiencies

Among the 35 underperforming entities, 11 of them grappled with operational inefficiencies, which, in turn, caused margin compression and exacerbated internal issues within their organizations. This led to decreased revenues and an inability to increase prices, compounding the impact of these inefficiencies. As a result, these companies found themselves facing additional financial burdens due to one-time restructuring charges.

Poor Management

Out of the 35 underperforming entities, 12 of them encountered frequent shifts in leadership, leading to instability and an inability to implement successful strategies. As a result, these companies faced challenges in meeting both short-term and long-term objectives, consequently eroding investor confidence in their leadership.

Notable Companies

Veeco (VECO): faced harsh competition over the period, with numerous companies like Applied Materials rapidly out-developing Veeco, leading to a decline in its share price.

Yelp (YELP): despite initial success in its restaurant review niche, saw competitors like Google rapidly develop similar products and consume Yelp's profits.

GoPro (GPRO): struggled to innovate past its core product offering of action cameras. When competitors and even cell phone companies began to develop alternatives, GoPro lost much of its market share.

Heartland Express (HTLD): was slow to adopt many innovative technological features in the trucking industry. Competitors, who were quick to pivot into innovative products, outcompeted HTLD and eroded profits.

Goodyear (GT): struggled with cost savings and operational excellence initiatives, which affected their ability to reduce total delivered costs, optimize working capital levels, and deliver customer service.

Stanley Black & Decker (SWK): faced inefficiencies in communication, delays in decision-making, and increased operation costs which led to margin compression and revenue decreases.

General Electric (GE): had 3 CEOs in 5 years, which created inconsistent strategic direction and disruption within the company. These changes led to a lack of oversight during a challenging restructuring period.

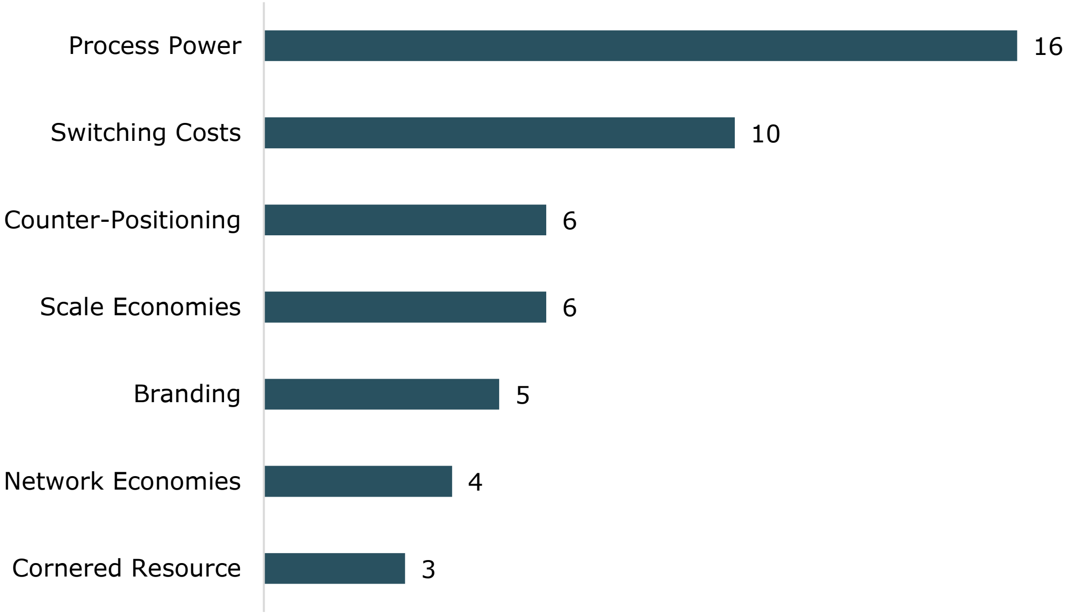
AZZ (AZZ): faced various leadership changes which resulted in numerous execution issues that cost AZZ millions of fees in restructuring and delay charges relating to long-term key projects.

Moat Breakdown - Top 35

Moat Expansion

In line with Guava Capital's investment philosophy, we centered our research of high performing companies around focusing on the companies' individual moats and competitive advantages. Hamilton Helmer, in his book *7 Powers*, presents a framework for understanding competitive advantages. However, a company who has a competitive advantage is not the only criteria for a good investment. Moats must be durable and expanding to generate the highest returns for the best companies. The businesses in the top 35 all exhibited defensible and growing moats to ensure long-term profitability and generate shareholder return.

Moat Breakdown - Top 35 Companies



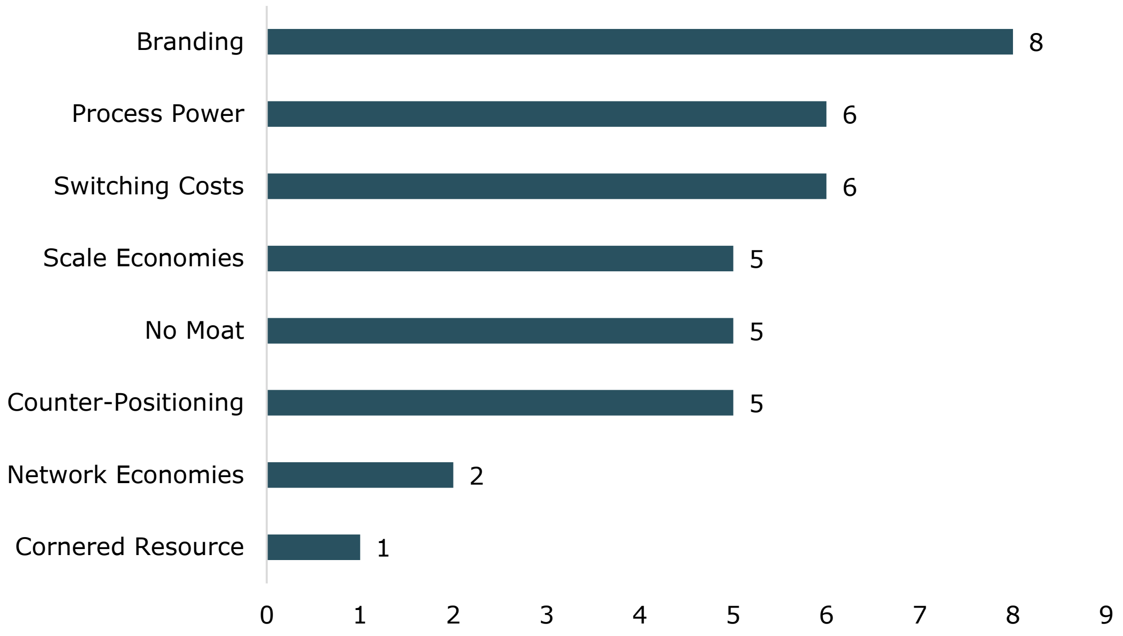
Cornered Resource	Dexcom	Molina Healthcare	Axon
Network Economies	Etsy	Copart	Block
Branding	Crocs	Tesla	FICO
Scale Economies	NVIDIA	SAIA	UnitedHealth Group
Counter-Positioning	Planet Fitness	Veeva	Wingstop
Switching Costs	Paycom	Insulet Corporation	IDEXX
Process Power	Cadence	KLA	Chart

Moat Breakdown - Bottom 35

Moat Erosion

In breaking down the bottom 35 companies' moats, we first looked at each company in 2016 before the company's underperformance over the analysis period. An investor analyzing a company from the bottom 35 in 2016 might have believed that it was poised to generate high returns over the coming years due to a perceived moat. However, while many bottom 35 companies had competitive advantages in 2016, these moats were either not defensible or did not grow over the following years. The difference between a company's 400+% return and a 70% drawdown can be attributed to its moat's positioning and erosion.

Moat Breakdown - Bottom 35 Companies

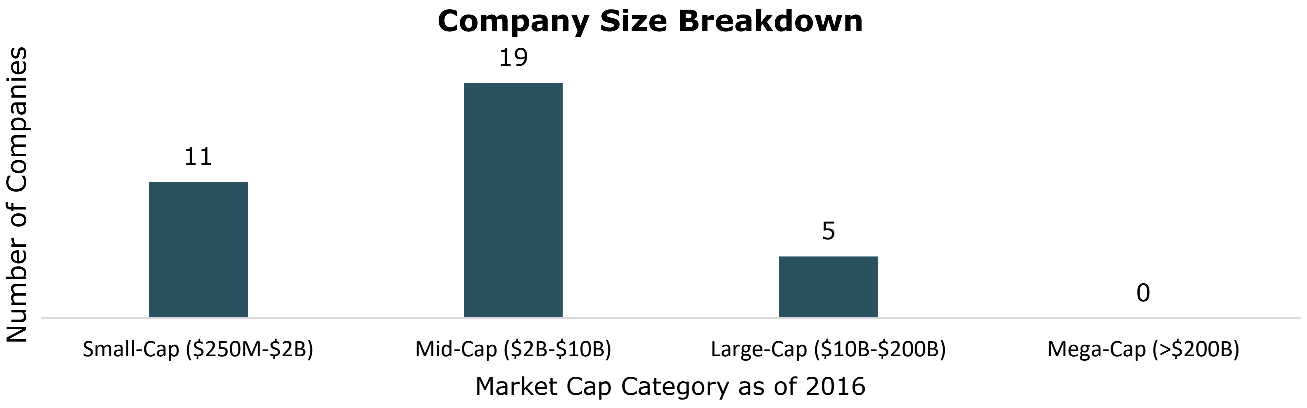


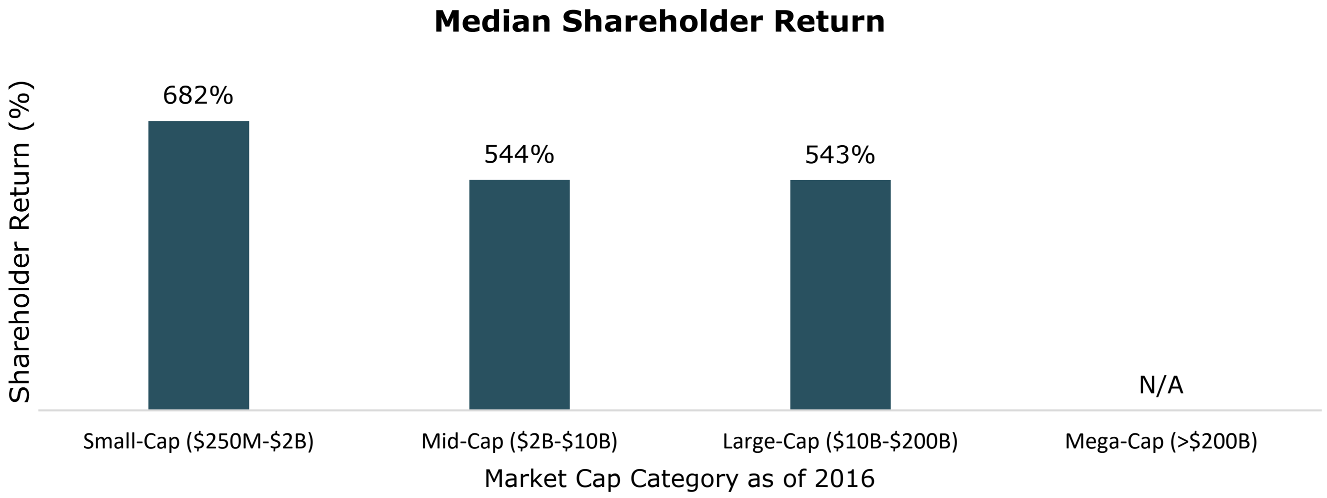
Perceived Moat in 2016			
Cornered Resource	Disney		
Network Economies	Tripadvisor		
Branding	Under Armour	GE	Molson Coors beverage company
Scale Economies	AZZ	Patterson Companies, Inc.	KraftHeinz
Counter-Positioning	GoPro	gogo	Sensata Technologies
Switching Costs	blackbaud	Sabre	NuVasive
Process Power	intel	Veeco	OSI Systems, Inc.

Top 35 Company Size Breakdown

Top 35 Company Size and Median Shareholder Return Breakdown

31% of the highest performing 35 companies began the period as small-cap companies, and ~86% of companies had market caps under $10 billion. The small cap companies had the highest median shareholder return over the period, gaining ~140% more than mid-cap and large-cap companies in 2016.





Notable Companies

Etsy (ETSY): The third highest performing company from 2016 to 2022, Etsy, began the period as a small-cap company ($923.7 million market cap).

UnitedHealth Group (UNH): The 35th best performing company over the period, was the largest company in 2016 ($110.9 billion market cap).

Crocs (CROX): A small cap company in 2016, had room to grow its share price, becoming a mid-cap company in 2022.

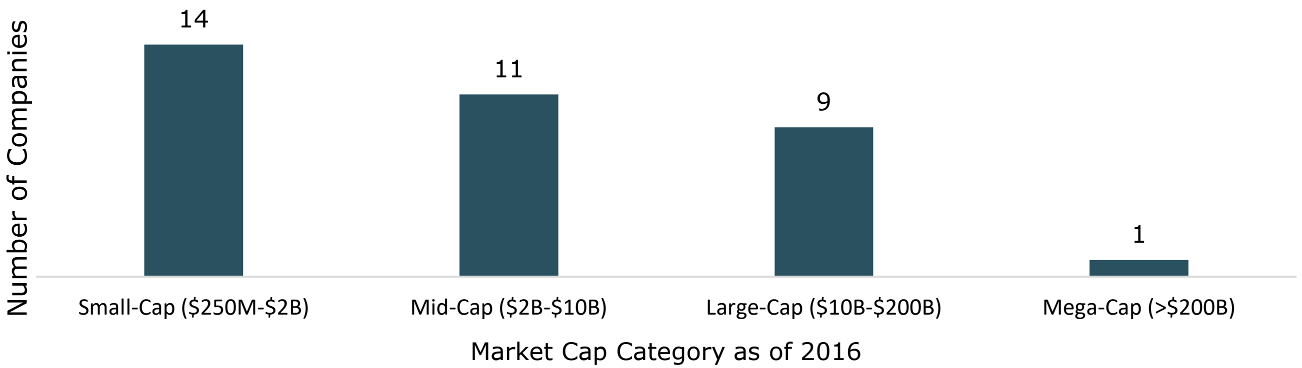
Tesla (TSLA): Tesla began the period as a large-cap company and still grew 1,232% into a mega-cap company in 2022 ($338 billion market cap in 2022).

Bottom 35 Company Size Breakdown

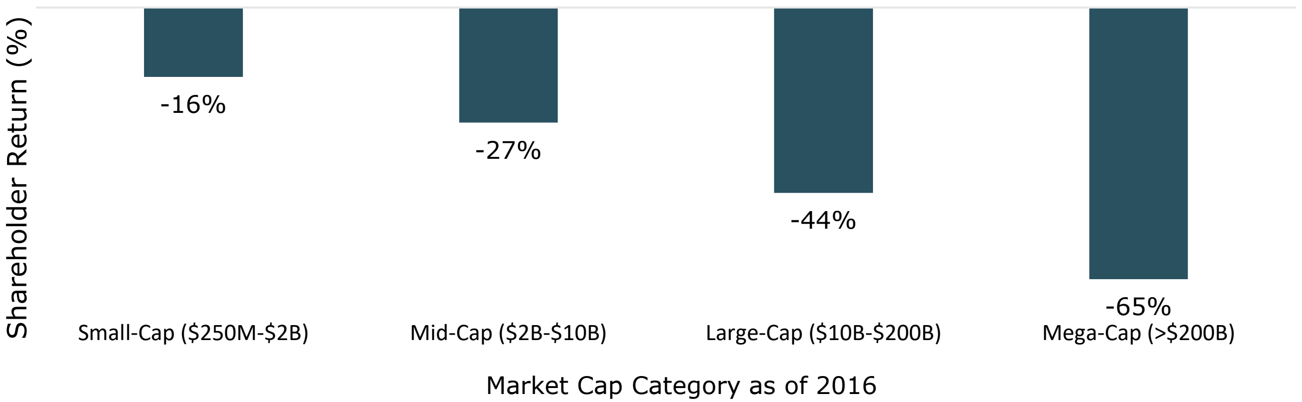
Bottom 35 Company Size and Median Shareholder Return Breakdown

40% of our bottom 35 companies began the period as a small-cap company, this percentage increased to 16 of 35 by 2022. The only mega-cap company in our bottom 35, GE, saw a 200+% decrease in market cap causing the company to lose this status. The large-cap companies also decreased by ~22%, down from nine to seven in just seven years.

Company Size Breakdown



Median Shareholder Return



Notable Companies

Tripadvisor

Tripadvisor (TRIP): our worst performing company since 2016, began the period as a large-cap company and shrunk to mid-cap by 2022 ($2.5 billion market cap in 2022)

General Electric (GE): the only mega-cap company in our bottom 35, saw its market cap shrink by ~68%, becoming a large-cap company over the period.

UNDER ARMOUR

Under Armour (UAA): saw a 71% drawdown in its market cap, falling from a large-cap to a mid-cap company in seven years.

Invesco

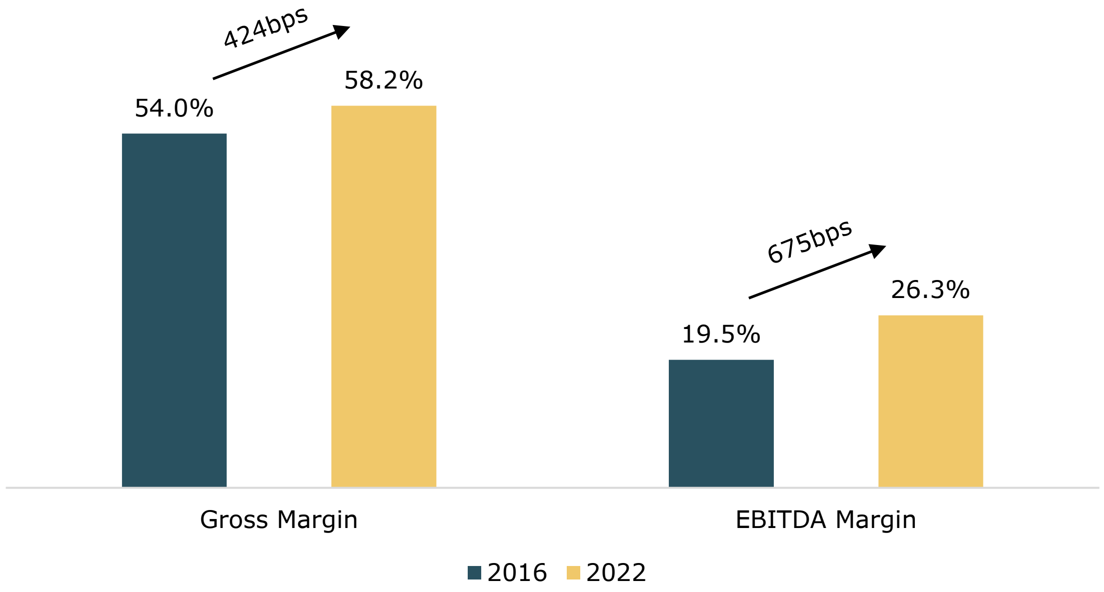
Invesco (IVZ): share price fell over 45% in tandem with the company's market cap drawing down ~72% since 2016 ($8 billion market cap in 2022).

Financial Metric Analysis

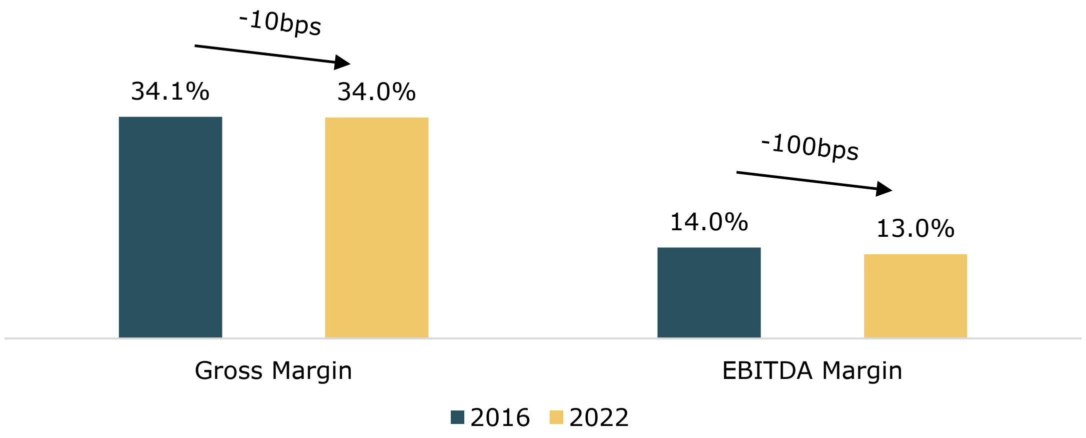
Gross/EBITDA Margin

- Among the Top 35 Stocks, 25 companies experienced margin expansion from 2016 to 2022. On average, these top performers witnessed a 459bps increase in gross margin and an impressive 675 bps increase in EBITDA margin over the period.
- The Bottom 35 performers showed less favorable results, with only 11 companies experiencing margin expansion. On average, the bottom performers saw a marginal 10 bps decrease in gross margin and a notable 100 bps decrease in EBITDA margin throughout the same period.
- Despite similar industry distributions between the two sets of companies, this suggests that the market values companies with higher margins at a premium price due to operational efficiency and better cost-handling.

Top 35 Companies



Bottom 35 Companies



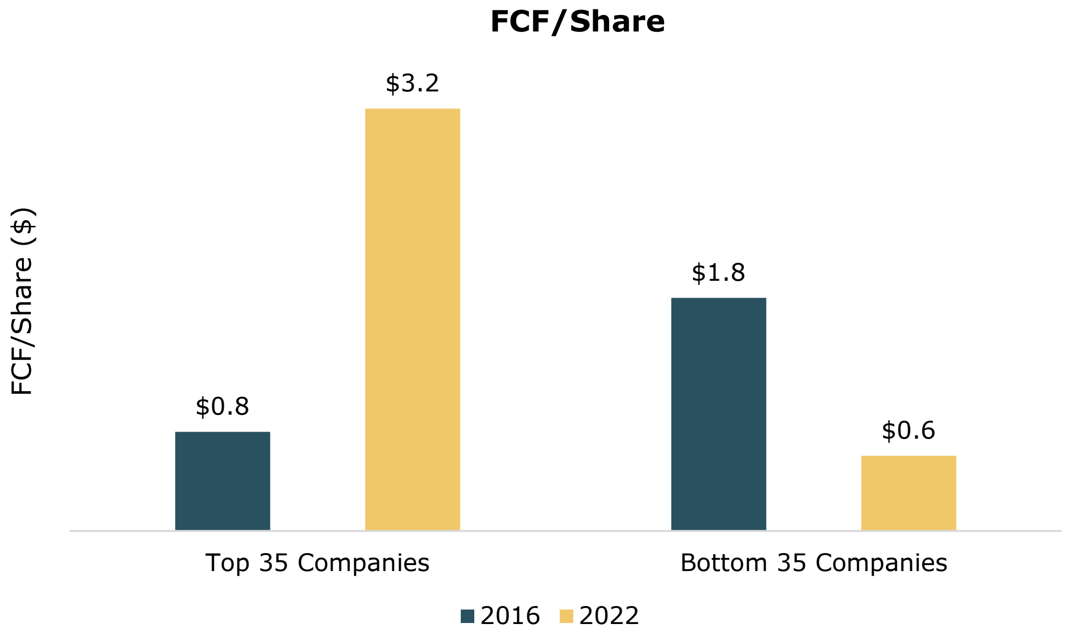
Financial Metric Analysis cont.

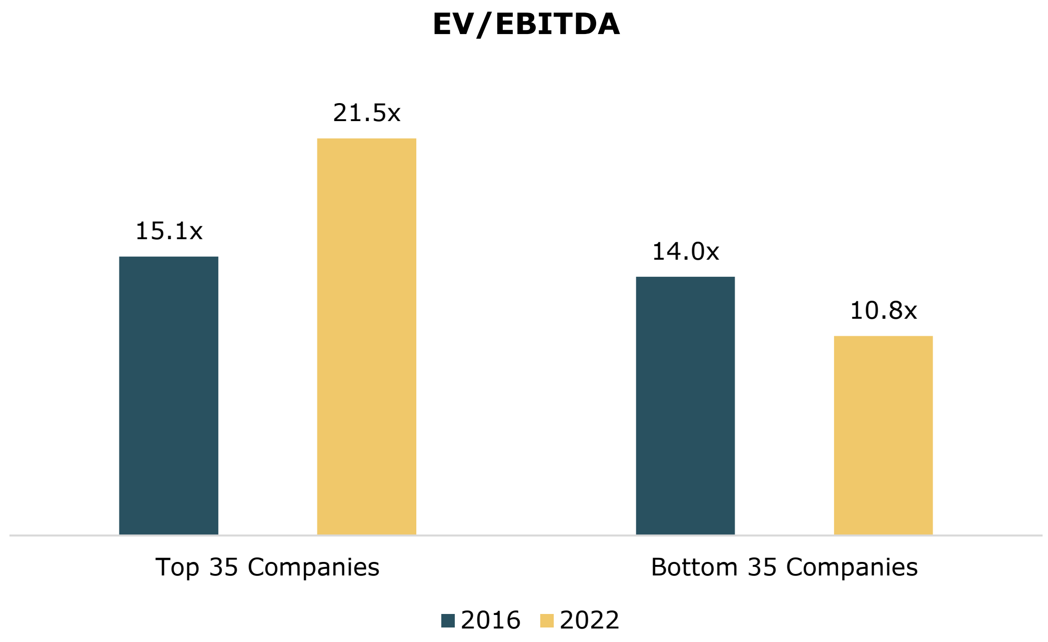
Free Cash Flow/Share

- The top 35 companies saw a 345% increase in FCF per share on average, illustrating a massive growth in cash flow coupled with only 5% dilution on average, with many companies buying back significant portions of shares.
- This upward trend in FCF per share growth in the top 35 and a ~70% decrease in the ratio in the bottom 35 companies is correlated with the average shareholder return of both groups. The top 35 companies grew by a median of ~560% while FCF per share increased, and the bottom 35 drew down ~30% on average as FCF per share decreased.

EV/EBITDA

- EV/EBITDA multiple for the top 35 increased 35.4% in the seven-year period, while the bottom 35 saw a decrease of 22.9%, showing that the market favored companies with consistent and increasing FCFs.

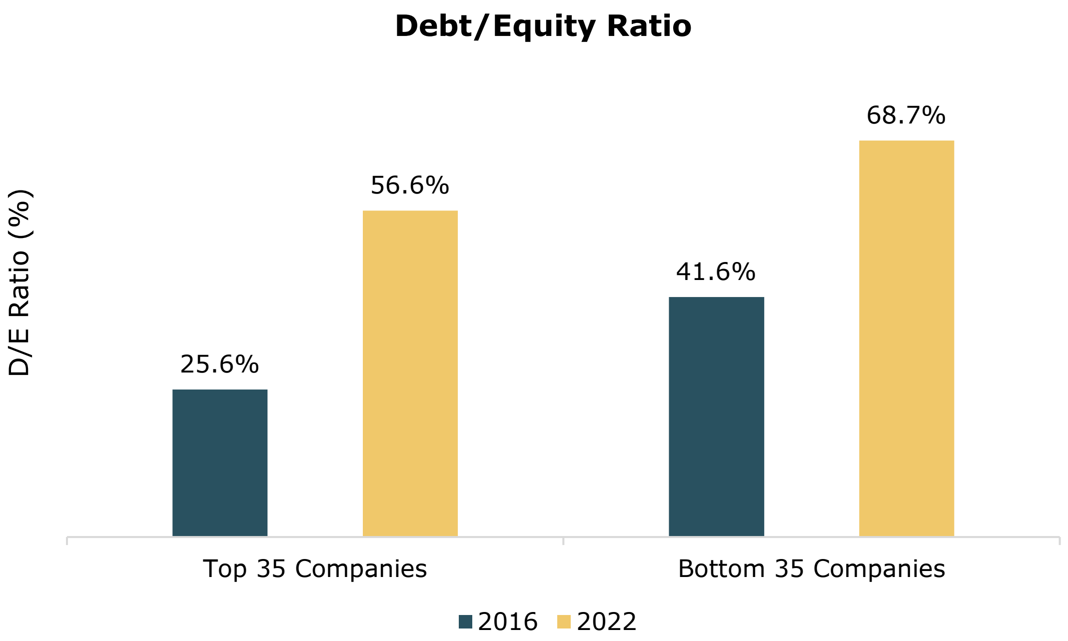


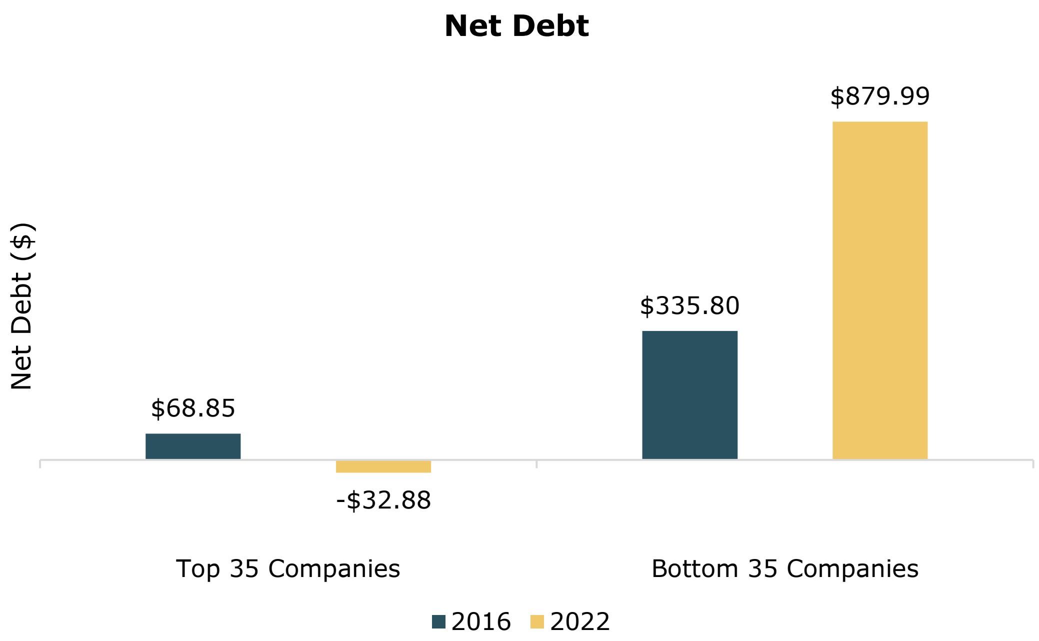


Financial Metric Analysis cont.

Debt Analysis

- On average, both sets of companies became more levered over the time period. The top performers saw a 121.2% increase in their Debt/Equity ratio, while the negative performers only saw a 65.3% increase. The top performers were still less levered, on average, compared to the underperformers.
- Despite a higher increase in their Debt/Equity value, the top performers saw a 147.8% decrease in net debt, compared to the 162.1% increase the negative performers reported.
- This decrease in net debt among the top performers can be attributed to the companies' abilities to generate increased cash flows throughout the period.

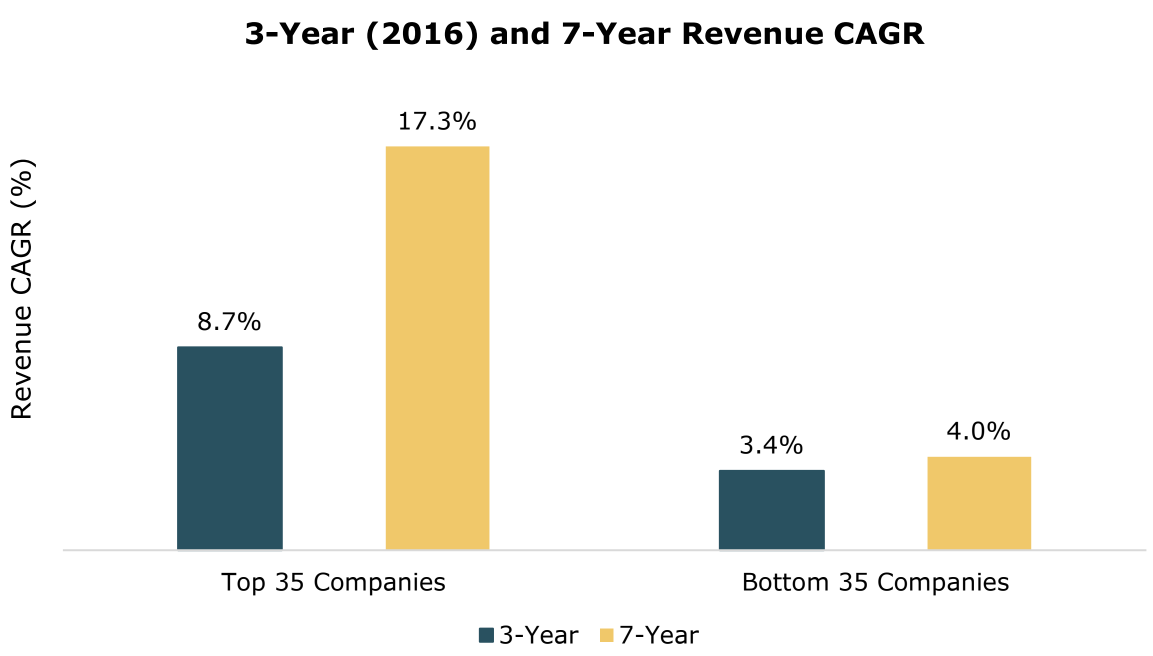




Financial Metric Analysis cont.

3-Year and 7-Year Revenue CAGRs

- We compared the 3-year revenue CAGR (2014-2016) and 7-year revenue CAGR (2016-2022) for both sets of companies.
- On average, the top performers saw higher 3-year and 7-year revenue CAGRs due to frequent product launches, accretive M&A, and constant innovation.
- Over a third of the leading 35 companies, 12 out of 35 (34.3%), experienced remarkable benefits from the COVID-19 pandemic's effects. Industries like semiconductors, trucking, and cloud computing thrived during the pandemic due to lockdown-induced pent-up demand, enabling these companies to capitalize on the increased market demand.



Top 35 Companies

1. AMD
2. NVIDIA
3. Etsy
4. crocs
5. AXON
6. SAIA
7. UBIQUITI NETWORKS
8. paycom
9. DECKERS BRANDS
10. WING STOP
11. TESLA
12. FORTINET
13. Insulet
14. cadence
15. OLD DOMINION FREIGHT LINE
16. QUANTA SERVICES, INC.
17. SYNOPSYS
18. LIGHT & WONDER
19. CHART
20. Copart
21. FICO
22. onsemi
23. JOHN DEERE
24. KLA
25. ARISTA
26. iridium
27. MPS
28. Builders FirstSource
29. dexcom CONTINUOUS GLUCOSE MONITORING
30. planet fitness
31. IDEXX
32. Veeva
33. MOLINA HEALTHCARE
34. BLOCK
35. UNITEDHEALTH GROUP

Advanced Micro Devices (AMD)

Company Overview

Advanced Micro Devices, or AMD, is a leading semiconductor company that has made significant strides in the technology industry. They specialize in designing and manufacturing high-performance processors, including Central Processing Units (CPUs) and Graphics Processing Units (GPUs), among other products. AMD's processors are utilized in various devices, from desktops and laptops to data centers and gaming consoles. Nearing bankruptcy in 2015, AMD made a strong recovery throughout the observed time period and came out on the top of our list as the highest performing company. With their innovative architectures, such as the Zen microarchitecture and chiplets design, AMD has successfully challenged the dominance of their competitors and gained a reputation for delivering exceptional performance and value.

	1/1/2016	12/31/2022	
Stock Price*	$2.77	$64.77	
Market Cap	$2,194.9	$104,432.3	
Enterprise Value	$3,646.9	$101,450.3	
Shares Outstanding	792.4	1,612.4	1
Net Debt	$1,452.0	-$2,982.0	
Debt/Equity	N/A	5.4%	2
Dividend Yield	N/A	N/A	
P/E	N/A	56.3x	3
EV/Sales	0.9x	4.3x	
EV/EBITDA	N/A	18.7x	
FCF/Share	-$0.4	$2.0	
Gross Margin	29.5%	42.9%	4
EBITDA Margin	N/A	23.0%	
Trailing 3yr Rev CAGR	-9.7%	51.9%	
Trailing 7yr Rev CAGR		28.9%	5
Analyst Buy %	13.8%		
Analyst Hold %	58.6%		
Analyst Sell %	27.6%		

*Numbers in millions excluding stock price

Management

CEO: Lisa Su (2014-Present), Previous COO of AMD and served various leadership roles at IBM and Texas Instruments

CFO: Devinder Kumar (2013-2023), Jean Hu (2023-Present), Previous CFO of Marvell and 20+ years experience in financial leadership within the semiconductor industry

COO: N/A

Analysis

1. Issued shares and senior notes throughout the period to raise cash for general corporate purchases and acquisition funding
2. De-levered balance sheet throughout the period; raised debt during 2022 to fund Xilinix acquisition; D/E ratio still relatively low signifying strong financial health
3. Company became profitable in 2017 with a P/E ratio of 127.6x; AMD grew into multiple yet still relatively expensive
4. Increased gross margin by 13%; attributed to higher pricing due to improved products and shift to focus on processors for datacenters which have higher margins
5. Maintained a 28.9% revenue CAGR over the 7-year period; company turned things around in the beginning of the period and continued to grow revenues through new product launches and growing end-markets (gaming, laptops/desktops, etc.)

Notable Events

Volatility

1. Launched Ryzen Threadripper Processor; expanded with 2nd Gen Ryzen PRO Desktop Processor (Aug./Sep. 2018)
2. Rival Intel announces manufacturing delays; Q2 '20 earnings beat due to strong sales of notebook and server chips (Jul. 2020)
3. Meta Platforms chose AMD's EPYC processors to power its data centers (Oct. 2021)
4. Q3 '22 earnings miss; 40% decrease in client segment sales due to PC market and US-China headwinds (Nov. 2022)

# of 20%+ Drawdowns	17
Max Drawdown	-64%

Mergers and Acquisitions

- Acquired gaming software company HiAlgo (Jun. 2016)
- Acquired Pensando Systems, a distribution services platform with a data processing unit and software stack deployed at scale across cloud and enterprise customers, for $1.9 billion (May 2022)
- Acquired Nitero, a maker of 60 Ghz. wireless chips for virtual and augmented reality (Apr. 2017)
- Acquired Xilinix to add reprogrammable chips for $49 billion in stock (Feb. 2022)

Other Notable Events

- Launched token Zen microarchitecture with the first generation of its Ryzen CPUs (Feb. 2017)
- Released Zen 2 with Ryzen 3000 series CPUs (Jul. 2019)
- Released Zen 3 with Ryzen 6000 series of mobile processors (Apr. 2022)
- Unveiled world's most advanced gaming graphics cards built on RDNA 3 Architecture with chiplet design (Nov. 2022)
- Announced $4 billion share repurchase program (Feb. 2022)

Competitive Landscape

Competition

- **Intel (INTC ~$109.1B market cap):** AMD and Intel have been two of the biggest rivals in the semiconductor industry. However, AMD began as a second-source supplier for companies using Intel processors and gained access to its unique architecture. After Intel began to view AMD as a potential threat, they stopped giving AMD their designs. Unlike AMD which is now fabless, Intel continued to invest in their own fabs and vertically integrate their production processes. Though Intel has struggled in the past few years, they still control nearly 80% of the chips market for laptops and desktops.
- **Nvidia Corporation (NVDA ~$359.5B market cap):** Nvidia is an American technology company specializing in the design and development of advanced graphics processing units, or GPUs, as well as other related technologies. Nvidia's products and technologies are widely used in various industries, including gaming, professional visualization, data centers, artificial intelligence, and automotive. Like AMD, Nvidia uses a fabless model and relies on third-party foundries for manufacturing. Nvidia has also been widely successful during the time period, coming in right behind AMD on our list.
- **Texas Instruments (TXN ~$163.8B market cap):** Texas Instruments is an American semiconductor company that designs and manufactures a wide range of integrated circuits and semiconductor devices. Their products are utilized in the automotive, industrial, personal electronics, telecommunications, and other industries. TI owns and operates its own fabs for manufacturing chips and is one of the few semiconductor companies that has retained its own manufacturing capabilities.

When CEO Lisa Su took the stage in 2014, she had a new business plan adapted for a long-term outlook that would go on to save AMD from years of financial struggle. With a stock price under $2, AMD was nearing bankruptcy. However, Lisa instituted an effective strategy to minimize debt and focus processor design and manufacturing on computer gaming, cloud, and data center compatibility. Realizing that AMD was losing money from its fab investments, she pushed for a fabless model and executed on creating robust high-performance chips using AMD's historic cheap architecture. Rapidly taking market share through competitive pricing and the development of the fast 10nm chip, throughout the period, AMD won nearly 35% market share of all CPUs in 2022.

Moat – Process Power, Cornered Resource

Process Power (strong): AMD possesses strong process power in their fabless business strategy. One of AMD's mistakes in the past has been trying everything under the sun, from controlling their own wafer fabs to entering all end-markets in search for a larger consumer base. However, in the beginning of the period, AMD began to revitalize their business by focusing their efforts towards designing CPUs and GPUs primarily targeted at the computer gaming sector. After divesting all their fabs, they were able to focus on the design of high-performance processors and out-source all manufacturing to third-party foundry companies, such as Taiwan Semiconductor Manufacturing Company. AMD then created their token Zen architecture in 2017 which offered a substantial improvement in performance and competitiveness to existing CPU architectures and was relatively cheaper to produce which granted AMD competitive pricing. They then developed the "chiplet" design, which separated larger silicon chips into smaller pieces that could be easily scaled up and down for different end-products and was integrated with their Zen 2 architecture in 2019. Both these innovations were significant contributors to AMD's success over the years, as their largest competitor, Intel, struggled to recreate products with similar efficiency and low costs.

Cornered Resource (weak): AMD has many patents and intangible assets relating to their unique product lines that have prevented competitors from mimicking their operations. As of 2022, AMD holds 19,800 patents worldwide. Most notably, they have patents surrounding their chiplets design and Zen architecture.

Conclusion - What drove shareholder return?

1. **Cheap Valuation in 2016:** AMD began as a second-source supplier for companies using Intel processors. In the early 2000's, CEO Jerry Sanders led the company to $1 billion in profits and their Athlon chips were top picks by customers around the world. However, AMD began to lose profits due to the unnecessarily expensive construction of new fab manufacturing plants, poor margins, and a large debt balance that they struggled to pay off. AMD began to spend $100s of millions to fund various manufacturing plants and was unable to keep up with Intel's newer and more efficient chips. Further adding to their struggles, AMD's acquisition of ATI, a GPU company for $2.5 billion, caused internal conflicts due to differences in company culture. Thus, AMD saw numerous product delays and a decrease in expectations, drowning in billions of debt and a share price just about $2 at the beginning of 2016. Nearing bankruptcy, AMD began to turn things around with the appointment of their new CEO Lisa Su at end of 2014. Though not all of AMD's success can be attributed to their cheap valuation at the beginning of 2016, it is an important factor to consider their incredible return during the time period.

2. **Debt Reduction:** A big factor that contributed to AMD's downfall in the 2010s was their accumulation of billions of debt. In 2015, AMD had $2.2B of debt, and a net debt balance of $1.5B. However, once AMD began to focus on the design of CPUs and GPUs for the gaming and consumer sectors, they began to consistently repay debt from 2016-2019, and lowered their debt balance down to just $330M in 2020. This allowed AMD to de-lever their balance sheet and remain financial healthy as they expanded during the period. However, AMD took on $679M in debt in 2022 to partially fund the acquisition of Xilinix and their $4B share repurchase program. By 2022, AMD had managed to increase its cash flows to $5.9B from $785M in 2016, and their debt ratio lowered to 5% in 2022. This de-leverage of AMD's balance sheet instilled investor confidence in their financial health and boosted share price.

3. **Intel's Downfall:** Intel has historically held 90%+ market share in the PC and server processing chip market. However, in July of 2022, Intel was forced to announce that it'd be delaying its next major manufacturing milestone for its chips for another few years. This was enough to push AMD's stock up 11% in a day, and ultimately contributed to AMD's success over the next few years. Following struggles to produce the 10nm chip after AMD had already mass produced their version, Intel lagged and was forced to lower prices for their less-efficient chips. This carried into the 7nm, and Intel lost significant market share in the years following. Additionally, Intel's vertical integration is a rarity in the industry. Though their manufacturing used to be a strength, they began tumbling after years of delays. This allowed AMD to grab significant market share during the period (~20%) as a result and drove their share price up.

4. **Process Power:** AMD's fabless model and development of their "Zen", a name for their new design system, architecture and chiplets structure has established them as a leader in the CPU/GPU market. By divesting all its factories and outsourcing chip manufacturing to TSMC, AMD has lowered their costs and focused on their core operations. Additionally, their products take on a modular design which are produced at lower costs than their competitors and can be used for both high-power and low-power end-products, expanding their product line while still focusing on robust high-performance chips. This focus on high-performance for gaming and PC markets allowed AMD to improve their margins significantly and drove revenues.

5. **Cornered Resource:** When CEO Lisa Su was appointed in 2014, she decided to strategically position AMD as a designer of CPUs and GPUs primarily in the computer gaming and laptop/desktop sector, with a focus on both high-performance chips at a lower cost. Because AMD already had the expertise and knowledge in producing lower-power and cost processors, their shift to robust high-performance chips for a variety of end markets allowed them to leverage their existing architecture to produce chips at a lower cost than their competitors. They created a new Zen architecture which is used for a variety of their product lines, including their chipsets used in desktops and notebooks, as well as System-on-Chip (SoC) products and technology for game consoles. Their IP and patents relating to unique product innovations has allowed them to hinder competitors from mimicking their products. As such, between 2015 and 2018 when AMD began to implement these strategies and win patents, they added $2.4B in revenues and gained 5% market share in just two years from 2016 to 2018.

Nvidia Corporation (NVDA)

Company Overview

Nvidia Corporation, Nvidia, is an American technology company that was founded in 1993. The company specializes in designing and manufacturing advanced graphics processing units (GPUs), system-on-a-chip units (SoCs), and related software for various industries. Nvidia's GPUs are widely used in gaming, professional visualization, data centers, and artificial intelligence (AI) applications. The company's business model focuses on developing cutting-edge GPU technology and partnering with original equipment manufacturers (OEMs) to integrate their GPUs into a wide range of devices like gaming consoles, laptops, workstations, and servers.

	1/1/2016	12/31/2022	
Stock Price*	$8.09	$146.14	
Market Cap	$17,415.1	$359,504.4	
Enterprise Value	$14,104.1	$358,265.4	
Shares Outstanding	2,152.0	2,460.0	
Net Debt	-$3,311.0	-$1,239.0	1
Debt/Equity	31.7%	55.8%	
Dividend Yield	0.1%	0.1%	
P/E	24.3x	51.4x	2
EV/Sales	2.9x	12.5x	
EV/EBITDA	15.1x	47.5x	
FCF/Share	$0.5	$1.9	3
Gross Margin	56.2%	53.6%	
EBITDA Margin	19.2%	26.4%	
Trailing 3yr Rev CAGR	5.4%	35.2%	4
Trailing 7yr Rev CAGR		27.2%	
Analyst Buy %	39.4%		
Analyst Hold %	54.5%		5
Analyst Sell %	6.1%		

Management

CEO: Jensen Huang (1993-Present), Founder and CEO of the company

CFO: Colette Kress (2013-Present), Former CFO of business technology segment at Cisco

COO: N/A

Analysis

1. 62.5% increase in net debt due to two $3.5+ billion debt offerings from 2019-2021 to fund acquisitions
2. Strong revenue growth coupled with innovative technologies maintaining Nvidia's status as a market leader have increased the P/E ratio ~110%
3. 280% increase in FCF per share as a result of growing revenue and minimal share dilution
4. Trailing three-year revenue CAGR increase of ~550% as the company has expanded into new business segments and overall technology and semiconductor industry demand has surged
5. Nearly two-thirds of sell-side analysts recommend holding or selling NVDA before a 1,749% increase in share price over the following 7 years

*Numbers in millions excluding stock price

Notable Events

NVIDIA

Volatility

- ❶ Pandemic growth in demand for technology and Nvidia gaming products as nations go into lockdown (2020)
- ❸ Release of crypto mining-specific GPU to fuel the booming crypto hype-cycle (Feb. 2021)
- ❺ Nvidia touts chip design with emphasis on artificial intelligence (Mar. 2022)

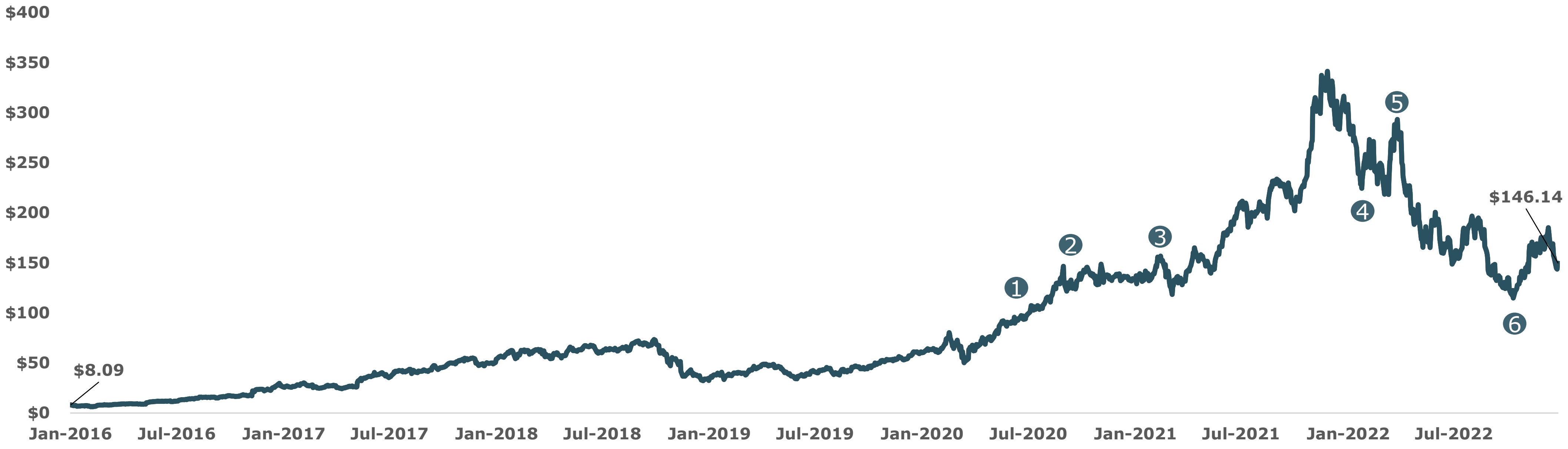
Mergers and Acquisitions

- Mellanox Technologies, a supercomputer chip maker, acquired by Nvidia for $6.9 billion in cash (Mar. 2019)
- ❷ Attempted acquisition of Softbank's Arm, an advanced semiconductor and CUP designer (Sep. 2020)
- ❹ Nvidia abandons acquisition of Arm due to FTC scrutiny (Feb. 2022)

Other Notable Events

- ❹ Russia invasion of Ukraine adding to potential supply chain challenges and growing geopolitical risk (Feb. 2022)
- ❻ Department of Commerce placed embargo on exports to China of advanced chips; Nvidia's data center chip added to control list (Oct. 2022)

# of 20%+ Drawdowns	5
Max Drawdown	-66%



Competitive Landscape

Competition

- **Advanced Micro Devices (AMD ~$104.4B market cap):** Advanced Micro Devices, or AMD, is a technology and semiconductor company established in 1969 and based in California. The company is known for designing and manufacturing high-performance computing solutions, including microprocessors, GPUs, and related software. AMD’s products are widely used in various sectors such as gaming, data centers, and personal computers.

- **Intel (INTC ~$109.1B market cap):** Intel is an end-to-end American semiconductor producer. The company specializes in designing and manufacturing a wide range of products like microprocessors, SoCs, memory software. Intel has attempted to be vertically integrated in the semiconductor space, and while finding initial success in doing so the complexity and race to keep up with Moore’s law has seen Intel fall behind in the semiconductor industry.

- **Broadcom (AVGO ~$233.6B market cap):** Founded in 1961, Broadcom is an American technology company that designs and develops a wide range of semiconductor chips and infrastructure software solutions. The company focuses on providing cutting-edge technology across varying industries like wired and wireless communications, enterprise storage, industrial, automotive, and more.

Nvidia, at the beginning of the time period in 2016, was a significantly smaller company operating in a relatively niche industry of GPUs for gaming and PC solutions. Its market cap at the time was ~$30 billion and focused primarily on their gaming segment. Throughout the 7-year period, Nvidia’s products began to be used in different and unique use-cases, demonstrating value to the company’s GPUs and CPUs that the company themselves had not believed were possible. Nvidia’s products, specifically its CUDA software, became extremely valuable in achieving higher parallelism and efficiency than general-purpose CPU code. The CUDA (Compute Unified Device Architecture) software gained popularity among researchers, IT specialists, and anyone looking to increase processing power and speed in their computer. Furthermore, as crypto rose to popularity, Nvidia’s GPUs were widely used to mine cryptocurrencies. Nvidia and its innovative CEO Jensen Huang was quick to adopt these new trends, creating crypto-specific GPU units. Additionally, during the global pandemic as technology and semiconductor chips quickly came into high demand, Nvidia was well-positioned to benefit. Nvidia also capitalized on the rise of artificial intelligence and its rise in demand for high-powered GPU chips. Overall, Nvidia was able to out-compete its closest competitors through the company’s fearless ability to pivot into new use-cases for their product expansion over varying industries.

Moat – Scale Economies, Switching Costs

Scale Economies (strong): Nvidia has a strong moat in the company’s economies of scale. Nvidia’s CUDA investment, the software framework developed by Nvidia to expand capabilities of GPU acceleration, is a massive investment that few companies can make. CUDA was a revolutionary product for Nvidia, and today, is used in many industries, from quantitative finance to machine learning, increasing in value and demand as technological advancements are made. In the GPU and semiconductor industry, few companies have the scale or access to the capital and market size necessary to make this monumental investment worth their time. Nvidia has achieved scale economies by having a large market reach, developed infrastructure, and an established foothold in an industry which requires significant investment to become profitable in.

Switching Costs (strong): Nvidia also has a strong moat in its high switching costs surrounding CUDA. Nvidia’s CUDA, the company’s proprietary and closed source parallel computing platform and API, can only be used on a Nvidia GPU; not on any of its competitors' products. CUDA is considered mission-critical for many developers and professions. A lock-in effect is created because switching away from CUDA is so costly to experts, and CUDA is only run on Nvidia GPUs.

Conclusion - What drove shareholder return?

1. **Strategic Acquisitions:** Nvidia's 1,749% increase in share price since 2016 can be partially attributed to the company's strategic acquisition strategy. Due to the rapidly evolving nature of the technology industry, Nvidia has adopted an aggressive strategy of acquiring smaller companies, often startups, to expand their market reach. Nvidia has acquired 22 companies in the technology industry since the company's inception, focusing on cutting-edge of innovation in order to gain expertise on the potential for their products to offer solutions in the rapidly developing sector. Most recently, Nvidia acquired OmniML, an AI and machine learning (ML) startup. This purchase illustrates Nvidia's acquisition strategy. The company is betting on the rise of AI through the acquisition of a startup, OmniML, and its sophisticated model design compression technology. To stay ahead of competitors, Nvidia's management team is constantly looking for acquisition targets, and this strategy of rapid growth and expansion has driven more use-cases for Nvidia's products, leading to a higher bottom line revenue and in turn drove shareholder return throughout the 7-year period.

2. **CUDA:** Nvidia's ~17x shareholder return since 2016 has been driven, in part, by the success of CUDA, the company's proprietary programming language and software ecosystem. CUDA plays a pivotal role in extending Nvidia's technology and platform leadership in the field of AI. As an end-to-end accelerated computing platform for deep learning and machine learning, CUDA enables developers to leverage Nvidia's GPUs, interconnects, systems, algorithms, and libraries, providing a comprehensive solution for both training and inferencing tasks. The unique suitability of GPUs for AI applications has further strengthened Nvidia's position in the market, and the company has continued to enhance its GPU architecture with AI and crypto specific features. With over 4 million developers worldwide utilizing CUDA as of 2022, Nvidia has successfully deployed its technology in target markets. Furthermore, while CUDA is a free software, it can only be used on Nvidia chips and GPUs. Customers create sophisticated models using CUDA, but in order to deploy these models and solutions, they must be using an Nvidia chip. This is a crucial requirement that has allowed CUDA to drive so much of Nvidia's success. Developers and other professionals who see CUDA as essential to their success are forced to purchase the most advanced Nvidia products, thus driving revenue and ensuring a recurring revenue stream.

3. **Fearless Innovation:** A third tenet of Nvidia's shareholder return throughout the time period is the management team's willingness to expand into new industry verticals and developing fields of technology. While many large companies are rooted in their ways, Nvidia has expanded out of their initial gaming business segment. Huang, Nvidia's CEO, has displayed a willingness to jump into new industries and use-cases. For instance, when cryptocurrency began to rise in popularity, Nvidia's GPUs and chips were used to mine cryptocurrencies. Huang was quick to realize this and acted swiftly by producing a crypto mining-specific GPU, and changing features of old GPUs so that miners would not be able to use them efficiently. This forced crypto miners to purchase Nvidia's new GPU, generating billions in revenue in the late 2010s and early 2020s. This innovation and Huang's willingness to continue to adapt Nvidia's business model in tandem with rapid development and innovation in the technology industry has helped drive the company's shareholder return over 1,700%.

4. **Scale Economies:** Nvidia has developed an economy of scale through its CUDA platform and the company's processors and GPUs, primarily used in the advancement of AI. Nvidia offers its customers best-in-class accelerated computing platforms. As AI has risen in popularity and advancements have created more enterprise use cases, Nvidia has positioned itself to benefit immensely. The company commands an ~80% market share for AI processors used in data centers, an essential element of AI innovation and use globally. The level of R&D spending and capex in developing a full-stack processing platform is extremely high. For instance, Nvidia spent $7.3 billion on R&D alone in 2022. AMD, its closest competitor, spent 46% less at $5 billion on R&D. Because of the massive investment required to be a key player in this space, Nvidia's capital, infrastructure, and pre-existing market reach have allowed the company to create and maintain an economy of scale and ensure a growing stream of revenue, benefiting from the growing demand for high-powered GPUs and chips to power the AI revolution. Nvidia's economies of scale have driven shareholder returns throughout the time period.

Etsy (ETSY)

Etsy

Company Overview

Etsy, founded in 2005, is a global e-commerce platform known for its unique, handmade, and vintage goods. The company, through its website Etsy.com, connects independent sellers with buyers, creating a vibrant community of creative entrepreneurs. With millions of active sellers and buyers worldwide, Etsy offers a diverse range of products, from crafts and jewelry to vintage collectibles and home decor. The company's revenue model relies on transaction fees, listing fees, and advertising services. Etsy's personalized shopping experience, commitment to supporting small businesses, and strong market position have led the company to return a 1,354% increase in share price since FYE2015.

	1/1/2016	12/31/2022	
Stock Price*	$8.24	$119.78	
Market Cap	$923.7	$15,054.9	
Enterprise Value	$644.0	$16,315.6	
Shares Outstanding	112.1	125.7	
Net Debt	-$279.7	$1,260.7	1
Debt/Equity	4.0%	N/A	2
Dividend Yield	N/A	N/A	
P/E	N/A	47.1x	
EV/Sales	2.4x	6.4x	
EV/EBITDA	38.6x	N/A	3
FCF/Share	$0.1	$5.2	4
Gross Margin	65.6%	72.0%	
EBITDA Margin	6.1%	N/A	
Trailing 3yr Rev CAGR	79.1%	46.4%	5
Trailing 7yr Rev CAGR		37.7%	
Analyst Buy %	12.5%		
Analyst Hold %	62.5%		
Analyst Sell %	25.0%		6

*Numbers in millions excluding stock price

Management

CEO: Chad Dickerson (2011-2017), Josh Silverman (2017-Present), Former President at American Express, CEO of Skype, and CEO of shopping.com

CFO: Rachel Glaser (2017-Present), Former CFO of Leaf Group and on the board of the NYT

COO: Linda Findley (2016-2019), Raina Moskowitz (2022-Present), Prior Etsy chief strategist

Analysis

1. 550% increase in net debt due to large and continuous convertible senior note issuance throughout 2018-2021 to fund acquisitions
2. Debt to equity ratio N/A in 2022 because of $1+ billion one-time asset impairment charge causing net income to be negative for the year
3. EV/EBITDA ratio also became non-existent due to negative net income in FY2022 as a result of one-time asset impairment
4. 5,100% increase in free cash flow per share due to revenue growth and growing margins as business lines grew
5. Trailing three-year revenue CAGR decrease by ~40% as Etsy matured as a company and reached more customers
6. Analysts recommended a “sell” rating on Etsy just before a historic 1,354% increase in share price over the following seven years

Notable Events

Etsy

Volatility

1. • Growth of e-commerce during the pandemic as brick-and-mortar stores closed (2020)
2. • News that vaccine is 90% effective at preventing COVID-19 pandemic, Etsy stock drops on fears of stores reopening leading to decreased demand for e-commerce (Nov. 2020)
3. • Q1 2021 earnings beat; diminishing revenue outlook due to potential end of pandemic (May 2021)

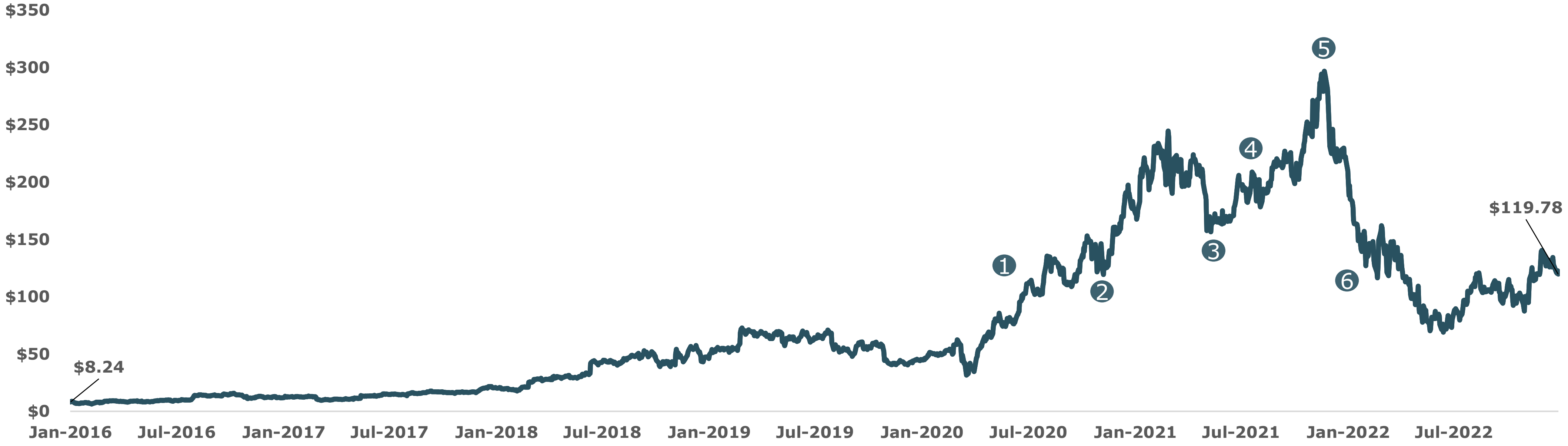
Mergers and Acquisitions

- Completed acquisition of Reverb.com for $275 million (Aug. 2019)
- 4 • Announced acquisition of Depop, popular online niche clothing app and website, acquired by Etsy for $1.6 billion in "mostly cash" (Jun. 2021)
- 4 • Announced acquisition of Elo7 for $217 million (Jun. 2021)

Other Notable Events

- Shares slump as long-time CEO Dickerson steps down (May 2017)
- 5 • EPS and revenue beats and higher than expected holiday-season demand (Nov. 2021)
- 6 • Post-pandemic drop in e-commerce sales, reduced demand for Etsy and large sell-off in the stock (Jan. 2022)

# of 20%+ Drawdowns	6
Max Drawdown	-76%



Competitive Landscape

Competition

- **Amazon (AMZN ~$856.9B market cap):** Amazon, founded in 1994, is a multinational technology company and the world's largest online retailer. The company started as an online marketplace for books and rapidly expanded to offer a vast selection of products, including electronics, clothing, household goods, and more. Amazon's business model revolves around its Prime membership program, which provides subscribers with benefits like fast shipping, streaming services, and exclusive deals.
- **eBay (EBAY ~$22.5B market cap):** eBay, founded in 1995, is an e-commerce corporation that operates as an online auction and shopping platform. It allows individuals and businesses to buy and sell a wide range of products through both auction-style and fixed-price listings. With over 183 million active buyers globally, eBay offers a diverse marketplace for new and used items, including electronics, fashion, collectibles, and more. The company's business model relies on transaction fees and advertising revenue, providing a platform for sellers to reach a broad customer base while offering buyers access to a vast array of products.
- **Shopify (SHOP ~$44.2B market cap):** Shopify, founded in 2006, is a Canadian leading e-commerce platform that enables businesses to create and manage their online stores. With over 1.7 million merchants worldwide, Shopify provides a large services to help entrepreneurs establish and grow their businesses. As of 2022, the platform reported over $5.6 billion in revenue, representing a year-over-year growth of 57%. Shopify's user-friendly interface, extensive customization options, and integrated payment solutions have contributed to its success, resulting in over $307 billion in total sales volume processed through its platform.

Etsy, at the beginning of the period, was a small and niche company that operated in its own domain of online e-commerce. The company did not compete with larger players like Amazon or Shopify as Etsy’s industry niche of handmade goods and services was specific to only Etsy. Throughout the time period, Amazon launched a “handmade” section to their online e-commerce website, thus directly competing with Etsy. Etsy was able to maintain their dominance in this industry niche despite the presence of Amazon because of their competitive advantages, primarily their network economies and strong branding. Customers know Etsy as a safe, reliable, and positive brand. In turn, Etsy has been able to keep their competitors at bay and continue to grow.

Moat – Network Economies

Network Economies (strong): Etsy has a strong moat in the company’s dual network effect. Etsy’s software platform, its primary offering, acts as a medium of exchange for artists and manufactures to sell their goods to customers. This unique dual network effect has set Etsy apart from competitors, providing value for artists and creators to monetize their talents by selling one-of-a-kind products to consumers while also providing value for consumers who have access to more goods on the platform. This, in turn, attracts buyers who seek authentic and unique items in a world of homogeneity and mass-production. As each additional seller joins the platform, they attract new buyers, thus creating a positive feedback loop that has fueled Etsy’s growth. This network effect has led over 100 million people to use Etsy, and as more individuals continue to join in search of consumers or producers of unique products, the company’s value only grows.

Conclusion - What drove shareholder return?

Etsy

1. **Pandemic-Related Growth:** Etsy was a benefactor of the COVID-19 pandemic. As retail brick-and-mortar stores began to close due to tightening restrictions to stop the spread of the coronavirus, Etsy was well positioned to benefit from a rise in e-commerce. Etsy, operating as an online-only store that connects buyers and sellers, capitalized on a lack of physical locations to purchase goods. Furthermore, during the lockdown following the pandemic, a trend towards being more creative and pursuing passions was rapidly growing. Many people began creating their own clothing items or other goods and selling them on Etsy's unique marketplace. Because Etsy had marketed itself as a location for one-of-a-kind products and individualistic items, people who began creating things for a wider audience took to Etsy to sell them. The pandemic lockdown forced people to shop for products online more, as well as provided individuals with more free-time to create and sell on Etsy. This drove revenue and due to the company's unique dual network effect, grew the business substantially, driving shareholder return over 1,300% since 2016.

2. **Niche Market Dominance:** Etsy initially focused its business on a relatively untapped market for buying and selling unique handmade goods. This space was largely dominated by eBay, which serves as a market for anything and everything. Etsy quickly became the market leader in this sector, centering its marketing and branding around offering a positive and seller-friendly environment for those who wish to sell their individual and personal products. Despite Amazon opening Amazon Handmade in 2015, Etsy's established base of buyers and sellers allowed the platform to maintain its dominance. Furthermore, many customers and sellers on Etsy use the website because they don't like to purchase homogenized and cheaply made goods from Amazon. Etsy's dominance in the handmade goods industry niche can explain the company's ~13x shareholder return throughout the time period.

3. **Network Economies:** Etsy's unique and powerful dual network effect most aptly explains the company's 1,354% shareholder return from FYE2015 to FYE2022. Etsy's online website offers a medium of exchange for buyers and sellers to interact. As more sellers and producers come to the platform, more consumers are attracted to purchase the new and unique product offerings. In turn, as more buyers join Etsy, more producers are attracted to the website to sell their products to a larger audience, and thus a profitable cycle is created, driving the value of the website. Etsy, in taking a percentage of each sale, beginning at 3.5% in 2016 and increasing to 6.5% in April 2022, as well as selling advertisements on its website Etsy.com, has been able to derive revenue from the increased value of its software. The increasing take rates also illustrates a key reason for the growth of Etsy's share price. The company began increasing the take rate from 3.5%, of which it had been stable at since the company's inception, to 5% in 2018. Because of the strong network effect, sellers of products do not have many other locations to sell their products to the same loyal customer base who are constantly checking Etsy for new products. Etsy further increased their take rate to 6.5% in 2022 without losing any supply or demand at scale. This pricing power, enabled through Etsy's dual network effect, has allowed the company to increase revenue by 37.7% annually compounded over the seven-year period, and in turn drive shareholder return.

Crocs, Inc (CROX)

Company Overview

Crocs, Inc. is a company that specializes in the design, development, marketing, distribution, and sale of casual lifestyle footwear and accessories for women, men, and children. The company's core product is its shoes, the majority of which contain Croslite™ material, a proprietary, molded footwear technology. Crocs operates across three geographic regions. The company prioritizes five core markets where it believes the greatest opportunities for growth exist: China, Japan, South Korea, the U.S., and Western Europe. The company's business model includes selling its products through a wide range of distribution channels in more than 85 countries. These channels include wholesale and direct-to-consumer. The direct-to-consumer channel includes company-operated retail stores, company-operated e-commerce sites, and third-party marketplaces. In addition to its core products, Crocs has also diversified its product portfolio through acquisitions; In February 2022, the company acquired HEYDUDE, a privately-owned casual footwear brand.

	1/1/2016	12/31/2022	
Stock Price*	$9.80	$108.43	
Market Cap	$721.9	$6,695.0	
Enterprise Value	$787.9	$9,098.3	
Shares Outstanding	73.7	61.8	1
Net Debt	-$136.9	$2,403.3	2
Debt/Equity	1.5%	317.3%	
Dividend Yield	N/A	N/A	
P/E	N/A	10.5x	3
EV/Sales	0.7x	2.6x	
EV/EBITDA	N/A	9.7x	
FCF/Share	-$0.1	$8.0	
Gross Margin	34.9%	52.5%	4
EBITDA Margin	N/A	26.5%	
Trailing 3yr Rev CAGR	-2.9%	36.9%	5
Trailing 7yr Rev CAGR		18.4%	
Analyst Buy %	33.3%		
Analyst Hold %	66.7%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Greg Ribbat (2015-2017), Andrew Rees (2017-Present), Former President of Crocs

CFO: Carrie Teffner (2015-2018), Anne Mehlman (2018-Present), Former VP of Finance at Crocs

COO:N/A

Analysis

1. Retired 16% of outstanding shares due to a board vote to retire around $1.0 billion dollars of outstanding shares
2. Debt substantially increased due to the $2.3 billion dollar acquisition of HEYDUDE. The acquisition was primarily financed through a $2.0 billion term loan
3. New leadership successfully transitioned company strategy to focus on simplifying product offering and returning the company back to profitability
4. Increases in average selling prices, reducing product mix, and increasing efficiencies in distribution resulted in gross margins expansion
5. Digital marketing campaigns and prioritization of top-selling products drove Crocs' ability to drive demand resulting in record revenue growth

Notable Events

crocs™

Volatility

1. Crocs withdraws guidance due to pandemic uncertainty (Mar. 2020)
3. Crocs announces record financial results for Q1 2021 with beats across all metrics (Apr. 2021)
4. Crocs outperforms estimates after responding to factory shutdowns in Vietnam and shifting production capacity to other countries. (Oct. 2021)

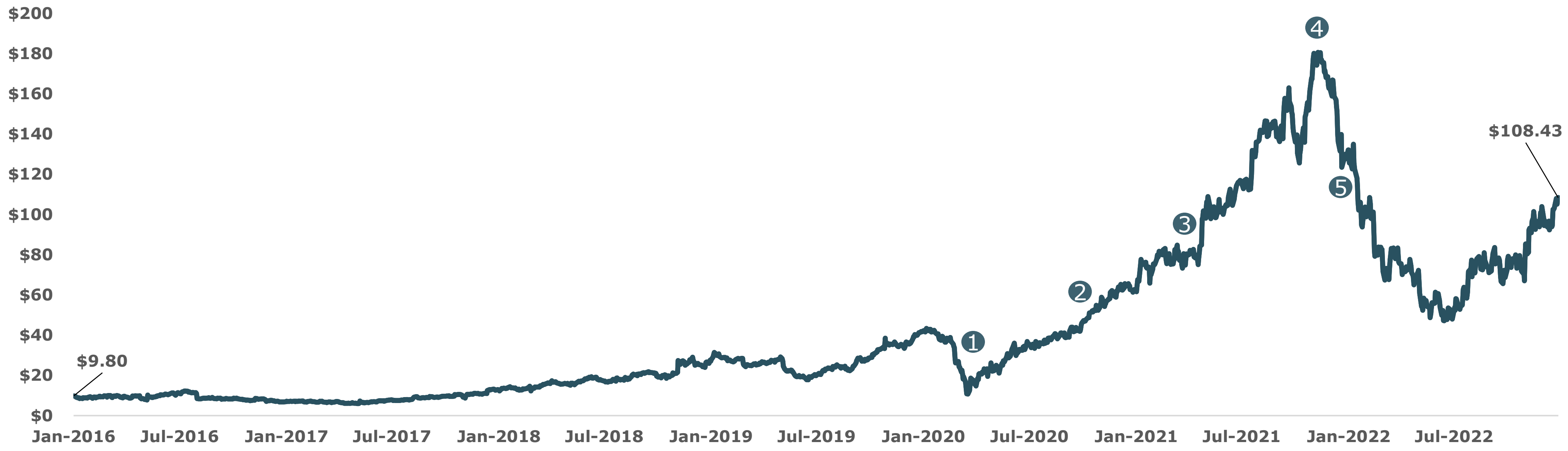
Mergers and Acquisitions

5. Crocs announces a majority cash acquisition of HEYDUDE for $2.5 billion (Dec. 2021)

Other Notable Events

2. Shares rise 13% after Justin Bieber announces collaboration with Crocs (Oct. 2020)
- Added to the S&P Midcap 400, replacing Cantel Medical (May 2021)

# of 20%+ Drawdowns	5
Max Drawdown	-75%



Competitive Landscape

Competition

- **Nike (NKE ~$183.1B Market Cap):** Nike designs, develops, and sells a variety of products to help in playing basketball and soccer (football), as well as in running, men's and women's training, and other action sports. Under its namesake brand, Nike also markets sports-inspired products for children and various competitive and recreational activities; it also sells sportswear under Converse.
- **Deckers Outdoor Corp (DECK ~$10.6B Market Cap):** Deckers Outdoor is a global leader in designing, marketing, and distributing innovative footwear, apparel, and accessories developed for both everyday casual lifestyle use and high-performance activities. It designs and markets the iconic UGG brand of luxury sheepskin footwear in addition to Teva sports sandals. Other product lines include Sanuk, HOKA UGGpure, and Koolaburra. Deckers Outdoor, which generates most of its revenue in the US, sells its footwear through about 160 retail stores worldwide, independent distributors, and e-commerce sites such as Amazon.com, Zappos.com, and Zalando.com.
- **Skechers (SKX ~$6.5B Market Cap):** Skechers USA designs and sells Skechers-branded lifestyle and athletic footwear for men, women, and children. Its products include casual, Its shoes are sold through roughly 3,095 distributor, licensee and franchise stores in more than 180 countries, as well as outlet stores, wholesale customers, and ecommerce businesses. Skechers generates about 50% its sales from the Americas.

Crocs successfully reignited its brand and strategy through the period; The pandemic and remote work favored casual footwear brands leading to an upward trend in across casual sneaker company stocks (Sketchers, Deckers Outdoor Corp). In addition, the resurgence of the fashion movement “Uglycore”: an anti-fashion trend that prioritizes comfort and individualism, favored the casual brands with unique and comfortable designs (Uggs, Crocs, Hoka, etc.).

Moat – Branding

Branding (strong): The foam clog and the Crocs brand are inextricably linked. Relative to other competitors who provide similar products (DAWGS), consumers are willing to pay a premium for Crocs footwear. Throughout the period, the company reprioritized its signature shoe and successfully rebranded itself as a shoe that makes a fashion statement. Crocs' “Come As You Are” campaign strategically leveraged digital communications and the world’s most influential people to drive the message that Crocs makes one comfortable in their shoes both literally and metaphorically; the shoe’s unique design resembles the uniqueness of individuals, and the message elicits good feelings about the shoe distinct from its objective product.

Conclusion - What drove shareholder return?

1. **Profitable Growth:** Since 2018, the Crocs brand has experienced a five-year run of double-digit revenue growth. Since the beginning of the period, Crocs' revenue grew at a an 18% CAGR while reaching double-digit operating margins in 2019 and an expanded adj. margin of 28% in 2022. Higher margin segments grew faster than lower margin; the company's high direct-to-consumer segment grew faster than wholesaler (12.5% vs 10.3% CAGR). In addition, the company increased its e-commerce presence which operate at very high margins.

2. **Store Count Reduction:** Over the period, Crocs closed nearly 40% of its physical locations in its efforts to respond to changing consumer behavior and focus on profitability. The reduction in physical stores also comes in response to a reduction in foot-traffic across retail stores. The transition enabled margin expansion due to the fixed costs associated with retail operations.

3. **Product Concentration:** SKU reduction and focusing on core molded footwear enhanced profitability and streamlined product offerings. Between 2014 and 2017: the company reduced it footwear SKUs by 50%. The focus on core molded footwear reprioritized the iconic product lines (clogs, Jibitz, and sandals) and reduced or eliminated other products (golf shoes, leather boots) with subpar gross margins. The company focused on products that are central to the brand's heritage.

4. **Branding:** Crocs "Come As You Are" campaign successfully revitalized the company's brand and drove its stock price to record highs. The brand partnered with influencers and brand relevant companies for multiple demographics (Justin Bieber, Bad Bunny, Drew Barrymore, KFC, Balenciaga) to revive its product relevance; all advertising dollars were spent on digital outlets. In the second year of the campaign, social media channels grew approximately 90% and engagement rates increased 250%. Since the beginning of the period, Crocs' Instagram following has grown at a 49% CAGR and the videos with hashtag "Crocs" has over 8.8 billion views on TikTok. Over the period, Crocs managed to increase its average selling price by over 38% while increasing units sold.

Axon Enterprise (AXON)

AXON

Company Overview

Founded in 1993 by brothers Rick and Tom Smith of Scottsdale, Arizona, Axon was founded under the name of AIR TASER after the Smith brothers bought the first patented TASER from Jack Cover, the weapon's inventor. Determined to revolutionize the TASER for law enforcement, the Smith brothers began addressing the problems that hindered the original TASER invented by Cover and rebranded to TASER International after debuting numerous weapon models. The TASER was eventually adopted as a popular and less-lethal alternative to guns by police officers, which gave Axon a monopoly on the market. The company expanded into body cameras, sensors, and software developed for law enforcement use, which led Smith to rebrand the company again to Axon Enterprise to represent its products and services better.

	1/1/2016	12/31/2022	
Stock Price*	$16.83	$165.93	
Market Cap	$902.8	$11,808.5	
Enterprise Value	$793.2	$11,551.2	
Shares Outstanding	53.6	71.2	
Net Debt	-$109.6	-$257.2	
Debt/Equity	0.1%	56.6%	1
Dividend Yield	N/A	N/A	
P/E	46.2x	150.9x	2
EV/Sales	4.0x	9.7x	2
EV/EBITDA	19.7x	98.2x	
FCF/Share	$0.8	$2.5	
Gross Margin	66.0%	61.2%	3
EBITDA Margin	20.4%	9.9%	4
Trailing 3yr Rev CAGR	19.9%	30.9%	5
Trailing 7yr Rev CAGR		29.2%	5
Analyst Buy %	57.1%		
Analyst Hold %	42.9%		
Analyst Sell %	0.0%		

Management

CEO: Rick Smith (1993-Present), Founded Axon under TASER International after two of his friends were shot and killed

CFO: Daniel Behrendt (2004-2017), Jawad Ahsan (2017-2022), Brittany Bagley (2022-Present), Previous CFO of Sonos and spent 12 years on KKR's Americas Private Equity Team

COO: Josh Isner** (2022-2023), Brittany Bagley (2023-Present)

Analysis

1. Long-term debt increased through senior convertible notes offering at the end of 2022 to fund general corporate operations/spending, such as R&D, product development, etc.
2. P/E multiple expansion despite inflated net income value due to recording net unrealized gains from Cellebrite DI Ltd investments; EV/Sales expansion reflects Axon's incredible growth arising from new product launches and subscription models
3. EBITDA margin decreased by 10% due to rising COGS from increased freight and labor costs, rising raw materials costs, and increased R&D spending
4. Gross margins decreased by 5% due to changes in product mix; 55.3% of total revenues attributed to sensors and software in 2022 compared to 24.5% in 2016; sensors and software gross margins are slightly lower than TASERs
5. Incredible trailing 3-year and 7-year revenue CAGRs attributed to near-monopoly on CED and bodycam markets, as well as increasing recurring revenues (90% of total revenues in 2022)

*Numbers in millions excluding stock price
**Josh Isner was the first COO of Axon

Notable Events

AXON

Volatility

- ❷ Police brutality protests turned violent in many cities across the US (Jun. 2020)
- ❸ Potential contract with DEA; LAPD renewed 5-year contract and became Axon's largest customer; several other large orders (Feb. 2021)
- ❹ Awarded $223 million DEA contract for camera and evidence management systems (Aug. 2021)
- ❺ Q3 2022 revenues increased 34%; gross margin increased 2%; booked contracts with US government (Nov. 2022)

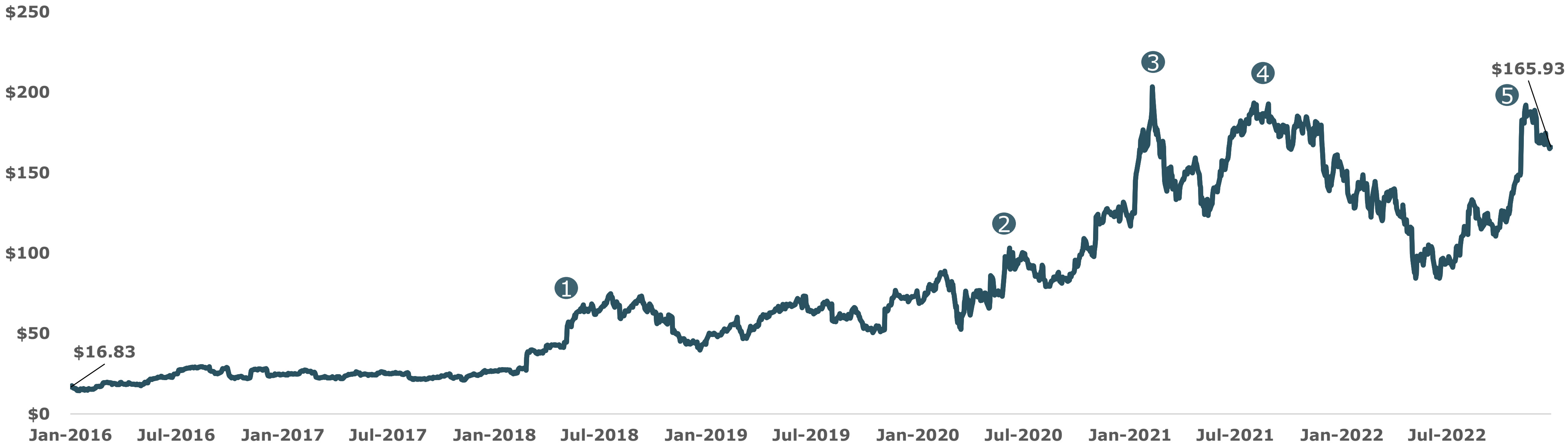
# of 20%+ Drawdowns	14
Max Drawdown	-58%

Mergers and Acquisitions

- Acquired Dextro, a computer vision and deep-learning system company (Feb. 2017)
- Acquired a computer vision team from Fossil Group (Feb. 2017)
- ❶ Acquired Vievu, Axon's largest camera competitor, for $7 million in cash and stock; set up near-monopoly in the bodycam market (May 2018)

Other Notable Events

- Axon launches Redaction Assistant, the first advanced AI-powered tool to be offered to law enforcement agencies (Apr. 2019)
- Resilient post-COVID-19 pandemic due to majority of revenue being tied to bundle contracts (2020)



Competitive Landscape

AXON

Competition

- **Motorola Solutions (MSI ~$49.0B market cap):** Motorola Solutions, an American video, equipment, telecommunications equipment, software, systems, and services provider, may be Axon's first serious threat to their body camera and software businesses. Motorola, a larger player in the body cam market, began offering a similar bundle of body cameras, digital evidence management, and cloud-based support for much cheaper than Axon in 2021.
- **Digital Ally (DGLY ~$0.1B market cap):** Digital Ally is one of Axon's primary camera rivals that has sued and been sued by Axon for patent infringement relating to their body cameras. They focus on body cameras and dashcams primarily for law enforcement, security, and commercial applications.
- **Tyler Technologies (TYL ~$13.4B market cap):** Tyler Technologies, a software and technology solutions company, is one of Axon's main competitors in the Records Management System (RMS) and Computer Aided Dispatch (CAD) markets. They primarily serve local governments, schools, and other public institutions.

Since its founding, Axon has had a near monopoly on both the taser weapon and bodycam markets. Because of their TASER patents and incredible brand recognition, many other competitors have tried and failed to create and commercialize the TASER. As the TASER rose in popularity among US police officers, nearly 94% of police agencies now using the weapon (2021), Axon strategically expanded into other business segments to continue growing market share. Axon now produces body cameras, management software, an inclusive line of TASERS, and a cost-effective package bundling many of their products for officers to use. During the 7-year period, they also released a subscription package that allows Axon to sign 5-year contracts with officers and agencies worldwide. Axon has maintained their monopoly on TASERS and cameras in serving law enforcement and federal agencies through these diverse business segments.

Moat – Cornered Resource, Switching Costs

Cornered Resource (strong): Founded by Jack Cover in the 1960s, the TASER was wildly unpopular in the United States until it was commercialized by the Smith brothers in the 1990s. After the brothers bought the original TASER company and patent from Jack Cover in 1990, they began experimenting with other versions of the weapon. Eventually, they created the M26 TASER, the first model Axon distributed (under TASER International). Since then, Axon has produced numerous models of the TASER and holds hundreds of patents on the weapon and their body cameras. They have sued and been sued by one of their competitors, Digital Ally, numerous times. They have managed to maintain their monopoly on the CED market by rejecting numerous claims on their TASER and body camera patents.

Switching Costs (strong): In 2019, Axon began selling a new subscription package called the "Officer Safety Plan" (OSP) which included a TASER, training, cameras, sensors, and a complete software suite that retailed for $199 per officer per month. This became Axon's highest-cost and highest-margin product on the market and saw immediate success during Q2 of 2019. Since then, Axon has released numerous variations of the OSP with their different TASER weapons, which has become their primary source of recurring revenue ($520 million annually). Because the OSP has a 5-year contract, the agencies that have bought the package from Axon are bound to use their products and services during that period and would incur a high financial and procedural cost when switching to an alternate supplier. Likewise, Axon launched two major software products in 2019 that also operated on a subscription basis and contributed to their increasing recurring revenue.

Conclusion - What drove shareholder return?

1. **New Market Entry:** During the 7-year period, Axon has tapped into the US state and federal governments to attract and retain new customers to grow their consumer base, as well as receive money to fund their operations. They have received grants from the Department of Justice, the Department of Homeland Security, the Department of Defense, and the Drug Enforcement Administration to fund R&D, purchase products, and train law enforcement officers. Additionally, Axon has received recognition from the US General Services Administration for their cloud services in 2022 to be the highest level of security status. This allows US government customers to leverage the Axon network with complete trust to store the most sensitive, unclassified data handled by federal civilian agencies. This new market penetration has granted Axon an entirely new consumer base and has driven up sales during the latter years of the period.

2. **Cornered Resource:** Since its invention, the Smith brothers have had control over the TASER weapon and managed to turn their small garage business into a billion-dollar company by constantly innovating their CED products, entering new markets (bodycams), and scoring patents that protect their designs. As of 2022, Axon holds hundreds of US and international patents on their CED, camera, and sensor products that have prohibited competitors from entering the market. This has given Axon a near-monopoly over both the CED and bodycam markets, with nearly no serious competitors threatening their business. As a result, Axon's products are the first choice for major cities with 17,000+ law enforcement agencies in 100+ countries around the world as part of the Axon network.

3. **Switching Costs:** Axon benefits from high financial and procedural switching costs through its subscription packages within its OSP product line and cloud software services (Axon Records, Evidence, Respond, and Dispatch). Axon's reliance on its subscription products has grown tremendously during the 7-year period. In 2015, recurring revenue only comprised around 8.4% of their total revenues, while in 2022, 90% was tied to subscription bundles. This has allowed Axon to build a massive customer base with incredible loyalty and locks agencies into their ecosystem, further incentivizing them to buy Axon products. Their subscription bundles offer agencies the benefit of buying tasers, body cameras, sensors, and software services all-in-one rather than separately purchasing each piece for a higher cost. Axon has capitalized on this opportunity by setting high margins for their subscription packages. Additionally, Axon's cloud software line has seen strong growth throughout the period and has largely contributed to their net revenue retention rate, as their customers typically sign 5- or 10-year contracts. Their cloud services offered a 73% gross margin in 2022 and have seen double- and triple-digit growth throughout the period. Though Axon's overall revenue growth has been consistent throughout the period, its recurring revenues have been their true growth driver of shareholder return.

Saia (SAIA)

Company Overview

Saia is a transportation company based in the United States. With its headquarters in Georgia, Saia operates as a leading provider of less-than-truckload (LTL) transportation services. The company primarily focuses on regional and interregional shipments across North America and has been one of the most active trucking companies in real estate expansion for service facilities during the 7-year period. Saia offers a comprehensive range of logistics services, including truckload brokerage, supply chain solutions, and expedited freight. It maintains a strong network of terminals strategically located throughout the US that allows for efficient and reliable transportation services.

	1/1/2016	12/31/2022	
Stock Price*	$21.79	$209.67	
Market Cap	$547.7	$5,548.7	
Enterprise Value	$616.6	$5,515.8	
Shares Outstanding	25.1	26.5	
Net Debt	$68.9	-$32.9	1
Debt/Equity	16.1%	9.8%	
Dividend Yield	N/A	N/A	
P/E	10.1x	15.6x	2
EV/Sales	0.5x	2.0x	
EV/EBITDA	4.0x	8.8x	
FCF/Share	$2.3	$3.9	
Gross Margin	32.5%	40.9%	3
EBITDA Margin	12.7%	22.5%	4
Trailing 3yr Rev CAGR	3.6%	16.0%	
Trailing 7yr Rev CAGR		12.5%	5
Analyst Buy %	42.9%		
Analyst Hold %	57.1%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Rick O'Dell (2006-2020), Frederick Holzgrefe (2020-Present), Previous COO of Saia

CFO: Frederick Holzgrefe (2014-2019), Robert Chambers (2019-2020), Douglas Col (2020-Present), Former VP of Saia

COO: N/A

Analysis

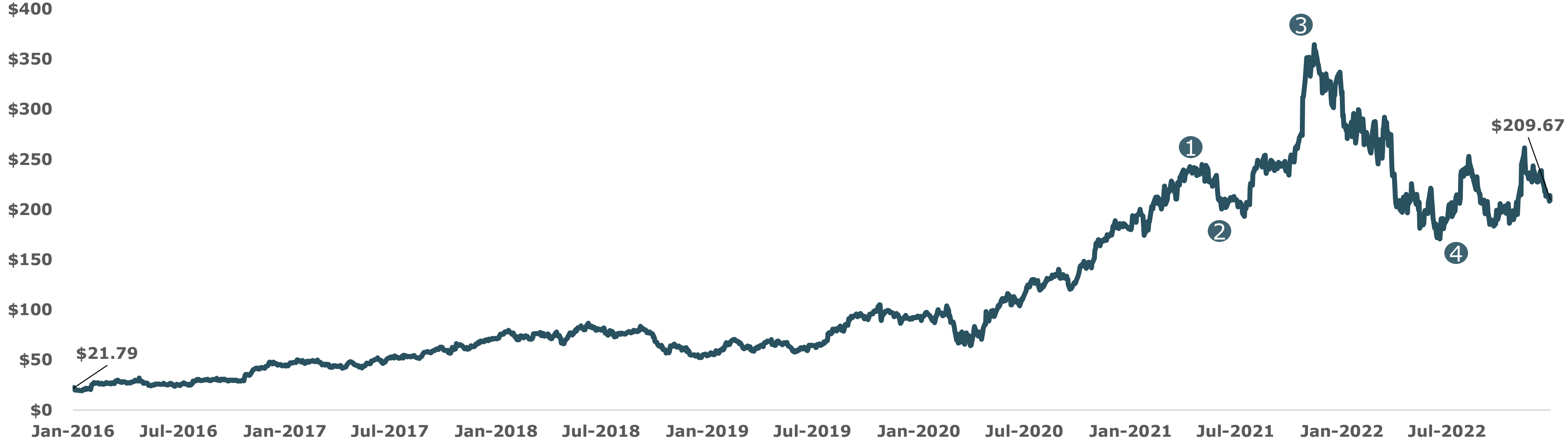
1. Net debt decreased by 309.1%; consistently paid off amounts of debt throughout the period and increased cash flows 87.9% through increased revenues and decreasing operating ratios
2. P/E multiple expansion; undervalued in the beginning of the period due to low investor sentiment for revenue growth and expansion
3. FCF increased 73.9% throughout the period; attributed to large increases in revenues due to increased demand for trucking post-COVID-19 pandemic, network expansion; and fuel/rate tailwinds
4. Gross margin increased 900bps over the 7-year period; part of management's plan to decrease operating ratio to sub-70
5. EBITDA margin increased due to increase in revenues and earnings; OPEX increased disproportionately to revenues which boosted earnings through the period
6. Maintained 12.5% revenue CAGR throughout the period; significant increase in revenues during the latter half of the period attributed to strong demand for trucking services post-COVID-19 pandemic and rapid expansion of network facilities beginning in 2017

Notable Events

Volatility

1. Launched hiring initiative; received two VNR Electric trucks from Volvo partnership (Apr.-May 2021)
2. Trucking industry faced driver shortages amid pandemic supply chain issues (Jun. 2021)
3. Q3 '21 earnings beat; revenue grew 28% and operating income grew 92% (Oct. 2021)
4. Evercore ISI cuts target price to $250 from $298 (Jul. 2022)

# of 20%+ Drawdowns	9
Max Drawdown	-53%



Mergers and Acquisitions

- N/A

Other Notable Events

- Expanded into Northeastern US beginning with Pennsylvania and New Jersey (2017)
- Announced exclusive US-Canada cross-border LTL partnership with TST Overland Express (Mar. 2017)
- Announced partnership with Daimler Trucks North America to test a battery electric Freightliner eM2 box truck (Dec. 2021)
- Reported record operating ratios attributed to increasing revenues, rate increases, and more weight per shipment (Jul. 2021)

Competitive Landscape

Competition

- **Old Dominion Freight Line (ODFL ~$31.6B market cap):** Old Dominion is a well-established and leading less-than-truckload(LTL) transportation company, one of Saia's largest competitors. With a significant market presence, Old Dominion is much larger than Saia by market cap and is recognized as one of the largest and most reliable LTL companies in the US. The company prides themselves on their robust network of service centers and have invested significant capital into expanding their physical facilities.
- **XPO (XPO ~$3.8B market cap):** XPO is a global transportation and logistics company, with operations in the United States, Canada, Mexico, and the Caribbean. They are a leading provider of freight transportation, and specifically LTL shipping across North America. With rapid expansion and the development of proprietary technology, XPO has grown to serve 27,000+ customers in the 20+ years its operated.
- **FedEx Corporation (FDX ~$43.7B market cap):** FedEx Freight is the LTL subsidiary of FedEx Corporation and is a significant competitor to Saia in the transportation and logistics industry. With operations primarily in the US and Canada, FedEx Freight provides reliable and efficient LTL shipping services for businesses of all sizes. Leveraging the resources and expertise of the larger FedEx network, FedEx Freight has established itself as a leader LTL carrier.

Saia, though significantly smaller than Old Dominion, operates a similar business model and strategy within the LTL business. Throughout the 7-year period, Saia has focused its efforts into internal organic growth by investing capital into service facility expansion to increase their customer base and shipping efficiency. Thus, Saia has made zero acquisitions throughout the period and has improved their operating ratio significantly through these efforts to increase market share. As a result, Saia and Old Dominion's share price were 98% correlated throughout the period.

Moat – Scale Economies

Scale Economies (weak): By nature of the LTL trucking industry, Saia benefits from economies of scale through significant upfront fixed costs and high barriers to entry. Saia has taken advantage of this by rapidly expanding their facility network and truck fleet throughout the United States. As Saia invests into more physical terminals and trucks, this allows them to expand their geographic reach, thereby increasing their customer base and improving shipping efficiency. Likewise, the more shipments that Saia makes, the lower their fixed costs are across their hard assets, lowering their cost margins. Though we do acknowledge that Saia benefits from economies of scale, we believe that Saia does not possess a particularly strong moat that has solely contributed to their shareholder return throughout the period.

Conclusion - What drove shareholder return?

1. **Service Facility Expansion:** Since 2016, Saia has opened 40 new terminals across the United States, making them one of the most active real estate players in the LTL market during the 7-year period. Because Saia is much smaller than their peers such as Old Dominion and FedEx, they've been implementing a rapid expansion and growth strategy that started with the development of facilities in the Northeastern US in 2017. By constantly investing in physical infrastructure, Saia has expanded their geographic reach and is able to increase their consumer base to drive revenues and decrease costs associated with shipping. Widely regarded as a regional shipper before the observed time period, Saia has grown to ship to locations across the US and North America. Saia's growth strategy has directly contributed to its 12.5% revenue growth YOY during the period, as well as their 930bps decrease in operating margin from 2016 to 2022.

2. **Improved Operating Ratio:** As mentioned above, Saia has been able to lower their operating ratio by 930bps throughout the period from 92.6% to 83.3% as part of management's long-term plan to improve cost efficiency. While Saia's operating costs still grew steadily YOY, management was able to offset this by increasing revenues at a steeper rate and ultimately improved operating ratios each year. This revenue growth and cost efficiency can be attributed to Saia's long-term commitment to facility expansion, their increase in tonnes per shipment, rate hikes, and fuel surcharges. By growing their geographic footprint and shifting to heavier freight particularly in 2020-2022, Saia has made significant strides in cost efficiency. Additionally, their long-term plan to gradually impose rate increases on shipping prices has contributed to their revenue growth. In 2022, the trucking industry saw average rate hikes increase to around 3-5%; however, Saia implemented a 7.5% increase in rates to offset higher operating costs and improve their operating ratio. With their gradual rate hikes, Saia has maintained that 22.5% of their revenues are attributed to rate hikes each year.

3. **Scale Economies:** The LTL shipping industry has very high barriers to entry due to the large upfront capex costs that come with establishing large networks of service facilities and employing truck fleets. As a result, Saia benefits from economies of scale due to their investment in long-term physical assets and infrastructure. With over 190 terminals and nearly 4,000 trucks, the more shipments that Saia makes, especially the heavier the freight, they benefit from lower fixed costs across each ton of freight. While this moat did necessarily not separate Saia from their competition during the 7-year period, this competitive advantage allowed them to take market share by improving operations to lower costs and prevent other smaller cap players from entering the market.

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Ubiquiti Inc. (UI)

UBIQUITI NETWORKS

Company Overview

Ubiquiti Inc. is a technology company founded in 2005 in New York City. The company specializes in networking and wireless communication solutions for consumers and businesses. It designs and manufactures hardware devices like access points, routers, switches, and surveillance cameras, known for their reliability and affordability. With a direct-to-consumer business model, the company bypasses traditional distribution channels to offer high-quality networking equipment at competitive prices. Additionally, Ubiquiti's UniFi software platform provides centralized management and monitoring capabilities, empowering users to optimize their network performance. Through its innovative products and disruptive approach, Ubiquiti has established itself as a prominent player in the networking industry.

	1/1/2016	12/31/2022	
Stock Price*	$30.97	$273.56	
Market Cap	$2,619.6	$16,529.1	
Enterprise Value	$2,248.5	$17,325.6	
Shares Outstanding	84.6	60.4	1
Net Debt	-$371.2	$769.5	2
Debt/Equity	29.4%	N/A	
Dividend Yield	0.5%	1.4%	3
P/E	15.1x	47.6x	
EV/Sales	3.7x	9.7x	
EV/EBITDA	12.7x	36.8x	
FCF/Share	$2.5	$2.6	
Gross Margin	48.8%	40.0%	
EBITDA Margin	29.1%	26.3%	
Trailing 3yr Rev CAGR	19.0%	13.3%	4
Trailing 7yr Rev CAGR		16.1%	
Analyst Buy %	14.3%		
Analyst Hold %	50%		
Analyst Sell %	35.7%		5

*Numbers in millions excluding stock price

Management

CEO: Robert Pera (2005-Present), Founder and former engineer at Apple, left in 2005 to found Ubiquiti

CFO: Kevin Radigan (2016-Present), Former CFO of American Medical Alert Corp

COO: N/A

Analysis

1. 28.6% decrease in shares outstanding due to continuous buybacks beginning in FY2016 and increasing in FY2018
2. Increase in net debt as a result of ~50% decrease in cash position in FY2018 and $200+ million debt issuance in FY2020-FY2022
3. The company stopped paying dividends from 2016-2018 then began again in 2019
4. 30% decrease in trailing three-year revenue CAGR as Ubiquiti experienced negative revenue growth in FY2022 due to allegations of a data breach and lawsuit
5. 35.5% of sell-side analysts placed a sell recommendation on UI just before an 816% increase in the company's stock price

Notable Events

UBIQUITI NETWORKS

Volatility

1 • EPS and revenue much higher than street expectations due to 10.5% increase in service provider revenue (Nov. 2019)

2 • Increased demand for wireless products as the COVID-19 pandemic forced companies to adopt work-from-home policies (2020-2021)

3 • EPS beat, bottom line higher than expected, COVID-19 pandemic era supply chain disruption overestimated (Oct. 2020)

Mergers and Acquisitions

- N/A

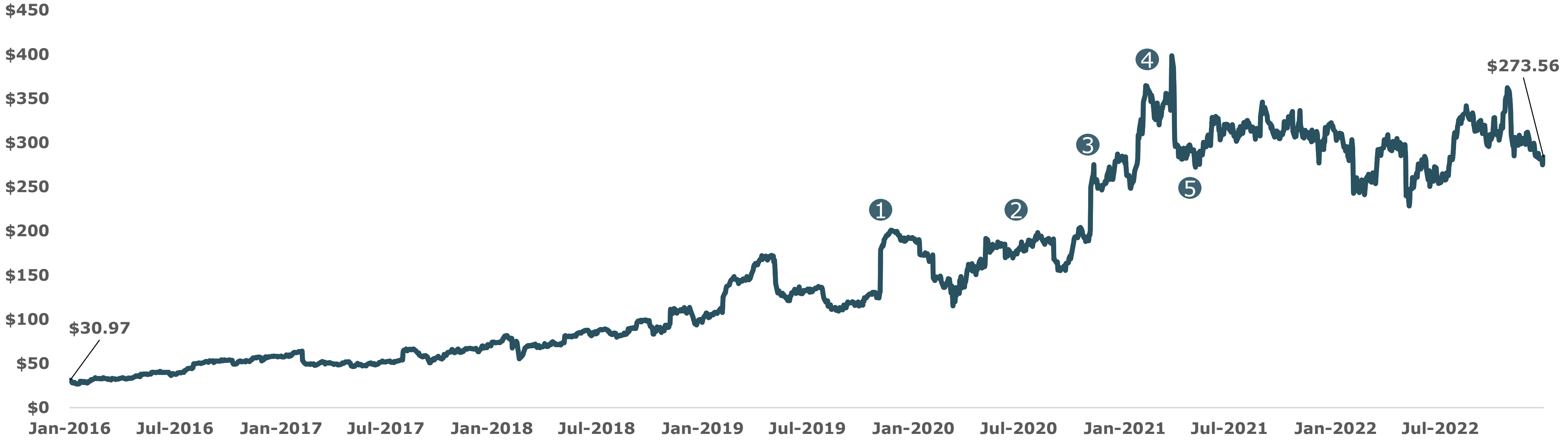
Other Notable Events

4 • Sequential EPS beat, earnings 43% higher than expected coupled with heightened revenue growth due to demand for camera systems (Feb. 2021)

5 • Alleged data breach and ensuing lawsuit from US attorney (Mar. 2021)

- Lawsuit uncovered former employee committed inside job aimed at extorting Ubiquiti (Dec. 2021)

# of 20%+ Drawdowns	9
Max Drawdown	-42%



Competitive Landscape

Competition

- **Cisco (CSCO ~$195.7B market cap):** Cisco is a multinational technology conglomerate that was founded in 1984. The company is renowned for its networking hardware, software, and services, catering to a wide range of customers, including businesses, governments, and service providers. Cisco's comprehensive portfolio encompasses routers, switches, security solutions, collaboration tools, and cloud-based services, empowering organizations to build and manage robust and secure networks.
- **Cambium Networks (CMBM ~$0.6B market cap):** Cambium Networks is a global provider of wireless networking solutions. Founded in 2011, the company specializes in point-to-point and point-to-multipoint connectivity, offering hardware devices and software solutions for industries such as telecommunications, enterprise, and industrial sectors. Cambium Networks' focus on reliable and scalable wireless broadband solutions positions it as a direct competitor to Ubiquiti.
- **Huawei (Private):** Huawei is a multinational private technology company founded in 1987, and it operates in various sectors including telecommunications, consumer electronics, and networking. As a direct competitor to Ubiquiti, Huawei offers a wide range of networking solutions, including routers, switches, and wireless access points, catering to both consumer and enterprise markets.

While Ubiquiti exhibited promising qualities, including cost efficiency and product reliability, its market position was relatively small compared to its competitors in 2016. However, by 2022, Ubiquiti demonstrated remarkable market resilience and successfully outperformed its competitors. Leveraging its disruptive direct-to-consumer business model, Ubiquiti continued to deliver cutting-edge networking solutions at competitive price points, solidifying its reputation for value-oriented innovation. Notably, the company's strategic expansion of its product portfolio, coupled with the accelerated development of its UniFi software platform, allowed Ubiquiti to effectively meet evolving customer demands and emerge as a formidable player in the networking industry. Ubiquiti also introduced a novel business model, focusing on product innovation as opposed to spending revenues on salesmen and customer support.

Moat – Counter Positioning

Counter Positioning (strong): Ubiquiti has a strong competitive advantage in its counter positioning against incumbent networking companies. Rather than create a new and revolutionary product, Ubiquiti developed an innovative business model in the networking industry, centered around a lack of salesmen, little customer service representatives, and direct to consumer shipping. The company focused on limiting their SG&A spending to just 3.77% of revenue, on average from 2015-2022, focusing all their liquidity on R&D and product innovation. Ubiquiti Community, a community forum on the company’s website, functions as a space for “techies” to discuss and troubleshoot products, with help from company experts. This business model has created higher margins and has enabled the company to price its products at a ~10% to ~25% discount to competitors. Furthermore, in eliminating the middle-man, retailers, in the sales of Ubiquiti’s products and software through a direct-to-consumer strategy, the company can retain higher margins and cut prices of their products.

Conclusion - What drove shareholder return?

1. **Industry Growth:** Ubiquiti's remarkable ~8x shareholder return throughout the period 2016-2022 can partially be attributed to the larger growth of the internet and growing demand for affordable retail wireless solutions. According to the Cisco Annual Internet Report in 2022, global internet users are projected to reach 66% of the world's population by 2023, up from 51% in 2018. Moreover, the report illustrates a rise in networked devices per capita from 2.4 to 3.6 in 2018 and 2023, respectively. Ubiquiti, since the company's inception in 2005, has recognized the limitations of wired networks and the costs associated with infrastructure deployment. Instead, Ubiquiti focused on wireless solutions, capitalizing on the underpenetrated markets by offering wireless networking solutions at a low price point, targeting SMB and retail customers. By strategically aligning with the larger industry trend and positioning itself to benefit from the rise in demand for low-cost networking solutions, Ubiquiti has been able to rapidly grow, meeting demands for high-bandwidth applications and broadband access at a lower price point.

2. **Ubiquiti Community:** The Ubiquiti Community is an online forum for the company's customers to talk, troubleshoot, and brainstorm about Ubiquiti's products. The website averaged ~400,000 users per month in 2022, up significantly from 2016. This community has attracted a unique type of customer who is more of a fan of the brand than anything. Ubiquiti has amassed a large following of devoted customers who care deeply about the company, support the young founder and CEO, and actively engage in discussions of the company's products; in turn driving recurring revenue for the bottom line. Ubiquiti's Reddit page, for instance, boasts 156,000 members and is a very active form for the company's customers to discuss anything and everything Ubiquiti-related. Cisco, a competitor of Ubiquiti is ~11x the size of the company, has a Reddit page with only 75,000 followers and infrequent posts about products. This unique infatuation with Ubiquiti can largely be attributed to the company's reputation as a "techy" or "nerdy" company, focused only on product innovation. Individuals on Ubiquiti's forums and Reddit page frequently discuss how the company is run by "techies" and appreciate that it is "not a bureaucratic mess like Cisco". The Ubiquiti Community of loyal followers continues to grow and drive recurring revenue, almost creating a network effect around the business, and successfully driving shareholder return 815.6% since FYE2015.

3. **Counter Positioning & Unique Business Model:** Ubiquiti stands out in the competitive landscape due to its distinctive and durable business model, providing a significant competitive advantage in the form of counter-positioning. Unlike traditional enterprise hardware companies, Ubiquiti follows a "pull" marketing approach, minimizing its SG&A costs to just 3.8% of revenue on average throughout the period. By operating as a lean research and development organization and forgoing a substantial sales force, Ubiquiti relies on its vast online community of enthusiasts and word-of-mouth to drive customer discovery. This approach allows Ubiquiti to offer products at remarkably lower price points, often a mere fraction of its competitors' offerings, while still achieving impressive gross margins of 49% in 2016 and 40% in 2022. The Ubiquiti Community has 11 million registered users, many of whom were active contributors to the website's forum in 2017. The number of users has only grown since then, illustrating the success of Ubiquiti's novel business model of no-salesmen and limited customer service.

Paycom Software (PAYC)

paycom

Company Overview

Paycom Software (Paycom) is an American technology company that was founded in 1998 and is based in Oklahoma City. It specializes in providing comprehensive cloud-based human capital management (HCM) solutions to businesses of all sizes. Paycom's core products include payroll processing, talent acquisition, time and attendance tracking, benefits administration, and HR management. The company's business model revolves around offering a single-database platform that integrates all aspects of HR and payroll processes, enabling efficient and streamlined workforce management. With its user-friendly interface and robust features, Paycom has gained a strong reputation in the industry, serving over 30,000 clients across various industries and empowering organizations to optimize their HR operations.

	1/1/2016	12/31/2022	
Stock Price*	$35.97	$310.31	
Market Cap	$2,125.9	$18,624.9	
Enterprise Value	$2,100.9	$18,294.2	
Shares Outstanding	59.1	60.0	
Net Debt	-$24.9	-$330.7	1
Debt/Equity	26.2%	5.9%	
Dividend Yield	N/A	N/A	
P/E	95.1x	63.4x	2
EV/Sales	9.4x	13.3x	
EV/EBITDA	47.9x	38.8x	
FCF/Share	$0.5	$4.0	3
Gross Margin	84.2%	84.1%	4
EBITDA Margin	19.5%	34.3%	
Trailing 3yr Rev CAGR	41.9%	23.1%	5
Trailing 7yr Rev CAGR		29.5%	5
Analyst Buy %	77.8%		
Analyst Hold %	22.2%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Chad Richison (1998-Present), Founder and CEO of Paycom, member of board of directors

CFO: Craig Boelte (2006-Present), Former owner of accounting practice that used Paycom

COO: N/A

Analysis

1. 1,222.8% decrease in net debt due to Paycom’s lack of need for debt issuance and growing cash position beginning in FY2019
2. P/E multiple compression of 33% as company has grown into its potential since 2016; multiple remains high today compared to industry average of ~45x
3. 700% increase in FCF/Share ratio due to minimal share dilution coupled with growth in revenue and product demand
4. Stagnant high gross margin representing stable cost structure while revenue grows and more products are offered
5. Trailing 3-year revenue CAGR decrease by ~45% as Paycom’s business matures and business model gains market reach, yet 7-year revenue CAGR remains at ~30% illustrating the company’s rapid long-term growth

Notable Events

paycom

Volatility

1. • Better than anticipated revenue growth and EPS beat due to large demand from COVID-19 pandemic era reliance on technology (Nov. 2020)
2. • Paycom releases Beti, innovative employee-driven payroll solution (Jul. 2021)
4. • Q2 '22 EPS beat, and boosted earnings outlook driven by strong demand (Aug. 2022)

Mergers and Acquisitions

- N/A

Other Notable Events

3. • EPS beat but slightly lower-than-expected revenue outlook drove shares down due to high-valuation at the time (Nov. 2021)

# of 20%+ Drawdowns	8
Max Drawdown	-53%

Competitive Landscape

paycom

Competition

- **Automatic Data Processing (ADP ~$99.1B market cap):** Automatic Data Processing, ADP, is a global leader in human capital management solutions, offering cloud-based software and services for businesses of all sizes. Their comprehensive suite of offerings includes HR, payroll, talent management, and administration solutions. ADP leverages advanced technologies to streamline processes, enhance efficiency, and provide personalized employee experiences.
- **Paychex (PAYX ~$41.7B market cap):** Paychex is a provider of payroll, HR, and outsourcing solutions for businesses. Founded in 1971, Paychex serves small and medium-sized businesses in their payroll and HR needs. The company's flagship all-in-one product, Paychex Flex, offers easy-to-use solutions for its customers. The company offers software solutions to businesses of all sizes.
- **Paylocity Holding Corporation (PCTY ~$10.8B market cap):** Paylocity Holding Corporation, or Paylocity, is a provider of cloud-based payroll and HCM software solutions for businesses. Founded in 1997, the company caters to organizations of various industries, offering a comprehensive suite of services like payroll processing, time and labor management, talent management, benefits administration, and enhanced analytics.

At the beginning of the period, in FYE2015, Paycom was a small-cap company that attempted to revolutionize payroll and human capital management. The company has large growth prospects; as evidenced by its 95.1x price-to-earnings multiple at the start of the period. Throughout the seven years, Paycom grew into its potential and began eating up market share as the first only software-based HR and payroll company. The company's aggressive sales strategy coupled with rising demand for cloud-based products and ease-of-use, allowed Paycom to dominate the market and gain significant market share. Paycom also targeted small and mid-sized businesses as part of their growth strategy. By getting SMBs integrated into the Paycom software suite, companies used Paycom as they grew and thus Paycom gained a foothold in the industry. This growth strategy along with the growing demand for cloud services, ease-of-use products, and streamlining employee efficiency, enabled Paycom to grow their revenue at a ~30% compounded rate since FYE2015 and dominate the online payroll software and HR industry.

Moat – Switching Costs

Switching Costs (strong): Paycom's competitive advantage lies in the high switching costs associated with its software solution offerings. Companies tend to use Paycom due to its ease of use, comparatively cheap prices, and developer friendly product (on a one-code database). Once companies are using Paycom, a high switching cost is created. This switching cost is primarily an opportunity cost of switching to another provider: it takes lots of time, effort, and company-wide change to switch away from Paycom's software solutions. Furthermore, as Paycom has continued to innovate, creating new software offerings, their customers have only become more dependent on the software creating an even higher switching cost. This competitive advantage is evidenced by Paycom's annual revenue retention rate, which was 93% in 2022, and maintained levels above 90% since 2016, coupled with an average of ~30% recurring revenue growth YoY throughout the period.

Conclusion - What drove shareholder return?

1. **Niche Market Dominance:** Paycom's 762.7% shareholder return throughout the period FYE2015 to FYE2022 can partially be attributed to the company's niche market dominance in the online payroll and human resource technology for the small and midsized businesses sector. Paycom offered a unique go-to-market strategy, differentiating itself from its competitors to gain market share. This strategy involves entering the market through direct sales as opposed to relying on brokers, channel partners, or consultants. Paycom's sales teams are sent to regional sales offices to make personal relationships with small and midsized business owners. Once integrated into the system by this unique sales strategy, the members of the sales team are instructed to maintain relationships with clients and continue to penetrate new markets. This strategy upended legacy payment providers who traditionally paid little attention to rural or smaller-sized businesses. Paycom's revenue began to exponentially grow, averaging ~30% compounded over the seven years, as a result of this successful sales campaign and the company's dominance of the payroll sector for SMBs, consequently, driving shareholder return.

2. **Switching Costs:** Once Paycom's sales team attracted many new clients and companies, the company's high switching costs ensured that these customers would not jump to a competitor and drove high recurring revenue, which translated into a ~7.5x shareholder return since 2016. Paycom has created an ecosystem surrounding its software solutions for businesses. Transitioning onto any payment platform for the first time is a revolutionary period for a company. Paycom's large suite of software, once integrated into a business, creates a high switching cost. Small and mid-sized businesses thinking of switching to one of Paycom's competitors face a high opportunity cost due to the time, effort, and general stagnation that the company would incur when its entire payroll system would be turned off for a week. Furthermore, because employees require on-time pay due to contractual obligations, a legal-switching cost is also created. If a company chooses to shut down its Paycom software during a transition period, any employees who are not paid or able to access their paychecks will likely be enraged, causing harm to the underlying business. These high switching costs are evidenced by a 32% average recurring revenue growth, 90%+ net revenue retention rate, and ~30% compounded seven-year revenue growth since FYE2015.

Deckers Outdoor Corporation (DECK)

DECKERS BRANDS

Company Overview
Over the past 49 years, Deckers has built a multibillion-dollar shoe empire, starting with UGG: the company's flagship sheepskin boots. They then moved to acquire four other core companies: HOKA, Teva, Sanuk, and Koolaburra by UGG. Deckers Outdoor Corporation is now a global footwear and apparel company known for its portfolio of iconic brands and established itself as a leader in the performance and lifestyle footwear market. With a strong emphasis on product innovation and quality, Deckers strives to provide the highest-quality products to meet their customers' expectations. Deckers has maintained a strong brand image for comfort and reliable footwear. By investing heavily into advertising, Deckers has enhanced their brand visibility by marketing directly to target consumers and has benefitted off mass fashion trends set by celebrities wearing Deckers's brands.

	1/1/2016	12/31/2022	
Stock Price*	$47.15	$399.20	
Market Cap	$1,524.5	$10,564.5	
Enterprise Value	$1,317.8	$9,707.1	
Shares Outstanding	32.3	26.5	1
Net Debt	-$206.7	-$857.4	
Debt/Equity	5.5%	11.3%	2
Dividend Yield	N/A	N/A	
P/E	10.7x	21.6x	
EV/Sales	0.7x	2.7x	3
EV/EBITDA	5.5x	14.3x	
FCF/Share	$1.6	$13.6	4
Gross Margin	49.1%	53.0%	5
EBITDA Margin	13.1%	19.0%	
Trailing 3yr Rev CAGR	8.6%	16.0%	
Trailing 7yr Rev CAGR		8.2%	
Analyst Buy %	45.5%		
Analyst Hold %	54.5%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Dave Powers (2016-Present), Former President of Omni-Channel and Direct To Consumer at Deckers

CFO: Thomas George (2009-2018), Steven Fasching (2018-Present), Former VP of of Planning and Investor Relations at Deckers

COO: N/A

Analysis

1. Deckers has repurchased shares throughout the period to return excess capital back to investors; they retired 5.8 million shares throughout period
2. D/E ratio increased during the period due to share repurchases decreasing equity value; debt balance value was zero by the end of the period
3. Deckers increased sales 73.7% throughout the period; growth was largely attributed by its HOKA brand which saw double digit growth beginning in 2019
4. FCF/Share increased $12 million throughout the period due to increased sales and limited spending in acquisitions and decrease in capex due to shift towards e-commerce; returned capital back to investors via share buybacks and paid off all debt
5. Increased gross margin 4% throughout the period due to shift towards e-commerce; increased DTC sales which have higher margins than wholesale revenues

Notable Events

DECKERS BRANDS

Volatility

- ❶ Q3 '17 earnings miss; wholesale and distributor sales decreased across UGG, Teva, and Sanuk brands (Feb. 2017)
- ❷ Q4 '20 earnings beat; despite COVID-19 pandemic related headwinds in retail sector, UGG and HOKA saw triple-digit e-commerce growth (May 2020)
- ❸ Q1 '22 records most profitable first quarter ever; UGG, HOKA, Teva, and other brands (Koolaburra) sales grew 70.8%, 95.5%, 65.9%, and 435.9% (Jul. 2021)

# of 20%+ Drawdowns	7
Max Drawdown	-55%

Mergers and Acquisitions

- N/A

Other Notable Events

- Marcato Capital Management, who owned 8.1% of Deckers, sued Deckers overboard election; Deckers took a hostile stance against Marcato's asks regarding board candidates (Oct. 2017)
- Appointed Steve Fasching to CFO (Jun. 2018)
- UGG debuted flagship store in NYC (Nov. 2020)
- HOKA ONE Merkato's announced launch of Carbon X 2 and hosted successive 100K world record attempts in the US and Japan (Jan. 2021)
- HOKA revenues surpassed UGG for the first time during Q1 of 2022 (Jul. 2021)

Competitive Landscape

DECKERS BRANDS

Competition

- **Nike (NKE ~$183.1B market cap):** Nike's principal business activity is the design, development, and worldwide marketing and selling of athletic footwear, apparel, equipment, accessories, and services. They currently own both footwear brands of Jordan and Converse. They are the largest seller of athletic footwear and apparel in the world, with both Nike-owned retail stores and sales through digital platforms. Nike's athletic footwear products are designed primarily for specific athletic use, although a large percentage of the products are worn for casual and leisure purposes.
- **Skechers (SKX ~$6.5B market cap):** Skechers is a globally recognized footwear company. Established in 1992, Skechers has grown into one of the largest athletic and lifestyle footwear brands, known for its diverse range of products and emphasis on comfort and style. They aggressively market their brands for men, women, and children through print, television, digital, and press campaigns, as well as partner with celebrities to increase brand awareness.
- **Crocs (CROX ~$6.7B market cap):** Crocs is a renowned footwear company that competes with Decker in the footwear market, particularly in the casual and comfort footwear segment. Established in 2002, Crocs has gained widespread recognition for its distinctive clog-style shoes and expanded its product line to include a variety of footwear options

Much of Deckers's success throughout the period can be attributed to their pull distribution model, building of their DTC channel, and strong brand recognition among professional athletes and the masses alike. While Deckers's success began with the UGG brand, their shareholder return throughout the 7-year period can be largely attributed to their HOKA brand. Their HOKA sales have maintained a 55.2% revenue CAGR from 2018-2022, and really began to skyrocket during the COVID-19 pandemic when "Uglycore", chunky shoes, began to trend online. Deckers has had a record of using DTC marketing channels through social media and celebrity/luxury brand partnerships to create demand for their products.

Moat – Branding, Process Power

Branding (strong): Beginning with the acquisition of UGG in 1995, and continuing with Teva, HOKA, Koolaburra, and Sanuk, Deckers has managed to grow each brand into a performance and lifestyle leader through innovative design, aggressive marketing, and influential partnerships. Most notably, Deckers began their success with the UGG brand in 2000, when celebrity Oprah Winfrey featured the unique UGG boot on her famous "favorite-things list", which went on to be worn by Paris Hilton, Beyonce, and Kate Moss. During the 7-year period, Deckers created a new trendy chunky boot that was popularized again by Bella Hadid and other celebrities. The brown boot now has become a staple, in addition to Deckers's brand HOKA that has captured the market's attention with its bright colors and wide thick sole and has been worn by professional athletes and lifestyle celebrities alike.

Process Power (strong): During the 7-year period, Deckers has established process power in both their marketing strategies and HOKA shoe innovation. Deckers utilizes a pull distribution method, which targets consumers through DTC strategies and creates demand. Then, Deckers fills this demand by not overproducing which has allowed them to maintain low inventory and costs. Additionally, much of their shareholder return can be attributed to their HOKA sales growth. Their HOKA shoes, with thick center soles, have been regarded by podiatrists and professional athletes as the most comfortable running shoes on the market.

Conclusion - What drove shareholder return?

DECKERS BRANDS

1. **Un-Levered Balance Sheet:** Though not a major contributing factor of shareholder return, during the period Deckers has maintained an un-levered balance sheet, ending the period with no debt balance. Though Deckers has built their brand on acquisitions, they have refrained from acquiring any other companies and have instead invested into organic growth and share buybacks to return capital back to investors. Because Deckers has maintained high margins and shifted to primarily e-commerce, they have maintained steady cashflows through lower COGS and capex costs. This has allowed Deckers to invest in their advertising, which has directly driven up sales, as well as maintain sufficient liquidity to remain financially stable

2. **Branding:** Deckers has invested incredible amounts of capital into the development of their brands, as well as getting the word out about new products. Deckers's largest brand by revenue is UGG, which is known for its luxurious and high-quality footwear, accessories, and apparel. Deckers have built this brand recognition by using wholesale accounts and then enjoy a high conversation rate where customers come to them directly. Popularized by celebrities in the 2000s, UGG boots demand began to wane in 2016; Deckers pivoted and leveraged their brand loyalty by expanding into home goods, such as blankets, sweatshirts, and slippers. UGG's brand power was already established and associated with comfort and high quality, their product line expansion was successful, and Decker's UGG segment has seen moderate growth throughout the period.

3. **Process Power:** Deckers benefits from process power through their DTC marketing strategy, a pull distribution method, and the trendy yet comfortable innovations of their HOKA shoe.
    1. **Direct-To-Consumer Sales:** Since the COVID-19 pandemic, Deckers had to shift towards DTC sales due to a decrease in wholesale and global distribution sales as shown through their growth in SG&A costs attributed to advertising. Particularly, Deckers began implementing e-commerce websites and marketing through their brand websites. They invest in creating user-friendly interfaces, detailed product information, and secure payment options to enhance the online shopping experience and incentivize brand loyalty. Additionally, Deckers actively engages with customers through social media platforms such as Instagram, Facebook, Twitter, and Tik Tok. They collaborate with influencers and run social media contests or campaigns to garner brand awareness. Most notably, Deckers brought back their UGG boot and promoted the HOKA running shoe through celebrities such as Blake Lively, Bella Hadid, Tom Brady, and more. Their ability to connect with consumers directly has grown their DTC sales 44.8% in 2021 during the pandemic, compared to 6% wholesale growth during the same period.
    2. **Pull Distribution Method:** Deckers also utilizes a pull distribution method to keep costs low and maintain demand and "hype" surrounding their brands. A pull distribution method essentially allows Deckers to create demand and fulfill that demand through precise production. Thus, their production is based on actual demand rather than forecasted and helps to avoid costs associated with overproduction and excess inventory. This ensures that demand is always ahead of supply, which has allowed Deckers to keep demand high for their trendy products.
    3. **HOKA:** HOKA ONE, or HOKA, is the largest underlying growth factor of Deckers throughout the 7-year period. Seeing double digit growth from 2019-2022 (when Deckers began reporting HOKA as its own segment), HOKA has generated nearly around 21% of Deckers's revenues, and surpassed UGG revenue for the first time in 2021. Although Deckers acquired HOKA in 2012, they were only popularized outside of elite runners during the COVID-19 pandemic when comfort and chunky clothing and footwear became the new fad. Not only did HOKA's shoes fit the chunky and ugly shoe trend, but they were also created with the intention of comfort and to minimize foot injuries with the large center sole. The HOKA shoe rebranded to be both a performance and lifestyle shoe, with consumers ranging from medical professionals who need to stand for hours to regular consumers who enjoyed the trendy aesthetic seen on their favorite celebrities. HOKA has since partnered with numerous brands such as Moncler, a luxury and high fashion clothing brand.

Wingstop (WING)

Company Overview

Founded in 1994, Wingstop is the largest fast casual chicken wings-focused restaurant chain worldwide, with over 2,000 locations globally. It operates an asset-light, highly-franchised business model, which allows it to maintain strong operating margins, generate consistent free cash flow, and achieve capital-efficient growth, with approximately 98% of its restaurants operated by independent franchisees.

	1/1/2016	12/31/2022	
Stock Price*	$22.69	$190.67	
Market Cap	$648.5	$4,117.1	
Enterprise Value	$732.8	$4,663.4	
Shares Outstanding	28.6	29.9	
Net Debt	$84.3	$546.3	1
Debt/Equity	N/A	N/A	2
Dividend Yield	N/A	N/A	
P/E	46.3x	75.5x	3
EV/Sales	9.4x	13.0x	
EV/EBITDA	32.7x	45.3x	
FCF/Share	$0.4	$1.8	4
Gross Margin	72.6%	83.7%	5
EBITDA Margin	28.7%	28.8%	
Trailing 3yr Rev CAGR	9.7%	12.8%	
Trailing 7yr Rev CAGR		24.3%	
Analyst Buy %	62.5%		
Analyst Hold %	37.5%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Charles R Morrison (2012-2022), Michael J Skipworth (2022-Present), Former COO of Wingstop

CFO: Mike Mravle (2014-2017), Michael J Skipworth (2017-2021), Alex R Kaleida (2021-Present), Former VP of FP&A of Wingstop

COO: N/A

Analysis

1. Increased leverage by 411% while maintaining profitability due to strong operating performance with sales growing at a 24% CAGR
2. Wingstop is a highly levered business with a Debt-to-Total-Assets ratio of 172.27
3. Share price appreciation is partly attributed due to multiple expansion. Currently, Wingstop trades at a 49% premium relative to its five-year historic P/E
4. FCF grew nearly 348% over the period due to average-unit-volumes increasing 43% and number of locations increasing by 132%
5. Gross margin expansion due to push towards higher margin segments (Boneless over Bone-in) and a negotiated pricing mechanism with poultry suppliers in 2020

Notable Events

Volatility

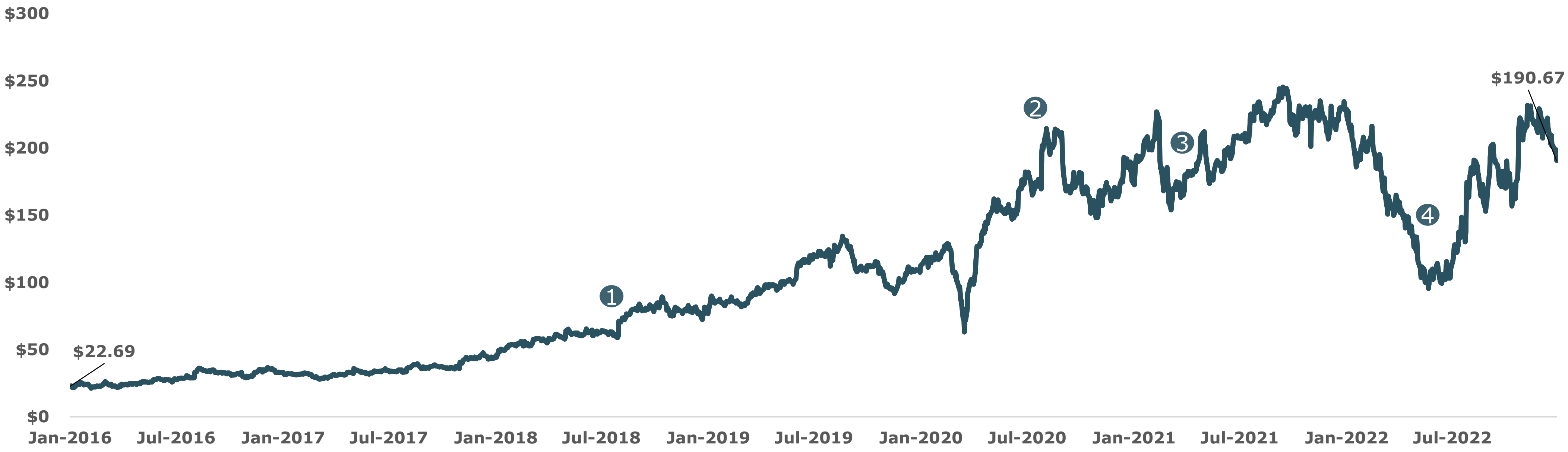
❶ • Wingstop announces delivery services and exceeds earnings expectations by nearly 17% (Aug. 2018)

❷ • Wingstop's Q1 '20 same-store-sales growth was up 9.9% due to strong delivery and carry-out sales (May 2020)

❸ • Misses EPS for Q4 '20 due to "significant" bone-in chicken wing inflation (Jan. 2021)

❹ • Charlie Murphy unexpectedly resigns as CEO after ten years of service (Mar. 2023)

# of 20%+ Drawdowns	9
Max Drawdown	-63%



Mergers and Acquisitions

- N/A

Other Notable Events

- Wingstop announces 1,000th location (Jan. 2017)
- To combat chicken wing inflation, Wingstop temporarily launches thighstop (Jun. 2021)
- Wingstop announces new chicken sandwich (Aug. 2022)
- Wingstop announces 2,000th location (May 2023)

Competitive Landscape

Competition

- **Buffalo Wild Wings (Private):** Buffalo Wild Wings is the largest sports bar franchise in the US and operates a chain of more than 1,200 Buffalo Wild Wings Grill & Bar quick-casual dining spots that specialize in serving Buffalo-style chicken wings in around 10 countries. A part of Roark Capital under Inspire Brands, the company features an immersive sports restaurant experience and a variety of boldly flavored menu items, including buffalo-style chicken wings spun in over 20 signature sauces and seasonings. Buffalo Wild Wings was founded in 1982 by Jim Disbrow and Scott Lowery in Minneapolis.
- **Brinker International (EAT ~$1.4B Market Cap):** Brinker International owns, develops, operates, and franchises the Chili's Grill & Bar and Maggiano's Little Italy restaurant brands, as well as certain virtual brands including It's Just Wings and Maggiano's Italian Classics. Chili's is a recognized leader in the casual dining industry and the flagship brand of the company. It enjoys a global presence with restaurants in 30 countries and two US territories. Maggiano's is a full-service, national, polished casual restaurant brand offering Italian-American cuisine. It's Just Wings is a no-frills offering that consists of chicken wings available in a variety of different sauces, rubs, and ranch dressing for a value price. Maggiano's Italian Classics offers a select group of items inspired by the menu at Maggiano's Little Italy, including several appetizers, salads, pastas, and entrées.
- **YUM! Brands (YUM ~$36.0B Market Cap):** YUM! Brands is the largest fast-food operator in the world in terms of number of locations, with more than 55,000 KFC, Pizza Hut, and Taco Bell outlets in more than 155 countries. The company's flagship chains are KFC (with about 28,000), Pizza Hut (more than 19,000), Habit Burger Grill restaurant (some 350 units) and quick-service Mexican leader Taco Bell (roughly 8,200). Franchisees, affiliates, and licensed operators run about 45% of the company's restaurants. The company was incorporated in 1997.

Moat – Counter Positioning, Process Power

Counter-Positioning (strong): Unlike other quick-service restaurants (QSR), Wingstop has positioned itself at the center of value and indulgence. Its core products are bone-in and boneless wings along with sides (French fries and corn). They cater to price sensitive consumers by offering higher margin boneless wings at a lower price relative to bone-in wings; during economic downturns, their customers pull back on constant value visits and save up for more indulgent visits (bone-in wings). The franchise locations are small square footage locations that primarily cater to carry out and delivery. Unlike legacy QSR (McDonalds, KFC, Taco bell), Wingstop has a limited menu and offers a product that is made-to-order, resulting in it being unable to be offered via drive-thru (7-21 minutes average order times) but higher quality than legacy QSR.

Process Power (weak): For over the last 30 years, Wingstop focused on solely selling fried chicken as its entree. Its relentless focus on chicken wings have resulted in strategic relationships with poultry providers, operational insights into the frying process, and a replicable franchise model that provides the same experience across all its locations. Its commitment to chicken has held true throughout the company’s operating history; Wingstop’s innovation primarily comes in the form of new flavors for its chicken.

Conclusion - What drove shareholder return?

1. **Same Store Sales Growth:** Wingstop consecutively increased same store sales growth for last twenty years. Over the last 7-year period, same store sales have grown between 15-25% year-over-year. This growth was driven by a **transitioning local marketing to a national advertising fund, proactive investments in digital ordering, and product innovation.**
    1. **Transition to national advertising fund:** Throughout the 7-year period, Wingstop transitioned its advertising spend into a consolidated national advertising fund. Historically, franchisees contributed 50% of ad spend to local advertising and 50% to national advertising; In 2018, there was a unanimous vote to consolidate all advertising spend to the national advertising fund. This fund contributed to increasing brand awareness and intimately engaging with customers by launching Wingstop's first television campaign, premium placement on sports events, and personalized digital marketing campaigns.
    2. **Early investment in digital ordering:** Wingstop primarily caters to delivery and carry-out orders. In 2014, Wingstop invested in online ordering as data showed that consumers who ordered online were more likely to have larger order values; in addition, after years of product research, Wingstop formally partnered with Doordash in 2018 to deliver wings. Their early investments in digital ordering and delivery made them well equipped to manage the pandemic. Today, over 60% of users order digitally.
    3. **Product innovation:** Over the last 7 years, Wingstop made a bigger push into menu innovations to please consumers and expand margins. Innovations including the addition of the chicken sandwich, chicken tenders, and thighs* reflect Wingstop's effort of promoting high margin boneless product offerings and increasing overall sales.
2. **Franchise Expansion:** Wingstop's business model requires all franchises to pay a 6% royalty fee on all revenue. Over the last 8 years, Wingstop has more than doubled its franchise locations from 845 to 1,959 locations and expanded into over 9 countries. Over the last 7 years, Wingstop units have more than strategically doubled; as of 2023, 90% of Wingstop's development comes from existing franchisees with an average 7.5 restaurants with brand partner. Wingstop is very selective about franchisors and geography in order to optimize performance: its franchises demonstrate best in-class unit economics with an average payback period of less than two years, cash on cash returns of over 50%, and an average unit value of $1.6 million annually (up 41% since 2016).
3. **Process Power:** Wingstop's ability to maximize shareholder returns stems from its 30-year reputation to its unwavering commitment to delivering high-quality chicken and its ability to continuously innovate and effectively market its offerings. Wingstop developed a deep understanding of customer preferences, allowing it to consistently produce delicious wings and uphold customer loyalty. Its commitment to focusing on reducing cooking time and perfecting the chicken wing creates a knowledge moat that no competitor can replicate without years of product and consumer research.

*Thighs were a limited release offering in 2022 in response to record inflation in chicken wing prices

Tesla Inc. (TSLA)

TESLA

Company Overview

Tesla is an American electric vehicle and clean energy company founded in 2003 by Martin Eberhard and Marc Tarpenning. The company is known for its cutting-edge electric cars, including the Model S, Model 3, Model X, and Model Y. Tesla's business model centers around sustainable transportation and energy solutions aiming to accelerate the world transition to renewable energy. By combining innovative technology, sleek design, and high performance, Tesla has become a leader in the electric vehicle (EV) industry, revolutionizing the automotive industry in the process.

	1/1/2016	12/31/2022	
Stock Price*	$14.89	$123.18	
Market Cap	$29,255.8	$388,971.9	
Enterprise Value	$30,707.9	$373,728.9	
Shares Outstanding	1,964.3	3,157.8	1
Net Debt	$1,452.1	-$16,437.0	2
Debt/Equity	234.2%	12.5%	
Dividend Yield	N/A	N/A	
P/E	N/A	33.6x	3
EV/Sales	7.6x	4.6x	
EV/EBITDA	N/A	21.5x	
FCF/Share	-$1.1	$2.4	4
Gross Margin	18.0%	23.8%	
EBITDA Margin	N/A	21.4%	
Trailing 3yr Rev CAGR	114.0%	49.1%	5
Trailing 7yr Rev CAGR		53.4%	6
Analyst Buy %	34.8%		
Analyst Hold %	39.1%		
Analyst Sell %	26.1%		7

*Numbers in millions excluding stock price

Management

CEO: Elon Musk (2008-Present), seed investor and board member since 2004

CFO: Deepak Ahuja (2008-2019), Zach Kirkhorn (2019-Present), Former VP of Finance at Tesla

COO: N/A

Analysis

1. Tesla repeatedly issued millions of shares despite occasionally buying back large quantities; In 2020 it authorized a 5-to-1 stock and 3-to-1 in 2022.
2. Large debt repayments beginning in FY2020 coupled with massive increase in cash position drove net debt down 1,232%
3. Multiple expansion due to company becoming profitable in 2020 after years of negative earnings
4. 318% increase in FCF/Share due to massive increase in revenue despite ~2x increase in shares outstanding
5. Decrease in trailing three-year revenue CAGR because of company maturing and slowdown in revenue growth
6. Remarkable 53% trailing seven-year revenue CAGR illustrate continuous growth of the company and success of EV market worldwide
7. Over 25% of all analysts recommended selling TSLA in 2016, just before a 700%+ increase in share price

Notable Events

TESLA

Volatility

1 • Announcement and presentation of new Cybertruck (Nov. 2019)

2 • Large EPS beat and increased revenue forecast, higher-than-expected demand for EVs (Jul. 2020)

3 • Strong growth in deliveries as production ramped up, strength in sales to Chinese markets (Jan. 2021)

4 • Q4 2020 EPS miss and revenue growth slowdown, market pullback due to un-justifiable growth (Feb. 2021)

# of 20%+ Drawdowns	11
Max Drawdown	-70%

Mergers and Acquisitions

- SolarCity, US market leader in residential solar panels, acquired by Tesla for $2.6 billion (Jun. 2016)
- $218 million acquisition of Maxwell Technologies (Feb. 2019)
- Tesla acquisition of German ATW Automation, a battery manufacturer (Oc. 2020)
- Acquisition of Springpower, a lithium-ion battery startup, for $3 (May 2021)

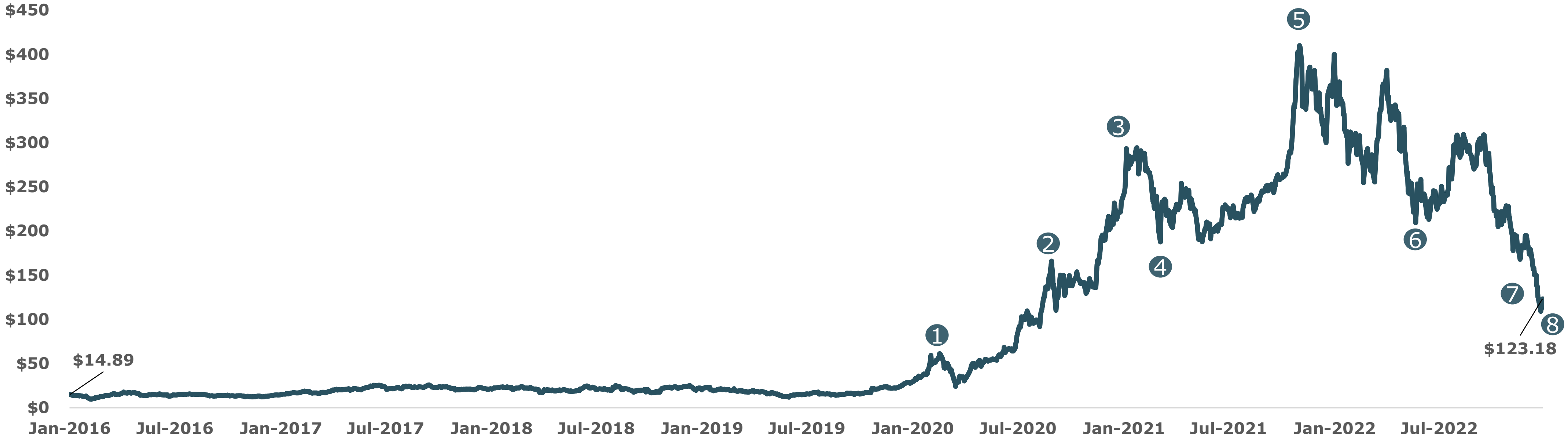
Other Notable Events

5 • Q3 2021: best-ever net income, operating profit, & gross profit; gross margins improved 30%; massive EPS beat despite high expectations (Oct. 2021)

6 • CEO Musk announces he is going to buy Twitter, concerns around financing (May 2022)

7 • Musk sells ~$3.6 billion worth of TSLA to fund his personal Twitter buyout (Dec. 2022)

8 • Tesla production pauses in Shanghai signaling trouble in Chinese markets (Dec. 2022)



Competitive Landscape

TESLA

Competition

- **Ford (F ~$47B market cap):** Ford is an American multinational automaker founded in 1903. With a rich history in the automotive industry, Ford is known for its wide range of vehicles, including trucks, SUVs, and sedans. In recent years, Ford has also made significant strides in the electric vehicle market, offering an expanding lineup of electric and hybrid models, such as the Mustang Mach-E and the upcoming all-electric Ford F-150 Lightning, showcasing their commitment to sustainable transportation.
- **Nio (NIO ~$0.8B market cap):** Nio is a Chinese electric vehicle manufacturer founded in 2014. With a focus on premium electric vehicles, Nio offers a range of stylish and technologically advanced models, including the ES8, ES6, and EC6. Known for its innovative battery swapping technology and autonomous driving capabilities, Nio has quickly gained recognition as a leading player in the electric vehicle market in China and has expanded its presence globally.
- **General Motors (GM ~47.8B market cap):** General Motors, or GM, is an American multinational corporation that was established in 1908. As one of the world's largest automakers, GM produces a diverse range of vehicles under various brands, including Chevrolet, GMC, Cadillac, and Buick. With a strong focus on innovation, GM has been at the forefront of advancements in electric and autonomous vehicle technologies, exemplified by the launch of its Chevrolet Bolt EV and ongoing development of self-driving vehicles through its subsidiary, Cruise.

Tesla, at the beginning of the period, was a highly disruptive business. Tesla’s sales were dwarfed by automotive giants like Ford and GM. Tesla was considered a startup attempting to create a cheap and good-looking alternative to expensive electric vehicles at the time. Tesla’s revenue from automotive was $3.7 billion and had only one other business segment: services on their cars, making up $305 million. At the end of the period, Tesla has become an established player in the automotive industry and a market leader in the EV sector. Through counter positioning and the creation of a cheaper alternative to their flagship Tesla Roadster, the Tesla Model 3, the company has grown rapidly and expanded into other business segments at the same time. Tesla’s acquisition of SolarCity brought an additional $3.9 billion in revenue to their bottom line. Additionally, revenue from car sales alone was $68.9 billion in 2022, revenue from leasing eclipsed $2.5 billion, and service revenue is just over $6 billion. Tesla’s success over their traditional gasoline car competitors can be attributed to their rapid growth, reinvestment into more factors, the Tesla brand image, and the success in a consumer trend towards more environmentally friendly automobiles.

Moat – Counter Positioning, Branding

Counter Positioning (strong): Tesla was the first pure-play EV manufacturer and was counter-positioned against traditional gas-powered automotive manufacturers like VW, Ford, and GM. Tesla provided the consumer with a futuristic, different-looking alternative to the traditional car. The company focused on putting lots of technology and software in the car while maintaining a sleek look that consumers would love. Tesla also does not have dealerships, another example of their counter positioning. The company realized that because a Tesla does not need service as much as a gas car does, dealerships would be less incentivized to sell the cars. In doing so, Tesla disrupted the legacy automotive market and gained a substantial market share.

Branding (strong): Because of Tesla’s initial success, much of which can be attributed to its counter positioning, the company has developed a reputable brand image. Elon Musk, Tesla’s CEO, also contributes to Tesla’s strong brand strength. Musk is seen as a once-in-a-lifetime innovator and explorer, constantly striving to push the boundaries of technology in Tesla’s products. Many individuals have faith in Tesla because they back Musk. However, Musk is also a polarizing figure. While he has numerous supporters, strengthening Tesla’s brand value, he has also amassed a large contingent of people who do not like him.

Conclusion - What drove shareholder return?

1. **Counter Positioning:** The initial success of Tesla comes from its strategic counter-positioning as the first pure-play EV design and manufacturing company. The company was counter-positioned against traditional gasoline automotive companies. Customers were attracted to Tesla’s new innovative electric cars as they were seen as a sleek and technologically advanced alternative to the incumbent's antiquated gasoline-powered cars. Tesla also offered a unique value proposition to customers that legacy automotive companies could not offer, environmentally friendly vehicles. The increase in demand for zero-carbon emission vehicles to combat the effects of global warming has rapidly increased over the past seven years, and Tesla came into the market at the perfect time to capitalize on this new consumer demand. Tesla also operates a no-dealership business model. The company only sells cars through its online website and select in-person “stores”, typically located in shopping centers with only one or two cars on display. Tesla representatives drive the car to the customer's residence whenever a new vehicle is ordered, allowing a much easier user experience. Tesla’s counter positioning against both gasoline-powered vehicles and traditional in-person car dealerships has enabled the company to succeed in the early years, gaining market share and driving revenue which has in turn driven shareholder return 727% throughout the period.

2. **EV Market Dominance:** Tesla’s 700+% return since 2016 can partially be attributed to the company’s dominance in the EV space. The electric vehicle sector within the general automobile industry has grown rapidly with a projected CAGR of 17.3%. Tesla was very well positioned to benefit from this growth and is partially responsible for the growth itself. The shift towards environmentally friendly vehicles and an aversion to using products that harm the earth's atmosphere in fear of global warming has helped the EV market grow since 2016. Tesla also offers a low-cost alternative to traditional gasoline cars and trucks. Tesla’s Model 3 has continuously dropped in price, attracting individuals who can not afford the more expensive Roadster and Model X. These price cuts place the car, a more attractive and technologically advanced vehicle, in the same pricing range as the average sedan made by Toyota or Ford. The company has regularly adjusted its vehicle pricing since 2016 to boost sales. This campaign has been very successful. As of FYE2022, three out of the top five top-selling EVs were made by Tesla, with the Tesla Model Y maintaining a 30.4% market share and the Model 3 having a 27.8% market share in the sector. Tesla’s market dominance in the electric vehicle sector coupled with the growth of the sector has driven Tesla’s shareholder return over the past seven years.

3. **Brand Value:** The company has also benefited from the intangible value attached to Tesla’s brand. Tesla’s branding has a strong effect on customers and has developed over time, primarily as a result of the initial success of the company. Tesla is synonymous with an electric vehicle and as the company has grown, its brand has developed into a strong competitive advantage for the company. Partially responsible for the rise in Tesla’s brand value is its CEO and early investor, Elon Musk. Musk is a famous venture investor and is widely recognized for his innovative qualities. Musk, unlike many chief executives, has a large following on social media and can be considered a modern-day influencer by many. His tweets and plethora of successful companies have helped him push Tesla into the spotlight not just of the automotive industry, but of popular culture. Musk’s influence on Tesla’s brand is evidenced in his acquisition of the social media platform Twitter in 2022. Tesla’s CEO began selling shares of the company to finance the $44 billion price tag. TSLA plummeted over 70% in tandem with Musk’s massive sales of stock. While this traditionally is a bad signal for any company, the CEO selling off a bulk of stock, it is rare that the underlying company’s share price would be affected as much as Tesla’s was. This concern and the large drawdown in TSLA's share price is also a result of the company’s shareholders' concern regarding Musk’s effectiveness as a chief executive while running Twitter. Elon Musk’s personal brand coupled with Tesla’s high brand value has enabled the company to have 100%+ net revenue retention rates while spending a negligible amount on marketing, further driving shareholder return.

Fortinet (FTNT)

Company Overview

Fortinet is an American cybersecurity company with headquarters in Sunnyvale, California. The company develops and sells security solutions like firewalls, endpoint security, and intrusion detection systems. Fortinet's flagship product is the Fortinet Security Fabric, a comprehensive platform that combines various security technologies. They also offer cloud security, Wi-Fi security, email security, and more solutions. Their business model emphasizes ongoing innovation, strategic partnerships, and a subscription-based licensing model to protect customers continuously against evolving cybersecurity threats.

	1/1/2016	12/31/2022	
Stock Price*	$6.05	$48.89	
Market Cap	$5,207.5	$38,194.6	
Enterprise Value	$4,316.2	$37,069.7	
Shares Outstanding	861.3	781.2	1
Net Debt	-$891.4	-$1,124.9	2
Debt/Equity	0.0%	N/A	
Dividend Yield	N/A	N/A	
P/E	292.9x	45.1x	3
EV/Sales	4.3x	8.4x	
EV/EBITDA	92.9x	34.5x	
FCF/Share	$0.3	$1.8	
Gross Margin	72.4%	76.8%	
EBITDA Margin	4.6%	24.3%	4
Trailing 3yr Rev CAGR	23.7%	26.9%	
Trailing 7yr Rev CAGR		23.5%	5
Analyst Buy %	66.7%		
Analyst Hold %	33.3%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Ken Xie (2000-Present), Founder of Fortinet

CFO: Andrew Del Matto (2007-2018), Keith Jensen (2018-Present), Former CAO of Fortinet

COO: N/A

Analysis

1. ~10% of shares repurchased, increasing YoY since 2016
2. $1 billion senior debt issuance in FY2021 to fund share buybacks and future acquisitions
3. 84.6% decrease in price-to-earnings multiple as Fortinet has matured as a company and grown into its extremely high valuations as of 1/1/2016
4. Large revenue growth coupled with an increase in profitability due to stable margins led to an increase in EBITDA margins
5. Remarkable trailing 7-year revenue CAGR illustrating significant and consistent revenue growth as the company came to dominate its market

Notable Events

Volatility

1. • Significant increase in demand for Security Fabric platform, cloud offerings, and FortiASIC chip technology (Aug. 2018)
5. • Termination of operations in Russia (Mar. 2022)
6. • Q2 '22 EPS beat but disappointing revenue outlook (Aug. 2022)

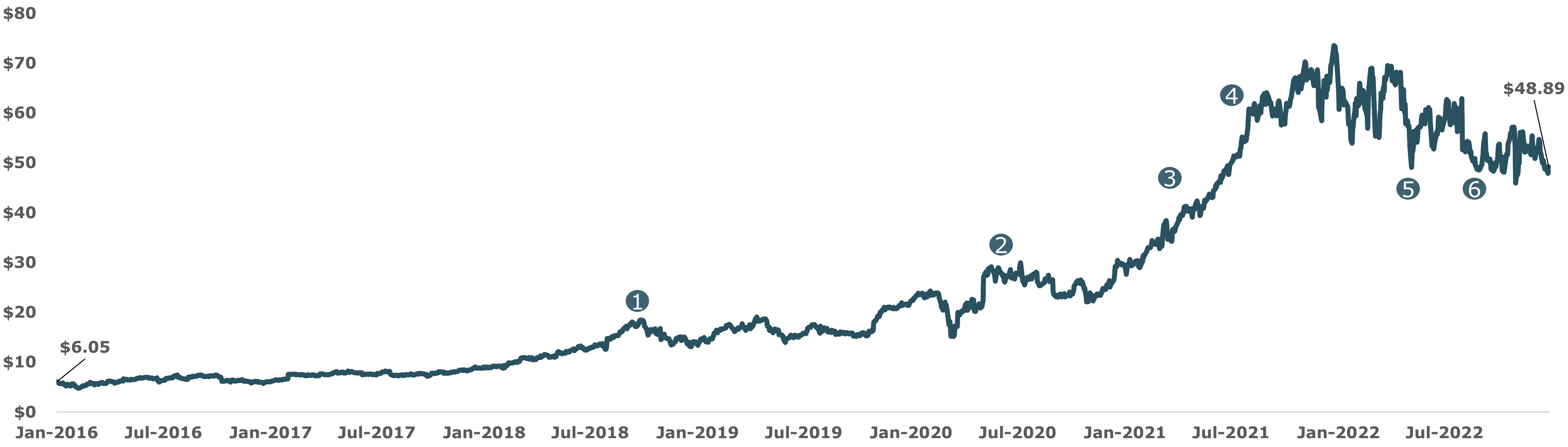
Mergers and Acquisitions

2. • Acquisition of OPAQ Networks, a SASE cloud provider (Jul. 2020)
- • Fortinet acquisition of ShieldX Networks, a cloud and network security startup (Mar. 2021)
4. • Sken.ai, an application security innovator, acquired by Fortinet to accelerate DevSecOps (Jul. 2021)

Other Notable Events

- • Announcement of AI and ML-based security services (Dec. 2022)
3. • Massive increase in demand for Fortinet's top-of-class cybersecurity products due to the COVID-19 pandemic and work form home (2020-2021)

# of 20%+ Drawdowns	7
Max Drawdown	-34%



Competitive Landscape

Competition

- **Palo Alto Networks (PANW ~$42.2B market cap):** Palo Alto Networks is a renowned cybersecurity company founded in 2005 and headquartered in California, USA. They specialize in providing advanced security solutions to help organizations prevent cyber threats and safeguard their networks, cloud environments, and endpoints. Palo Alto Networks' business model focuses on delivering a comprehensive security platform that integrates next-generation firewalls, cloud security, threat intelligence, and advanced analytics to provide proactive and effective cybersecurity defenses.
- **Arista Networks (ANET ~$37.1B market cap):** Arista Networks is an American computer networking company based out of Santa Clara, California. The company designs and sells multilayer network switches to deliver software defined networking for large datacenters, cloud computing, high-performance computing, and high frequency trading companies. Arista's business model revolves around delivering reliable networking infrastructure through their Extensible Operating System (EOS).
- **CrowdStrike (CRWD ~$24.7B market cap):** CrowdStrike is a prominent cybersecurity company founded in 2011 and headquartered in California, USA. They specialize in providing advanced endpoint protection and threat intelligence solutions. CrowdStrike's business model revolves around delivering comprehensive cybersecurity through their cloud-native Falcon platform, which combines next-generation antivirus, endpoint detection and response (EDR), and managed threat-hunting capabilities. Their products focus on proactive threat detection, real-time response, and threat intelligence sharing to combat sophisticated cyber threats effectively.

At the beginning of the time period, in 2016, Fortinet was a relatively small competitor in the larger cybersecurity space but dominated their specialty: the firewall. Fortinet was valued as a high-growth company, at 292x price-to-earnings, illustrating the market's belief about the company's future growth. Fortinet has grown and matured into the company that the market has expected, surpassing this growth potential. Through its niche market dominance in the firewall and unified threat management, the company has developed into a market leader over the time period and out-performed its competitors. The impact of the COVID-19 pandemic has also accelerated growth, with many companies needing enhanced cybersecurity products, Fortinet capitalized on this opportunity to gain further market share.

Moat – Switching Costs

Switching Costs (strong): Fortinet has a strong competitive advantage in its switching costs. The company specializes in the development and IP surrounding unified threat management systems, an industry they are the market leader. Fortinet, over the time period, has advanced its software services business, providing customers with anti-spam, anti-virus, and other cybersecurity software. Software itself does not have a high switching cost but because Fortinet's primary product is their unified threat management hardware services, the installation of their hardware creates a switching cost for the company's customers. Fortinet's innovation has led them to manufacture top-of-the-line unified threat management systems, and they have attracted lots of customers because of its superior product in this industry niche. When the hardware is installed and implemented in a customer's computer system, the software is also installed and fully integrated to help manage the cybersecurity of that customer. A high switching cost is thus incurred in changing away from Fortinet's services because companies have a significant opportunity cost of getting rid of an already expensive piece of hardware and re-implementing and integrating the software that comes with it.

Conclusion - What drove shareholder return?

1. **Strategic Acquisitions:** Fortinet's remarkable shareholder return of over 700% since 2016 can partially be attributed to the management team's objective of frequent and strategic acquisitions. Fortinet focused on acquiring many companies to expand their software as a service (SaaS) offering within the cybersecurity space. These acquisitions allowed Fortinet to enhance its product portfolio, access new technologies, and enter new markets, leading to increased revenue streams and market penetration. By strategically integrating the acquired companies' expertise and technologies into their existing offerings, primarily on the software development front, Fortinet delivered more comprehensive and innovative solutions to its customers, driving customer satisfaction and loyalty. The management team's focus on strategic acquisitions also demonstrated their forward-thinking approach and commitment to staying at the forefront of the rapidly evolving cybersecurity landscape. This, in turn, instilled confidence in shareholders and investors, contributing to Fortinet's impressive shareholder return and solidifying its position as a leader in the unified threat management cybersecurity industry.

2. **Niche Market Dominance:** Fortinet operates in the cybersecurity market but focuses on a niche section of the market in its best-selling products. The company's first-ever product was the FortiGate firewall, a physical firewall. Fortinet has only continued to innovate from this original firewall into a fully unified threat management system that defends systems against all cybersecurity threats through one piece of hardware the company installs. Fortinet's dominance in this market has been crucial for its outsized shareholder return since 2016. Much of this return is also due to the rise in technology and the exponentially growing demand for cybersecurity companies. Fortinet's niche market dominance positioned the company well to capitalize on an increase in demand for cybersecurity as an industry, and thus the stock price skyrocketed.

3. **Impact of COVID-19 Pandemic:** Fortinet as a business sells its products to all types of customers. The company has over 500,000 total customers with a $130 billion TAM as of FYE2022. Because Fortinet is not merely a supplier to businesses but also sells cybersecurity software and hardware to individuals as well, it was extremely well positioned to capitalize on the rise of work from home as a result of the COVID-19 pandemic. More individual workers being forced to work from home meant a rapidly growing demand for enhanced cybersecurity for home Wi-Fi networks, home computers, and even home data centers. Fortinet, having catered to all types of customers even before the pandemic, quickly became a market leader as the company knew how to sell its software and hardware to the individual, unlike many of its larger competitors. The global pandemic forced many to work from home, increasing the demand and thus driving shareholder return for Fortinet.

4. **Switching Costs:** A final reason for Fortinet's 709% shareholder return from 2016-2023 is the company's high switching costs associated with its products. Fortinet, due to a massive increase in sales during the pandemic, carved out a large piece of the unified threat management market and the largest cybersecurity market. In doing so, the company sold both its cutting-edge hardware as well as its new and growing software business. Once individuals and entire companies became completely implemented on Fortinet's hardware as well as its software, a high opportunity cost of switching is created. If a customer of Fortinet wanted to switch to a different software system or cybersecurity hardware, for reasons unknown as Fortinet already manufactures top-of-the-line products, the customer would have to re-purchase, re-implement, and re-integrate both the hardware and software solutions. These switching costs drove Fortinet's high recurring revenue rate and in turn, drove shareholder return in the past seven years.

Insulet Corporation (PODD)

Company Overview

Insulet Corporation, founded in 2000 and headquartered in Massachusetts, is a leading medical device company that specializes in insulin delivery systems. Its flagship product, the Omnipod Insulin Management System, is a tubeless, waterproof insulin pump that offers a unique and convenient approach to insulin delivery. The company has been selling the Omnipod since 2005 along with a system of products that comes along with the pod. Insulet's business model revolves around the development, manufacturing, and sale of its proprietary Omnipod system and related products. Insulet serves both pediatric and adult populations and caters to patients with type 1 and type 2 diabetes.

	1/1/2016	12/31/2022	
Stock Price*	$37.06	$294.39	
Market Cap	$2,019.8	$20,445.0	1
Enterprise Value	$2,164.6	$21,203.1	
Shares Outstanding	56.9	69.5	
Net Debt	$54.8	$758.1	
Debt/Equity	521.2%	300.8%	
Dividend Yield	N/A	N/A	
P/E	N/A	283.6x	
EV/Sales	8.2x	16.2x	2
EV/EBITDA	N/A	210.3x	
FCF/Share	-$0.6	-$0.1	
Gross Margin	50.1%	58.8%	3
EBITDA Margin	N/A	7.7%	4
Trailing 3yr Rev CAGR	7.6%	20.0%	
Trailing 7yr Rev CAGR		23.0%	
Analyst Buy %	31.6%		
Analyst Hold %	68.4%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Patrick Sullivan (2014-2019), Shacey Petrovic (2019-2022), Jim Hollingshead (2022-Present), Former ResMed executive, has been on the board of Insulet since July 2019

CFO: Michael Levitz (2015-2019), Wayde McMillan (2019-Present), Former CFO of Medtronic subsidiary

COO: N/A

Analysis

1. Despite a 22% share dilution, market cap continued to increase by ~10x due to innovative developments to their flagship product, the Omnipod
2. Large increase in EV/Sales multiple, ~2x expansion, demonstrating the market's recognition of the company's future growth prospects
3. Significant EBITDA margin expansion as business turned profitable and revenue growth boomed as company matured
4. High switching costs coupled with product innovation led Insulet to hit a switching point in which CAGR increased from 7.6% in three years to 23% in seven years

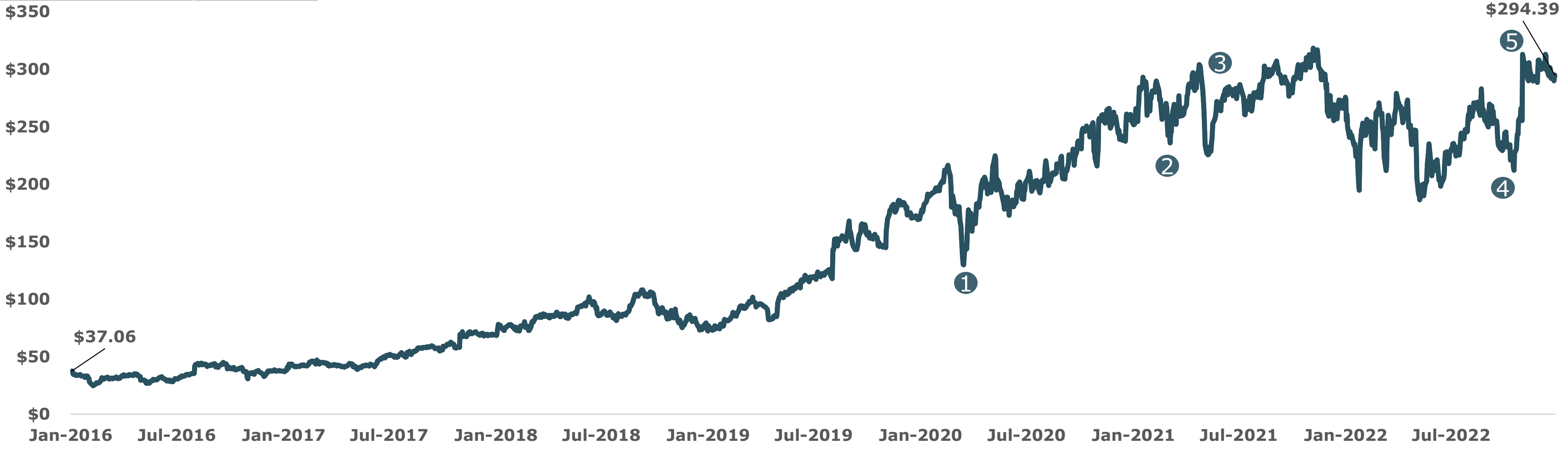
Notable Events

Insulet Corporation

Volatility

1. EPS miss and lower than expected outlook for FY2020 due to impact of COVID-19 forcing patients to reprioritize their health needs (Feb. 2020)
2. Omnipod DASH recall (Feb. 2021)
3. Report of DexCom acquisition talks, DexCom refutes rumors of merger (May 2022)
4. Issuance of nationwide device correction for Omnipod 5 (Oct. 2022)
5. EPS beat due to higher-than-expected Omnipod 5 sales and updated forward guidance (Nov. 2022)

# of 20%+ Drawdowns	8
Max Drawdown	-39%



Mergers and Acquisitions

- N/A

Other Notable Events

- Raised $500 million in second public offering (May 2020)
- Insulet expanding distribution to Australia and Middle East (Dec. 2021)
- CEO transition announced (May 2022)
- FDA clearance of Omnipod 5 (Aug. 2022)

Competitive Landscape

Insulet Corporation

Competition

- **Medtronic (MDT ~$103.4B market cap):** Medtronic MiniMed, a division of Medtronic, is a leading competitor to Insulet in the insulin delivery market. Medtronic MiniMed specializes in developing and manufacturing innovative insulin pump systems and related products. The company specializes in variable basal rates, bolus calculators, and integration with continuous glucose monitoring technology. MiniMed also focuses on data integration of insulin delivery through smartphone apps and data management platforms. Medtronic is a significantly larger company than Insulet and has global reach.
- **Tandem Diabetes Care (TNDM ~$2.9B market cap):** Tandem is a smaller company within the insulin delivery market that distinguishes itself by providing a comprehensive, user-centric, and integrated approach to diabetes product development and customer care. Tandem's insulin pump systems are designed with a strong emphasis on user experience and ease of use. They provide intuitive touch-screen interfaces, customizable settings, and seamless integration with other diabetes management technologies like continuous glucose monitoring (CGM) systems.
- **West Pharmaceuticals (WST ~$17.4B market cap):** West Pharmaceuticals, a pharma conglomerate, offers a diverse range of products, one of which being insulin delivery devices. West Pharma is known for their expertise in engineering and manufacturing high-quality, reliable, and user-friendly drug delivery devices. While they do not directly focus on the handsfree insulin delivery that Insulet has become known for, West Pharma competes for market share in the drug delivery market as a whole and their products can be used to deliver insulin among other things.

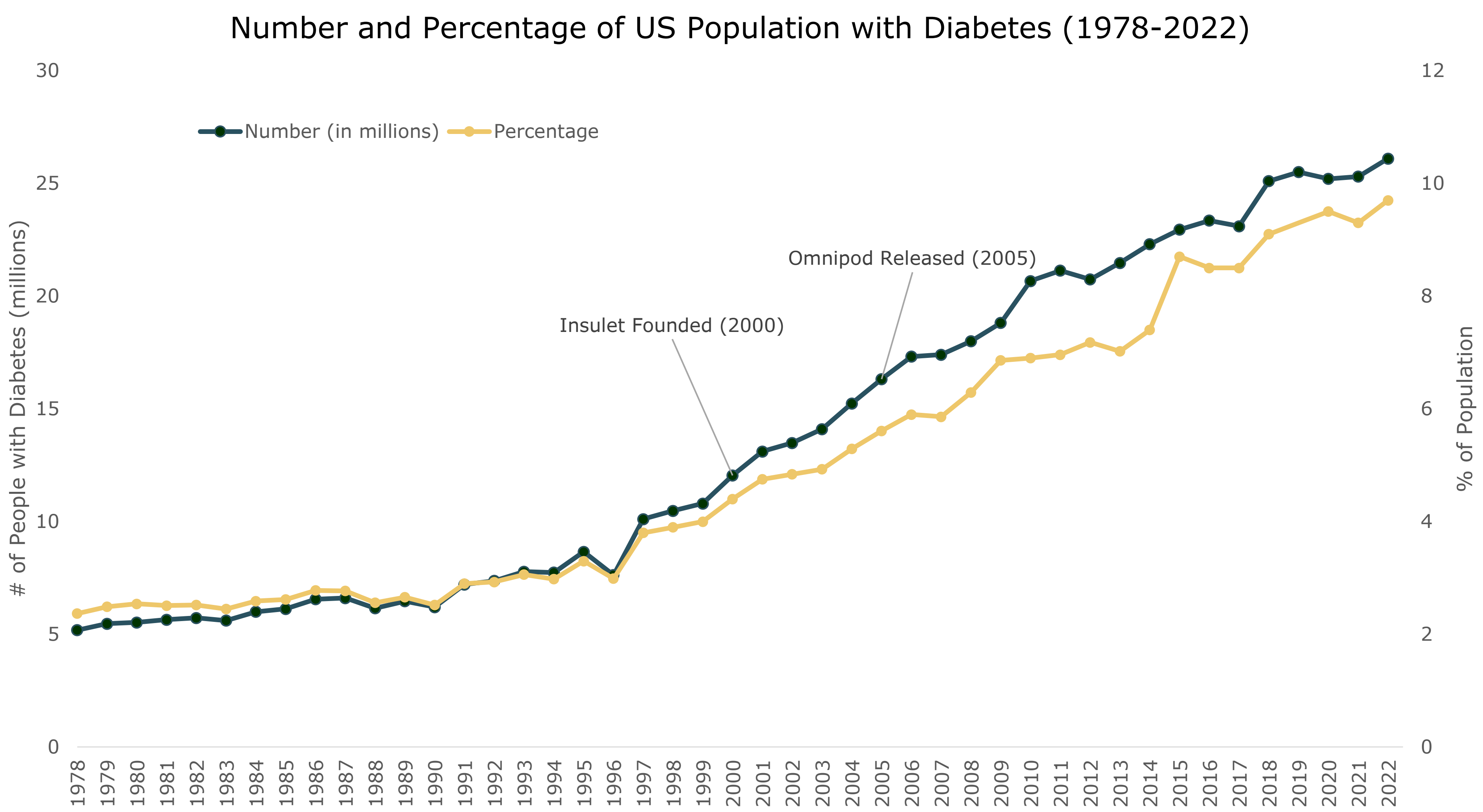
Insulet announced the Omnipod in 2003. Since then, the Omnipod has become one of the best-selling insulin delivery products in the world and drives over 95% of Insulet's revenue. Insulet is completely reliant on its sales from the Omnipod and their innovation and expansion into global markets have driven shareholder return as well as a gain in market share over their competitors during the period. With each new iteration of the Omnipod, Insulet wins market share over its competitors primarily due to the high demand for a discrete and easy-to-use insulin delivery system. Insulet has stated that 35% of Omnipod 5 customers previously used a rival device, a 75% increase from the release of Omnipod 4 in which 20% of customers reported switching.

Moat – Switching Costs

Switching Costs (strong): Insulet's competitive advantage is its strong switching costs. Individuals with diabetes need insulin for the rest of their life. When Insulet acquires a new customer the likelihood that that customer will ever switch to a different device are extremely low. Customers become familiar with the Omnipod system, both continuously purchasing the refill pods and using the mobile app to monitor their insulin levels. Insulet also focuses on targeting younger generations in their customer acquisition efforts. In creating a very nonchalant waterproof product that requires little maintenance, younger customers are much more likely to initially purchase the Omnipod than its competitors who offer more bulky and less appealing products to the eye. Insulet also concentrates on having a social media presence to attract the younger generations who disproportionately use social media. When someone is initially deciding what insulin device to purchase, they are more likely to choose the product that they see models, celebrities, and their peers using. When a young customer purchases the Omnipod, they are going to keep it for the foreseeable future. Insulet also puts an emphasis on innovation, continuously increasing its spending on research and development. The most recent iteration of the Omnipod, the Omnipod 5, was highly anticipated by customers and thus creates more stickiness to the product. Customers become excited about the next generation of Omnipod and are more likely to keep using Insulet's products as each additional development to the Omnipod is released.

Diabetes Growth

Insulet Corporation



Source: Centers for Disease Control and Prevention (CDC)

Conclusion- What drove shareholder return?

1. **Industry Growth:** The industry for insulin has substantially grown since 2016. According to the Center for Disease Control's National Diabetes Statistics Report, in 2020 cases of diabetes have risen to an estimated 37.3 million, representing 11.3% of the US population. This number is estimated to double or even triple by 2050 with between 1 in 3 to 1 in 5 Americans will have diabetes. This trend follows globally, as 537 million adults live with diabetes around the world, and it is estimated that this number will rise to 643 million by 2030, and 783 million by 2045, representing a 45% increase in 24 years. Diabetes has grown at an alarming rate in America and in the rest of the world in part due to the rise of individuals living a more dormant lifestyle and eating more unhealthy foods. The increasing value of the insulin industry has driven significant shareholder returns for Insulet Corporation over the time frame. Insulet has capitalized on this expanding market due to its innovative Omnipod system. Insulet's ability to generate sustainable revenue growth and consistent profitability has resulted in improved financial performance and enhanced shareholder returns since 2016. The stock has risen 694% over the period.

2. **Focus on Younger Generations:** Insulet focuses heavily on marketing its flagship Omnipod product to younger generations. The CDC recently published a study stating that there is a concerning increase in youth living with diabetes in the US. From 2001 to 2017, the number of people under age 20 living with type 1 diabetes increased by 45%, and the number living with type 2 diabetes grew by 95%. Insulet recognizes these trends and has pushed its marketing efforts into social media, where its Omnipod Instagram account boasts 40,000 followers, and on TikTok, in which the Omnipod has over one billion views. Just two weeks after Insulet's product launch of the Omnipod 5, the company tapped into the video game market by partnering with Nintendo to create the "Omnipod Island" on the popular game Animal Crossing. Insulet also focuses on making a sleek and easy-to-wear design. The pod itself is only two inches tall by 1.5 inches wide. This innovation, from the incumbent insulin devices being clunky, loud, and having lots of tubes connected, to a more nuanced and stylish look, has successfully attracted millions of young customers. By attracting more young people to the Omnipod, Insulet has been able to steal market share in the rapidly growing demographic with diabetes from its competitors. In doing so, Insulet has generated more revenue and driven shareholder return over the past seven years, making it the 14th-highest-returning company.

3. **Switching Costs:** Insulet has leveraged a strong competitive advantage through its switching costs. Since 2016, the Omnipod has been Insulet's primary source of revenue. The adoption of Insulet's Omnipod creates significant barriers for customers to switch to alternative products offered by competitors. Once customers integrate the Omnipod into their diabetes management routine, they develop a sense of comfort and familiarity that fosters loyalty and inhibits switching. Furthermore, Insulet offers a pay-as-you-go business model, different from that of its competitors who primarily charge lump-sum amounts for both the insulin management system and the insulin itself. Insulet, on the other hand, charges a much cheaper price, $420 for the Omnipod 5 compared to $4000 for Tandem's product, with hopes of attracting patients who might be on the fence about switching or initially choosing a product. Insulet makes it even easier for customers to get their hands on an Omnipod by selling it via the pharmacy. Customers can get started with the Omnipod at any local pharmacy with no upfront commitment, as compared to the four-year commitment and relying solely on doctor's offices that competitors require. Once the customer purchases the Omnipod device, they then purchase pod refills from Insulet. Due to the nature of the diabetes market, an individual with type 1 or type 2 diabetes will need insulin for the rest of their life. This provides a very strong source of recurring revenue for Insulet's pod re-fill sales. This high recurring revenue coupled with a low churn rate due to high switching costs for Insulet has successfully driven shareholder return since 2016.

Cadence Design Systems (CDNS)

cadence®

Company Overview

Cadence Design Systems, headquartered in San Jose, California, is an American electronic design automation (EDA) company. The company was founded in 1988 from the merger of SDA Systems and ECAD Inc. Cadence specializes in providing software, hardware, and intellectual property (IP) solutions for integrated semiconductor manufacturing and electronic system design and verification. The company follows a business model centered around licensing its software and IP solutions to customers, enabling them to streamline design process, enhance productivity, and reduce costs. It is one of two major operators in the EDA space and competes directly with Synopsys for market share in the industry vertical.

	1/1/2016	12/31/2022	
Stock Price*	$20.53	$160.64	
Market Cap	$6,017.6	$44,066.1	
Enterprise Value	$5,739.7	$44,107.9	
Shares Outstanding	297.5	274.3	1
Net Debt	-$367.9	$41.8	2
Debt/Equity	24.9%	33.7%	
Dividend Yield	N/A	N/A	
P/E	24.5x	47.9x	3
EV/Sales	3.4x	12.4x	
EV/EBITDA	14.2x	36.6x	
FCF/Share	$1.2	$4.1	
Gross Margin	86.2%	89.6%	
EBITDA Margin	23.7%	33.9%	4
Trailing 3yr Rev CAGR	8.7%	15.1%	5
Trailing 7yr Rev CAGR		11.1%	
Analyst Buy %	60.0%		
Analyst Hold %	40.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Lip-Bu Tan (2004-2021), Anirudh Devgan (2021-Present), Former VP of R&D at Cadence

CFO: John Wall (2017-Present), Former VP of Finance at Cadence

COO: N/A

Analysis

1. 8% of shares repurchased throughout the period to return capital back to shareholders
2. Debt issuance of ~111% in FY2016 and FY2022 to fund R&D initiatives and enhance innovation
3. ~2x increase in P/E multiple as a result of rapid growth in semiconductor industry and the market's anticipation of future growth prospects
4. 10% increase in EBITDA margin illustrating continuous growth in revenue as R&D expenditures and COGS remained constant
5. Large increase in trailing three-year revenue CAGR due to swift revenue growth in an expanding and innovative industry

Notable Events

cadence®

Volatility

1. • Announcement new release of Cadence Digital Full Flow Solution (Apr. 2020)
2. • EPS beat and heightened guidance due to higher-than-expected demand for software (Jul. 2021)

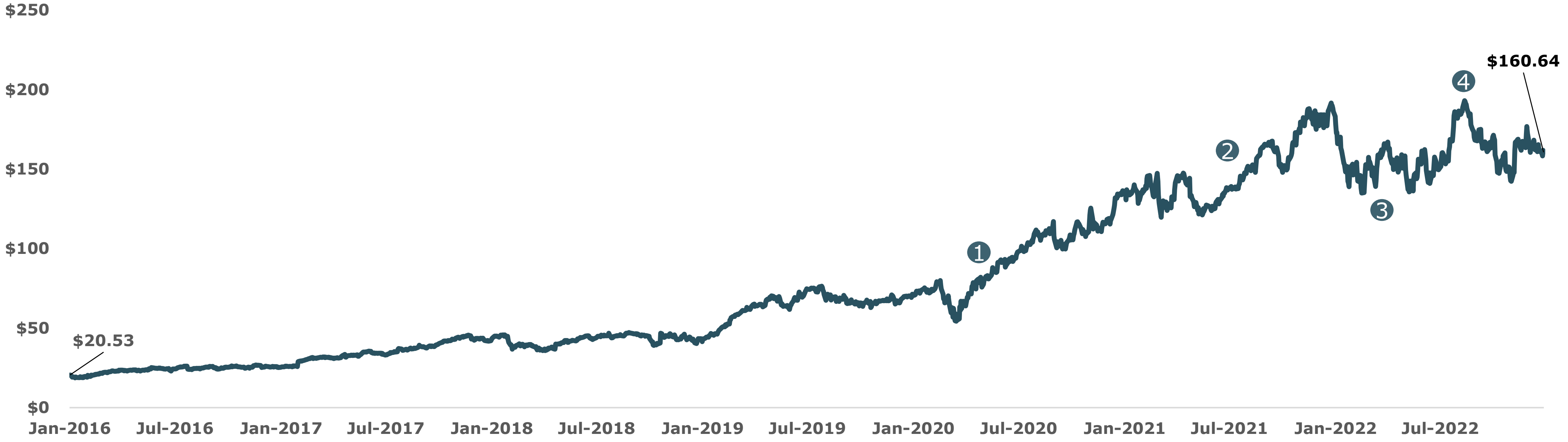
Mergers and Acquisitions

- Acquisition of Rocketick for $40 million cash (Apr. 2016)
- Cadence acquisition of AWR Corporation for $160 million (Dec. 2019)
- ④ OpenEye Scientific acquired by Cadence for $500 million all-cash (Jul. 2022)

Other Notable Events

- ③ Report that Cadence technology is used in People's Liberation Army fusion efforts (Apr. 2022)
- McLaren announced multi-year partnership with Cadence (May 2022)

# of 20%+ Drawdowns	5
Max Drawdown	-31%



Competitive Landscape

Competition

- **Synopsys (SNPS ~$48.6B market cap):** Synopsys is a renowned electronic design automation (EDA) company that was founded in 1986. Headquartered in Mountain View, California, Synopsys offers a comprehensive suite of software and IP solutions that enable efficient design and verification of integrated circuits and electronic systems. The company's core products cover a wide range of areas, including semiconductor design, verification, intellectual property, and software security. Synopsys operates on a business model that involves licensing its software and IP solutions to customers, helping them accelerate their development cycles and enhance product quality.
- **Siemens EDA (Private):** Siemens EDA is a prominent electronic design automation company, offering software, hardware, and services for integrated circuit and electronic system development. As part of Siemens Digital Industries Software, Siemens EDA provides industry-leading solutions for semiconductor design, verification, and manufacturing. Their comprehensive portfolio covers digital and analog/mixed-signal design, formal verification, simulation, and manufacturing. Siemens EDA's business model focuses on optimizing design processes, enhancing productivity, and enabling efficient delivery of high-quality electronic products to market.

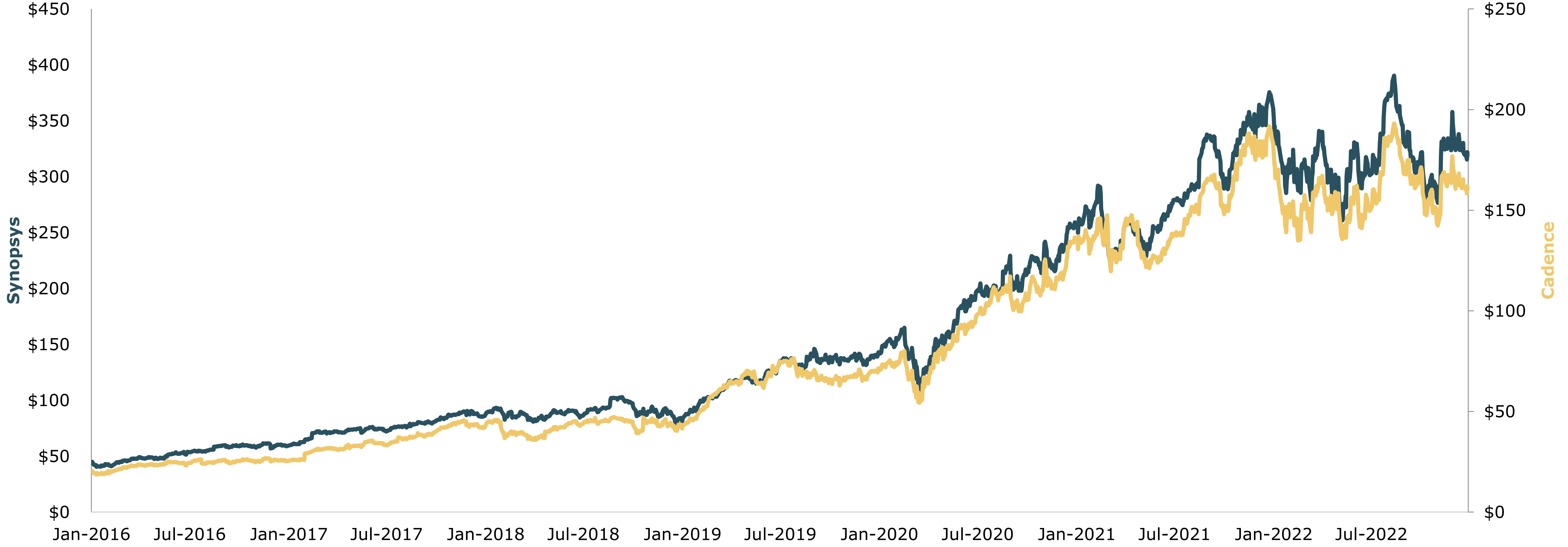
Cadence Design Systems and Synopsys operate as a duopoly in the EDA industry, both growing rapidly since the beginning of 2016 and 2023 largely in part from the overall semiconductor industry growth. Cadence and Synopsys stock prices have a 99.7% correlation over the time period, with Cadence beginning the period as a smaller company relative to their period-end growth allowing the company to have a larger percentage gain than Synopsys. Both companies have returned north of 600% since 2016 and continue to operate as a duopoly in the space, careful not to draw regulatory attention from the FTC. This competition has forced both Cadence and Synopsys to invest heavily in R&D and accelerate innovation and development, resulting in superior products constantly being introduced to the market. Cadence has also maintained slightly higher gross margins than Synopsys, leading to an outsized return since 2016.

Moat – Process Power, Switching Costs

Process Power (strong): Cadence has a strong moat in its process power behind the company's main products: its chip EDA and IP core business sector. Cadence has operated in the EDA space for over 30 years and has proprietary knowledge about the process. Even if a direct competitor had every piece of written knowledge and steps of the design process, it is estimated that it would still take this company 5+ years to catch up to Cadence's level of specialty and design just because of the complexity of EDA software design. Furthermore, Cadence has patents and IP protections on much of its proprietary information, securing its dominance in the duopolistic market that they operate in over the duration of the period.

Switching Costs (strong): Cadence also has a strong moat in the company's high switching costs associated with its EDA chip software. EDA software manufactured by Cadence and its competitor Synopsys is considered mission-critical for all large companies globally that require advanced semiconductor chips. Because Cadence is on the cutting edge of innovation and is a market leader in the EDA industry vertical, the cost of not using their products is extremely high because the use of high-end chips is not possible without their technology. There is in essence no way that customers could switch and use a different product because, besides Synopsys, there is no other company that can make such advanced EDA. Industry experts claim that companies would rather the power go out in their buildings before they stop using Cadence's products, further illustrating the mission-critical element of the company's software.

Cadence vs. Synopsys



Cadence and Synopsys, the two companies who operate a duopoly in semiconductor EDA software sector, have a 99.7% correlation in their stock prices from 2016 to 2022.

Conclusion - What drove shareholder return?

1. **Niche Market Dominance:** Cadence has been one of the market leaders in the EDA software space and has developed into a key player in the IP core industry vertical. Cadence and Synopsys, another EDA software manufacturer, operate a duopoly in the semiconductor EDA software niche. These two companies have benefited from the industry growth. Because Cadence is one of two companies that have a monopoly over this industry niche—EDA software is an essential step in the development and manufacturing of advanced semiconductor chips—as the semiconductor industry has rapidly grown since 2016, Cadence has been well positioned to grow along with it. This rapid industry growth coupled with its competitive positioning in the industry niche has allowed the company to return 682% over the period 2016 to 2023.

2. **Strategic Acquisitions:** Cadence Design Systems has made 57 strategic acquisitions since the company's inception. The primary target of most of the company's acquisitions has been focused on breaking into the IP core semiconductor manufacturing process. In 2013, Cadence acquired Tensilica, a data plane processing IP company, for $380 million, marking a breakthrough in their attempt to carve out market share in the IP core segment. These acquisitions have proven successful as IP—the development and sale of intellectual property surrounding semiconductor manufacturing—has become 15% of Cadence's sales in FY2022, a number that has continued growing YoY since 2016. Through several key acquisitions, Cadence and the company's management team have been able to derive large gains in shareholder value by breaking into another industry vertical: semiconductor intellectual property.

3. **Process Power:** The company has come to develop a strong moat through its process power surrounding the development and innovation of EDA software in the semiconductor manufacturing process. Cadence spends around 35% of its revenue on research and development alone, an extremely high number even for the rapidly-growing semiconductor industry. This results in constant and ongoing innovation towards the next and most advanced iteration of their EDA software, which is in endless demand by fabless companies that manufacture chips through third-party services like Cadence and TSMC. Because of the sophisticated nature of Cadence's operations surrounding the manufacturing of semiconductors, any attempt to catch Cadence's development in the EDA vertical is very unlikely to succeed. Cadence has over 30 years of industry knowledge and the countless learning cycles that come with the design of electronic design automation software. The process power competitive advantages have helped drive Cadence's shareholder return by over 650% since 2016 and have allowed the company to maintain its state as a duopoly in the EDA software industry niche.

4. **High Switching Costs:** A final reason for Cadence's remarkable 682% gain since FYE2015 is the high switching costs associated with the company's products. In specific, the electronic design automation software that Cadence is known for producing is at the cutting edge and the only software that allows fabless technology companies to manufacture the most advanced semiconductor chips. Because of this fact, there are no real alternatives to Cadence's products for any company that needs the most advanced chip for their end products. Many companies consider the adoption of the most advanced iteration of the semiconductor chip mission-critical to the success of their business, further increasing demand for Cadence's leading-edge products. Synopsys, the main competitor and other company that operates the duopoly, produces a product like that of Cadence's EDA software. Despite the existence of Synopsys, neither company has been able to gain meaningful market share over the other as both companies' business model relies on three-year contracts. These contracts are repeatedly renewed and both companies understand the nature of the duopoly they have created, being very cautious to not undercut each other and garner attention from regulatory bodies. Throughout the period FYE2015 to FYE2022, Cadence has been able to drive shareholder return through its high switching costs, ensuring growing demand as evidenced by its ~90% recurring revenue rate on average.

Old Dominion Freight Line (ODFL)

Company Overview

Old Dominion Freight Line, more commonly known as Old Dominion, is a union-free transportation company specializing in regional, inter-regional, and national less-than-truckload (LTL) shipping. Founded in 1934, Old Dominion operates a vast network of service centers and distribution facilities throughout the United States. Their services include ground and air expedited transportation for time-sensitive shipments, consumer household pickup and delivery and freight delivery services throughout North America. In addition to these core services, they've also expanded to provide a range of value-add services such as container drayage, truckload brokerage, and supply chain consulting. However, historically, over 98% of their revenue has been derived from LTL shipments.

	1/1/2016	12/31/2022	
Stock Price*	$38.95	$283.78	
Market Cap	$4,941.4	$31,352.5	
Enterprise Value	$5,063.8	$31,314.9	
Shares Outstanding	126.9	110.5	1
Net Debt	$122.3	-$37.6	2
Debt/Equity	7.9%	5.4%	
Dividend Yield	N/A	0.5%	
P/E	16.4x	23.3x	3
EV/Sales	1.7x	5.0x	
EV/EBITDA	7.6x	14.8x	
FCF/Share	$0.7	$8.1	4
Gross Margin	23.6%	35.4%	5
EBITDA Margin	22.3%	33.8%	
Trailing 3yr Rev CAGR	11.7%	15.1%	6
Trailing 7yr Rev CAGR		11.2%	
Analyst Buy %	52.6%		
Analyst Hold %	47.4%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price
**Kevin Freeman was the company's first COO

Management

CEO: David Congdon (2015-2018), Greg Gantt (2018-2023), Kevin Freeman (2023-Present), Former COO of Old Dominon

CFO: Adam Satterfield (2016-Present), Previous VP of Finance at Old Dominon

COO: Kevin Freeman** (2018-2023), Gregory Plemmons (2023-Present), Former VP of Sales at Old Dominion

Analysis

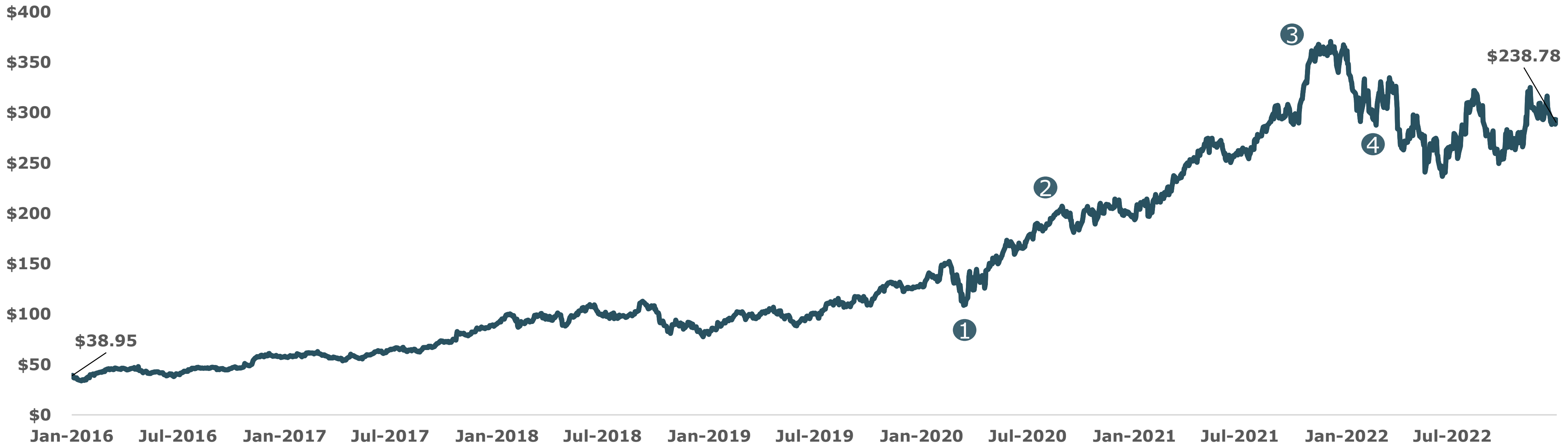
1. Authorized numerous stock repurchase programs throughout the 7-year period to return extra capital back to shareholders rather than engaging in inorganic growth; issued a share buyback program during COVID-19 pandemic showing strong financial health despite competitors conserving cash
2. ODFL has always carried very little debt; repaid moderate debt from 2015-2018 to stay financially healthy and strengthen balance sheet
3. Moderate P/E multiple expansion; ODFL grew at a conservative and gradual rate due to their long-term strategy
4. Operating cash flows increased over the period due to an increase in shipments and revenues
5. Gross margins increased by 11%; ODFL maintained a high gross margin compared to competitors
6. Revenue CAGRs relatively consistent; ODFL maintained revenue growth by investing in core operations, expanding network of service facilities, and winning long-term contracts with customers

Notable Events

Volatility

1. • Stay-at-home orders for truckers halted ODFL's operations; many customers closed, and volumes dropped (Mar. 2020)
2. • Added nine service centers in new and existing markets (Aug. 2020)
3. • Set new company records for quarterly revenue and profitability due to commitment to superior service, 20.9% employee increase, and continued investment in capacity (Oct. 2021)
4. • 50% dividend increase (Feb. 2022)

# of 20%+ Drawdowns	10
Max Drawdown	-34%



Mergers and Acquisitions

- N/A

Other Notable Events

- Awarded the Mastio Quality Award for #1 National Shipper for 13 consecutive years (2010-2022)
- Strong recovery post-COVID-19 pandemic due to significant capex cuts, employee furlough program, and a strong balance sheet (2020)
- Announced $250 million share repurchase program during pandemic; showed investors strong financial health despite downturns (May 2020)
- Opened six new facilities across the US (Aug. 2021)

Competitive Landscape

Competition

- **Saia (SAIA ~$5.6B market cap):** Saia is a transportation and logistics company that specializes in LTL freight shipping services. They are a prominent player in the LTL transportation industry and offer comprehensive shipping services across its network of terminals and service centers across the US. Like ODFL, Saia places strong emphasis on commitment to service and high-quality. However, Saia's network is smaller than ODFL and focuses on regional shipping in certain places within the US.
- **FedEx Freight (FDX ~$43.7B market cap):** FedEx freight, a division of FedEx Corporation, specializes in providing freight transportation and logistics services. FedEx Freight benefits from the extensive FedEx multinational network and strong brand reputation in the logistics industry. They offer a wide range of services, such as LTL and Truckload Freight (TL), as well as value-add services such as residential and liftgate delivery.
- **UPS Freight (UPS ~$150.4B market cap):** United Parcel Service, or more commonly known as UPS, is a multinational package delivery and supply chain management company based in the US. It is one of the largest and most recognized companies globally. While UPS is more well-known for its package delivery services, it also offers LTL freight transportation solutions for larger shipments through its UPS Freight division.

Though ODFL only holds around 10% market share as of 2022 in the LTL space, they have proven to be the most profitable in the industry. Driving this profitability is their ability to continually increase prices and charge a premium while still maintaining a strong customer base and shipment loads. They had an outstanding OPEX of 70.2% in 2022, as well as a 30% gross margin, which is incredibly high compared to its competitors in the space. ODFL's focus on strong customer service, high-quality shipments, and a 99% on-time services rate has allowed them to gradually raise prices and remain financially healthy through a widely cyclical industry.

Moat – Process Power, Scale Economies

Process Power (strong): ODFL has been awarded the Mastio Quality Award for #1 National Shipper for 13 consecutive years, and though not a market leader in the LTL space, has proved to be profitable and financially healthy through many economic downturns. ODFL's management has focused on the long-term: they believe in gradual increases in price to offset economic downturns and declines in revenues, as well as high-quality services leading to higher premiums and thus strong cash flows. Instead of utilizing M&A to jumpstart growth in the company, ODFL focuses on improving their internal operations and network expansion to provide the highest-quality and most efficient services in the market.

Scale Economies (weak): LTL is a sophisticated industry with high barriers to entry. The logistics of freight shipping are hard to master and require high upfront investments into facilities, capacities, and trucks. ODFL heavily invests in expansion and capacity, with over 250 service centers across North America and 11,000+ trucks. By continually investing extra capital into capacity and building new service facilities, ODFL benefits from large economies of scale. The more shipments they accumulate and the more facilities they construct, the lower their costs per unit of shipments. The high upfront fixed costs are spread out among the shipments and the increased facilities allow ODFL the ability to transport more goods.

Conclusion - What drove shareholder return?

1. **Long-Term Pricing Strategy:** Old Dominion's management has been gradually executing their long-term pricing strategy by increasing their rates every few years, which has allowed them to expand their profit margins and decrease their operating ratios through the 7 years. They have consistently increased rates through all market fluctuations despite downturns. Though ODFL recognized that the trucking industry is very cyclic and saw soft demand environments throughout the period, they remained at the top by maintaining their long-term and consistent approach to pricing. While this strategy led ODFL to see a decrease in volumes, the strength of the yield ultimately allowed them to increase revenues and improve their OPEX margins. As a result of this gradual increase in profitability, ODFL has maintained its financial health throughout economic downturns by continually investing in itself and cutting costs where necessary, as well as returning extra capital to shareholders. Seeing ODFL's financial stability and ability to turn a profit despite bearish market conditions has contributed directly to ODFL's shareholder return during the period.

2. **Process Power:** ODFL has largely attributed its gradual yet incredible return to its ability to generate more value for customers through its dedication to the highest quality of services. Focused on organic growth and never engaging in M&A, ODFL has invested lots of capital into its core operations as well as network expansion to increase its efficiency and shipping speed. ODFL has increased their on-time services ratio (percent of packages that arrive on time) to 99% in 2022, which can largely be attributed to their ability to expand their network to 250+ service centers, as well as investing in their employees through bonus programs. As a result of their high-quality service, their customers are willing to pay a premium. ODFL's OPEX margins decreased from 83.8% to 70.6% from 2015 to 2022 and have increased their revenues drastically during the period. This has increased their share price gradually throughout the period and is a direct factor in their success.

3. **Scale Economies:** By nature of the LTL industry, ODFL's investments into new facilities, expanding their truck fleet, and capacity allowed them to greatly benefit from economies of scale. These large upfront investments allowed ODFL to streamline its core operations and deliver more efficient shipping solutions. This directly contributed to their reputation for high-quality service and increased on-time ratio, which allowed them to charge higher premiums and retain a strong customer base. As a result, ODFL's revenues gradually increased YOY due to rate increases. Investors believed that ODFL had the potential to grow and could withstand market cycles due to a strong financial base, which contributed to their shareholder return during the period.

Quanta Services (PWR)

Company Overview

Quanta Services is a leading provider and contractor of infrastructure solutions for the electric and gas utility, renewable energy, communications, pipeline, and energy industries. They operate in the United States, Canada, Australia, and select international markets. They operated primarily in two segment throughout the 7-year period: Electric Power and Oil and Gas infrastructure services. However, in 2021 they added the Renewable Energy infrastructure solutions segment due to the acquisition of Blattner Holding Company and its operating subsidiaries which significantly expanded and enhanced Quanta's existing services with respect to the renewable energy generation industry. Their services encompass engineering, procurement, construction, upgrade, repair, and maintenance for various infrastructure projects.

	1/1/2016	12/31/2022	
Stock Price*	$20.31	$142.50	
Market Cap	$3,244.7	$20,363.4	
Enterprise Value	$3,600.7	$23,925.8	
Shares Outstanding	152.9	142.9	1
Net Debt	$353.7	$3,546.9	
Debt/Equity	15.6%	73.6%	2
Dividend Yield	N/A	0.2%	
P/E	23.9x	36.1x	
EV/Sales	0.5x	1.4x	
EV/EBITDA	8.4x	15.4x	
FCF/Share	$2.4	$4.9	3
Gross Margin	11.7%	15.1%	
EBITDA Margin	5.7%	9.1%	4
Trailing 3yr Rev CAGR	8.6%	12.1%	
Trailing 7yr Rev CAGR		12.3%	5
Analyst Buy %	77.8%		
Analyst Hold %	22.2%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Duke Austin (2016-Present), Former COO of Quanta Services

CFO: Derrick Jensen (2012-2022), Jayshree Desai (2022-Present), Former Corporate Development Officer at Quanta Services

COO: Duke Austin (2013-2016), Redgie Probst (2022-Present), Previous founder and CEO of Probst Electric and Summit Line Construction until their acquisition by Quanta in 2013

Analysis

1. Retired 10 million shares from 2016-2022 through numerous share repurchase programs, signifies company's financial health and dedication to return capital back to shareholders
2. Increased debt to fund numerous acquisitions (most notably Blattner in 2021); repaid significant amounts of debt in 2020 and 2022 to maintain company's capital structure and financial stability
3. Maintained consistent cash flows throughout the period; jump in FCF in 2022 due to Blattner acquisition
4. Increased EBITDA margin in 2020-2022 attributed to increased profit contributions from emergency restoration efforts (2020), communications demand, and renewable energy services
5. 12.3% revenue CAGR attributed to numerous core business acquisitions, expansion into renewable energy, and backlog growth

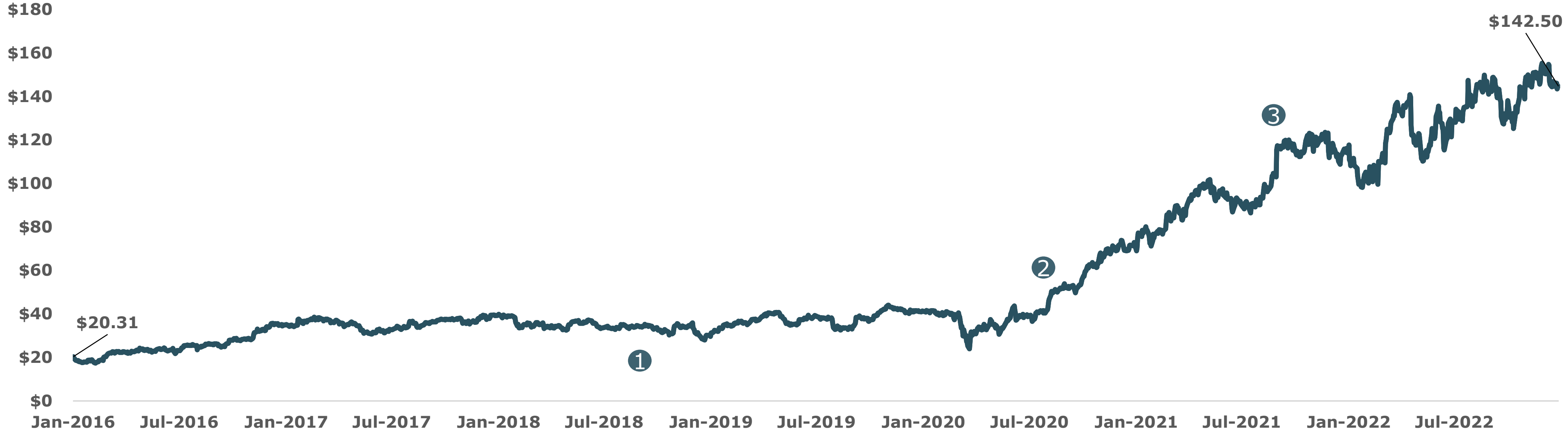
Notable Events

QUANTA SERVICES, INC.

Volatility

1. • Q3 '18 earnings miss; damages and costs from 2 projects impacted profitability, restoration efforts reduced revenues by $85.1 million, less favorable foreign currency exchange rates (Nov. 2018)
2. • Q2 '20 earnings beat; LUMA contract expected to provide long-term earnings and cash flow, electric margins increased 300 bps, 50% increase in communications operations (Aug. 2020)
3. • Announced definitive agreement to acquire Blattner (Sep. 2021)

# of 20%+ Drawdowns	8
Max Drawdown	-46%



Mergers and Acquisitions

- Acquired Stronghold, a leading specialized services company that provides solutions to the downstream and midstream energy markets; primarily refinery and petrochemical (Jul. 2017)
- Acquired The Hallen Construction Co., a gas utility contractor serving the northeast US (Sep. 2019)
- Acquired Blattner, a leading utility-scale renewable energy infrastructures solutions provider, for $2.4 billion in cash and $3430 million in Quanta common stock (Oct. 2021)
- Numerous other acquisitions pertaining to their core businesses

Other Notable Events

- Non-compete agreement for communications infrastructure expired, reentered market (De.c 2016)
- Selected by PacifiCorp (a subsidiary of Berkshire Hathaway Energy) to install 143 miles of high-voltage electric transmission line (Nov. 2018)
- Exited the Latin America market (2020)
- Quanta-ATCO joint venture, LUMA Energy, begins operation and maintenance of Puerto Rico's Electric Power Transmission and Distribution System (Jun. 2021)

Competitive Landscape

Competition

- **MasTec (MTZ ~$6.6B market cap):** MasTec is a leading infrastructure construction company that provides a wide range of services primarily to the energy, utility, and communications industries. Their services span across the entire project life-cycle, from initial design and engineering to construction, installation, and ongoing maintenance and repair. They operate within the oil and gas, electrical transmission and distribution, water and sewer, and wireless and wireline telecommunication spaces primarily within the US and Canada.
- **AECOM (ACM ~$11.8B market cap):** AECOM is a global professional consulting company that provides a wide range of services in the areas of design, engineering, and construction of infrastructure projects. They operate across multiple industries, including infrastructure, transportation, water, environment, and others. Unlike Quanta that specializes in infrastructure solutions, AECOM provides a broad range of professional service offerings.
- **Fluor Corporation (FLR ~$4.9B market cap):** Fluor Corporation is a global engineering, procurement, construction, and project management company. They provide a wide range of services, from traditional engineering disciplines such as piping, mechanical, electrical, control systems, civil, structural, and architectural to advanced engineering specialties. They also manage all aspects of the delivery process and are oftentimes hired as the overall program manager on large infrastructure projects.

Throughout the 7-year period, Quanta has managed to outperform its competitors by maintaining a strong liquidity position through revenue growth within its electric power segment. Their consistent cash flows have allowed them to acquire several smaller companies that have boosted their operations. Through their acquisitions, they've bought a significant market share and positioned themselves as a global contractor within the energy, O&G, and communications end-markets by being the largest infrastructure specialty contractor in North America. Additionally, Quanta acquired Blattner, a renewable energy infrastructure solutions company, to position itself at the forefront of the energy transition.

Moat – Process Power

Process Power (strong): Quanta has always seen M&A as a fundamental component of its growth strategy. Throughout the period, Quanta invested significant capital into acquisitions within the electric power, O&G, and renewables industries that support their front-end businesses. Quanta primarily focuses on accretive acquisitions that are additive to their core operations, which make up around 80% of their work. However, the company also continuously expand its service offerings through these acquisitions to meet their customers' growing needs. Additionally, Quanta uses a unique decentralized operational model that allows its acquired businesses to continue to be led by their former owners. Though Quanta's corporate strategies unite all their companies, their owners continue to operate as they did before which produces an entrepreneurial spirit, leading to unexpected synergies. By identifying accretive acquisitions and successfully executing these transactions, Quanta has built an incredible family of individual contractor companies around the world.

Conclusion - What drove shareholder return?

1. **Blattner Acquisition:** In October 2021, Quanta acquired Blattner, a large utility-scale renewable energy infrastructure solutions provider in North America, for $2.36 billion in cash and $340 million worth of Quanta common stock. The acquisition marked Quanta's expansion into the renewables space and contributed to Quanta's 15.0% and 31.5% revenue growth in 2021 and 2022. Their renewable energy revenue segment saw a 107% jump in 2022 post-merger, with management optimistic that renewable energy revenues will continue to grow as demand for renewable infrastructure grows. The acquisition allowed Quanta to strategically position itself to collaborate with its customers to lead North America's energy transition and capitalize on the growing amount of expected investment in renewable energy infrastructure. Through this acquisition, Quanta plans to ride the wave of carbon neutrality and provide core infrastructure for the long term. This acquisition improved investor sentiment in Quanta's plan to adapt to the shift in renewable energy and proved to be accretive in the latter two years of the period, ultimately driving shareholder return from 2021-2022.

2. **Infrastructure Investment and Jobs Act:** On November 6, 2021, Congress passed the Infrastructure Investment and Jobs Act, which allocated $1 trillion to numerous infrastructure-related projects. Most notable for Quanta, the bill allocated $65 billion to broadband infrastructure development, $7.5 billion to electric vehicle charging, and $65 billion to clean energy transmission and grids. This bill provided strong tailwinds for all US infrastructure companies for decades and allowed Quanta to take on numerous projects and further expand to meet this new demand. Being the US's largest infrastructure contractor, Quanta was positioned to take on more projects in 2021-2022, which increased the revenues and shareholder return.

3. **Strong Liquidity Position:** Quanta has maintained a strong liquidity position throughout the 7-year period to support its aggressive acquisition strategy. They pursued a growth strategy with three main focuses: timely delivery of projects, leverage on core business to expand in complementary adjacent service lines and enter new accretive end-markets. Their ability to maintain a 12.3% revenue CAGR over the period is attributed to their continuous investment in their employees and services. Because Quanta is a contractor company, their revenues and cashflows are tied to contracts and maintaining backlogs, which they grew throughout the period through accretive core-business acquisitions and high-quality services. Quanta has maintained a low net debt/EBITDA ratio throughout the period (<2x), except for 2021 when they acquired Blattner through debt raises. However, they managed to repay amounts of that debt following the acquisition and return their multiple down to 2.1x in 2022. Additionally, Quanta has continuously repurchased shares throughout the period, signifying strong cash flows and increasing investor sentiment.

4. **Process Power:** Quanta has engaged in an aggressive acquisition strategy that is core to its growth strategy. As one of the largest infrastructure contractor companies in the US, their constant ability to execute accretive acquisitions that build on their base businesses or expand to tangential services was a key factor in their incredible shareholder return over the 7-year period. Quanta has acquired more than 200 companies that have been a value-add to their business, which is a direct contributor to sales expansion. Additionally, their unique decentralized operations model has allowed their acquired companies to improve operations and increase sales individually, leading to additional synergies. This processing power has allowed Quanta to consistently grow throughout the period, which has been reflected in their shareholder return.

Synopsys Inc. (SNPS)

Company Overview

Synopsys is an American electronic design automation (EDA) and semiconductor intellectual property (IP) company headquartered in Mountain View, California. Founded in 1986, Synopsys has become a global leader in providing solutions to accelerate innovation in the development and verification of electronic systems. The company's core products include EDA tools for designing and verifying integrated circuits, software quality and security solutions, and IP cores for a wide range of applications. Synopsys operates on a business model that combines software licenses, maintenance and support services, and IP licensing, catering to semiconductor and electronics companies worldwide.

	1/1/2016	12/31/2022	
Stock Price*	$44.92	$319.29	
Market Cap	$6,803.3	$48,665.3	
Enterprise Value	$6,043.3	$47,799.6	
Shares Outstanding	151.5	152.4	
Net Debt	-$759.9	-$909.2	
Debt/Equity	6.5%	11.8%	
Dividend Yield	N/A	N/A	
P/E	28.9x	49.6x	1
EV/Sales	2.7x	9.4x	
EV/EBITDA	12.6x	30.7x	
FCF/Share	$2.6	$10.5	2
Gross Margin	76.2%	78.0%	
EBITDA Margin	21.3%	30.6%	3
Trailing 3yr Rev CAGR	8.5%	14.8%	
Trailing 7yr Rev CAGR		12.4%	4
Analyst Buy %	77.8%		
Analyst Hold %	22.2%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

**Prior to Sassine Ghazi's appointment, Synopsys did not list a COO

Management

CEO: Dr. Aart de Geus (2012-Present), Co-founded the company in 1986

CFO: Trac Pham (2014-2022), Shelagh Glaser (2022-Present), Former CFO of Zandesk

COO: Sassine Ghazi (2020-Present)** President and COO, joined the company in 1998

Analysis

1. 71.6% expansion in P/E multiple as a result of industry growth and market's expectations of Synopsys future growth
2. ~4x increase in FCF/Share from increase in revenue while shares outstanding remained relatively unchanged
3. 10% increase in EBITDA margin as the company streamlined operational efficiency and grew into an economy of scale
4. Seven-year revenue CAGR remains high despite Synopsys maturing as a company; largely due to industry's rapid growth and global chip shortage increasing demand for Synopsys EDA software

Notable Events

SYNOPSYS®

Volatility

1. Synopsys launched a cloud-based AI software tool for chip design (Feb. 2020)
2. DoD announced contract as a partner in DARPA's AISS system with Synopsys (May 2020)
3. Washington Post report on use of Synopsys Cadence Design Systems in People's Liberation Army fusion efforts (Apr. 2021)

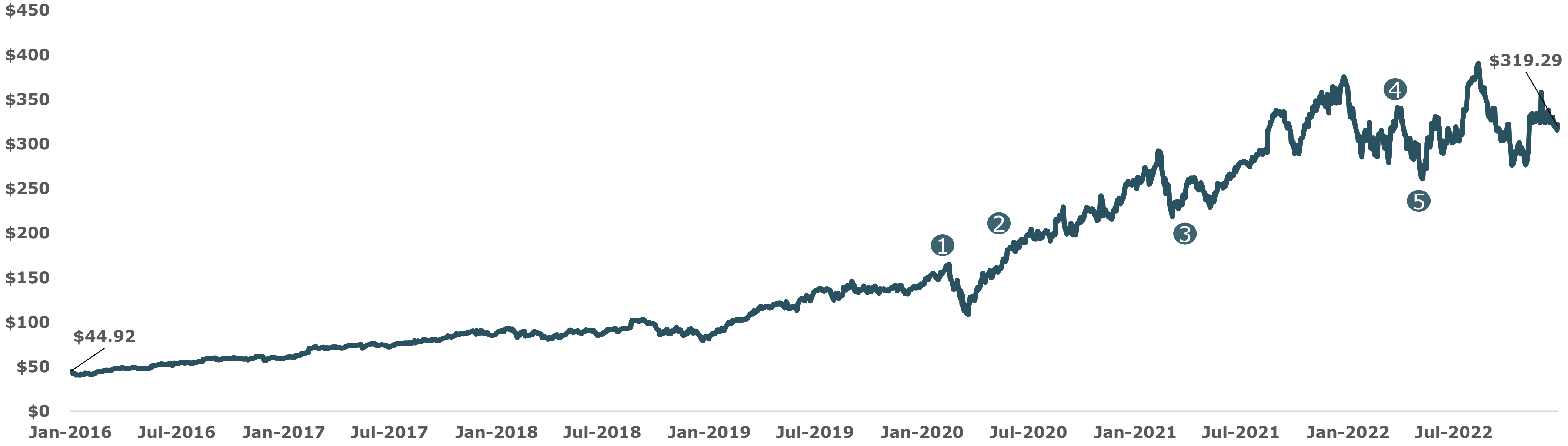
Mergers and Acquisitions

- Announces acquisition of BlackDuck Software for $565M (Nov. 2017)
- 4 • Announced WhiteHat Security acquisition by Synopsys for $330 million (Apr. 2022)

Other Notable Events

- 5 • Department of Commerce investigation into Synopsys for unlawful tech transfers to Chinese companies (Apr. 2022)

# of 20%+ Drawdowns	5
Max Drawdown	-34%



Competitive Landscape

Competition

- **Cadence (CDNS ~$44.1B market cap):** Cadence is a leading semiconductor company that specializes in providing innovative electronic design automation (EDA) software, intellectual property (IP), and hardware for the creation of integrated circuits and electronic systems. With a comprehensive portfolio of products, Cadence caters to various industries, including automotive, consumer electronics, aerospace, and telecommunications. The company's business model revolves around empowering its customers to design, verify, and implement complex electronic systems efficiently.
- **Siemens EDA (Private):** Siemens EDA is a prominent electronic design automation company, offering software, hardware, and services for integrated circuit and electronic system development. As part of Siemens Digital Industries Software, Siemens EDA provides industry-leading solutions for semiconductor design, verification, and manufacturing. Their comprehensive portfolio covers digital and analog/mixed-signal design, formal verification, simulation, and manufacturing. Siemens EDA's business model focuses on optimizing design processes, enhancing productivity, and enabling efficient delivery of high-quality electronic products to market.
- **Veracode (Private):** Veracode is an American company that operates in software integrity services, specializing in application security testing and vulnerability management. Veracode competes with Synopsys's software integrity services business segment, as it is a software business, and does not compete against Synopsys' semiconductor EDA or IP business segments, more generally their semiconductor and system design segment.

At the beginning of the period Synopsys, like many of its peers in the semiconductor industry, was a relatively small company that operated in the software and hardware sectors. The company began heavily developing its arsenal of IP in the early 2000s and, in tune with the rest of the semiconductor industry, began to rapidly grow. Synopsys was especially well-positioned to capitalize on the largescale demand for semiconductors as it was well-positioned in its industry vertical of IP cores and EDA tools, owning over 3,400 patents and IP restrictions surrounding the semiconductor and system design business segment. The company's brand name has developed into that of a very reputable firm, and they have developed meaningful relationships with many of their customers, further allowing Synopsys to have dominance over the industry.

Moat – Process Power

Process Power (strong): Synopsys has a strong moat: process power in the company's semiconductor and system design business segment, including EDA and IP, and system integration. The company relies on proprietary information to develop its products and is constantly innovating in order to stay ahead of the curve. Due to the rapid growth in the semiconductor industry, companies that have the most advance and innovative products can maintain a competitive advantage, which Synopsys has been successful in doing. It is only through extended investment that any other company operating in Synopsys's industry vertical can catch them in terms of progress, and because the company is constantly innovating, spending $1.5 billion on R&D in FY22, it would be very difficult to gain market share from the company in the immediate future.

Conclusion - What drove shareholder return?

1. **Industry Growth:** A portion of Synopsys’ 600%+ return since 2016 can be attributed to the outstanding growth and returns of the semiconductor industry. This industry growth can be explained by rapid technological innovation, rising consumption of consumer electronics, increasing disposable income, and a rapidly growing population. Synopsys acts as a key player in the industry, developing the bottom-end technology and IP for the construction of modern semiconductor. Synopsys is a major player in the chip intellectual property core. Their industry-leading IP is licensed to companies as software building blocks, called IP cores, for wide use in the larger development of chips. Synopsys is also the market leader in the electronic design automation (EDA) tools industry vertical. Synopsys' dominance and mere existence as a major player in these two industry verticals, coupled with rapid growth, over 10% industry CAGR, and outsized demand, has successfully driven shareholder return from 2016 to 2022.

2. **Niche Market Dominance:** Synopsys, along with its competitor Cadence, has come to dominate the industry niche that the company operates in within the larger semiconductor manufacturing industry. Most of the company’s revenue, an average of 65% throughout the period, comes from its electronic design automation software business, while an average of 25% comes from IP cores and the remaining 10% is from the software integrity segment. Synopsys is the market leader in EDA and attributes the company’s robust ~35 years of investment, innovation, and execution to its dominance of the EDA market. While the semiconductor industry is very competitive, Synopsys has been able to carve out a portion, in tandem with Cadence as the two companies operate a duopoly, in a step in the semiconductor manufacturing process that, coupled with increasing demand for advanced chips, has driven shareholder return 611% since FY2016.

3. **Strategic Acquisitions:** Synopsys has acquired a total of 90 companies across various domains since its inception. These strategic acquisitions have played a crucial role in driving shareholder returns since 2016. By acquiring complementary companies and technologies, Synopsys expanded its product portfolio, and patent portfolio, and strengthened its market position, leading to increased revenue streams and profitability. The continuous acquisitions, spearheaded by a management team that is constantly looking for a leg up on its competition through acquisition, have enabled the company to offer comprehensive solutions to its customers, enhancing its competitive advantage and driving customer loyalty. Additionally, Synopsys has acquired 20 companies in the silicon IP industry niche alone to break into an additional industry vertical and generate a more diversified revenue stream from their dominance over the EDA segment. These acquisitions have proven successful as IP revenue continues to grow at an average of 20% YoY since 2016, driving shareholder return and placing Synopsys as the 19th highest-returning company since 2016.

4. **Process Power:** Much of Synopsys’ 12.4% trailing seven-year revenue CAGR and remarkable shareholder return over the period can be attributed and summarized to its strong process power. To gain an advantage in the semiconductor industry and carve out market share more generally, a company must maintain a very high degree of innovation and specialized, implicit knowledge of their technology. Synopsys does exactly this through its rapid innovation, focus on investment in R&D, and a large portfolio of patents protecting the company’s proprietary information, IP, and trade secrets. Synopsys has maintained over 3,400 patents surrounding their chip IP core and EDA over the period. This company organization enables it to produce a superior product and can only be matched by an extended commitment. Synopsys’ process power can provide an overarching reason for their strong shareholder return over the period and illustrates how innovation coupled with IP protections in a rapidly growing industry can quickly lead to market dominance.

Light & Wonder (LNW)

Company Overview

Light & Wonder, formerly known as Scientific Games until March 2022, is a leading developer of technology-based products and services and associated content for the worldwide gaming industry. L&W's portfolio includes gaming machines and game content, casino management systems, table game products and services, lottery games and systems, sports betting technology, and interactive gaming and social casino solutions. In March 2022, L&W divested their lottery and sports-betting businesses and rebranded to "Light & Wonder", a leading cross-platform global games company with a focus on content and digital markets. They now operate within the three business segments of Gaming, SciPlay, and iGaming.

	1/1/2016	12/31/2022	
Stock Price*	$8.86	$58.60	
Market Cap	$762.9	$5,489.3	1
Enterprise Value	$8,841.2	$8,694.3	1
Shares Outstanding	86.1	93.7	
Net Debt	$8,078.3	$3,034.0	1
Debt/Equity	N/A	340.1%	
Dividend Yield	N/A	N/A	
P/E	N/A	508.1x	
EV/Sales	3.2x	3.5x	
EV/EBITDA	N/A	12.5x	
FCF/Share	$1.1	-$6.4	3
Gross Margin	56.1%	70.2%	4
EBITDA Margin	N/A	27.6%	
Trailing 3yr Rev CAGR	43.7%	-9.6%	5
Trailing 7yr Rev CAGR		-1.3%	
Analyst Buy %	55.6%		
Analyst Hold %	33.3%		
Analyst Sell %	11.1%		

*Numbers in millions excluding stock price

Management

CEO: Kevin M. Sheehan (2016-2018), Barry Cottle (2018-2022), Matt Wilson (2022-Present), Former CEO of Gaming

CFO: Michael Quartieri (2016-2020), Mike Eklund (2020-2021), Connie James (2021-Present), Former CFO of Scientific Games Corp

COO: N/A

Analysis

1. Market cap increases yet EV stays roughly the same; can be attributed to two stock and cash divestitures of core businesses that sold off significant debt and brought in $6.6 billion of cash to balance out enterprise value
2. Rapidly paid off debt in 2022 by using 90% of proceeds from two divestitures of core businesses; also sold off debt through lottery and sports betting divestitures
3. FCF decreased in 2021 and 2022 due to large repayments of debt to un-lever balance sheet
4. Gross margins increased by ~25% due to divestiture of lottery and sports betting business leading to changes in product mix; increased prices on gaming cabinets
5. Revenue CAGRs decreased due to divestitures of two core revenue sources; net cash proceeds were used to mainly pay off debt and restore company's financial health and focus on sustainable organic growth; decrease in revenue CAGR not necessarily a sign of stagnancy

Notable Events

Volatility

1. • Launched iLottery in Pennsylvania; most successful launch in the US to-date (May 2018)
2. • Legal settlement with Shuffle Tech; paid $152 million to plaintiffs (Dec. 2018)
3. • Announced stakeholder shift agreement; group of long-term institutional investors acquired 34.9% stake (Sep. 2020)
4. • Announced sale of Sports Betting and Lottery businesses for $7b to pay down $4.4 billion of debt (Sep./Oct. 2021)

# of 20%+ Drawdowns	5
Max Drawdown	-92%

Mergers and Acquisitions

- Acquired DEQ Systems Corp. and their extensive table game portfolio (Jan. 2017)
- Acquired Red7Mobile, industry leader in mobile and interactive casino content (Jul. 2017)
- Acquired NYX Gaming Group, a B2B digital gaming and sports better platform (Jan. 2018)
- Acquired Tech Art, leading supplier of hole-card readers for blackjack (Jan. 2018)
- Acquired SportCast, a leader in sports betting playing engagement (May. 2021)
- Acquired Lightning Box, a slot-developer (Aug. 2021)

Other Notable Events

- Gaming revenues decreased due to customer consolidation, fewer casino openings and expansion, and the end of a strategic long-relationship in 2018 (2019)
- SciPlay, a subsidiary of LNW, completed an IPO to sell a minority interest of 18.0% in their social gaming business (May 2019)
- Recovered post-COVID-19 pandemic through cutting $100 million in quarterly workforce costs and ramping up SciPlay revenues (2020)

Competitive Landscape

Competition

- **Aristocrat Leisure (ALL.AX ~$13.4B market cap):** Aristocrat is an Australian company that specializes in the design, development, and manufacturing of gaming machines and systems for the global gambling industry. After they saw the gambling market tighten in Australia, Aristocrat began moving towards international sales, in particular, the United States. They are LNW's direct competitors in the interactive gaming, gambling cabinet, and casino management system spaces.
- **International Game Technology (IGT ~$4.5B market cap):** International Game Technology is one of the world's leading designers and manufacturer of video slot machines, blackjack, keno and poker games, lottery technology and products, sports betting technologies, and proprietary software for computerized game monitoring. IGT has a large presence in the traditional gaming markets, such as land-based casinos, and offers a wide product range within the gaming space.
- **Activision Blizzard (ATVI ~$59.9B market cap):** Activision Blizzard, a major American video game publisher and developer, is one of the largest and most influential companies in the gaming industry. They are one of LNW's largest competitors in the online gaming space, and especially with LNW's subsidiary, SciPlay. They've developed numerous popular video game franchises, such as Call of Duty, World of Warcraft, and Candy Crush Saga.

Light & Wonder, formerly known as Scientific Games until their major rebrand as a games-focused business in March 2021, saw significant tumbles during 2018-2019. However, they managed to recover from overall slowdowns in casino machine expansion and lottery markets, as well as the COVID-19 pandemic by divesting their sports betting and lottery segments to de-lever their balance sheet and position themselves for growth as a gaming machine and iGaming business. LNW was able to maintain its capital structure and improve liquidity by cutting significant costs during the pandemic and used proceeds from various debt offerings and divestitures to pay off its debt and fund gaming operations and R&D.

Moat – N/A

We believe that Light & Wonder did not have a moat during the 7-year period.

Conclusion - What drove shareholder return?

1. **Strategic Capital Restructuring:** Light and Wonder is a highly leveraged company, which presented many risks and challenges throughout the period. However, LNW began to refinance and expand its corporate credit facility in 2019 to gradually unlever its balance sheet. They began to refinance their existing revolving credit facility through 2024, as well as issue and redeem large amounts of their unsecured notes on better terms. However, the COVID-19 pandemic put a halt on LNW's debt repayment as they focused on maintaining their liquidity position by issuing more debt to increase free cash flow during the period. Once the crisis came to an end, LNW began to announce plans to rapidly pay off their debt and de-lever their balance sheet, which investors reacted incredibly positively to and drove the stock price. The most prominent actions LNW took to meet their leverage ratio of 2.5x-3.5x by the end of 2022 was the divestitures of two core businesses: lottery and sports betting. LNW announced to divest these two businesses in September and October of 2021 and completed both divestitures in Q2 of 2022. They sold their lottery business to Brookfield Partners for $5.8 billion in cash proceeds and their sports betting business to Endeavor Holdings for $750 million in cash and 2 million shares in Class A common stock. These sales marked LNW's final steps in streamlining its business and focusing on its core operations. LNW used 90% of the proceeds from the lottery divestiture to pay off significant amounts of their debt, as well as authorizing a 3-year $750 million share repurchase program to return capital to shareholders. At the end of the period, LNW was able to significantly de-lever its balance sheet and maintain a debt ratio of 3.4x. LNW's strategy to pay off its debt in 2021-2022 and focus on the financial health and sustainable growth potential of the company by focusing on core operations ultimately drove their share price in the latter years of the period.

2. **Cost-Cutting:** The casino and gambling market was largely affected by the COVID-19 pandemic due to domestic and international casino shutdowns, as well as a decrease in individual disposable income. As a result, LNW took a hit during the crisis and began drastic cost-cutting measures to be a stronger competitor post-pandemic, and to maintain its strong liquidity position coming off previous debt refinancings. The firm's executive leadership took a 50% drop in salaries and the CEO withdrew no company salary during the ongoing pandemic. LNW also deferred non-critical capital expenditures, laid off employees, and began cutting worker salaries to maintain its cash position. Though LNW saw decreases in game operating revenue, this was partially offset by improved working capital, capex, lower interest payments, and a jump in SciPlay revenue due to player monetization. Overall, they saw a dramatic increase in free cash flow in 2020, which signaled to investors that LNW had braved the pandemic and their share price despite land-casino closures worldwide.

3. **Rebrand Towards Digital Gaming:** In March 2022, LNW changed its name to Light & Wonder from Scientific Games and shifted away from its lottery and sports betting business to focus on its core gaming operations. Their transformation came after significant leadership changes, most notably their CEO, who was dedicated to rebranding Scientific Games as a more technology and iGaming company. They began focusing on monetizing online games through SciPlay and the development of more innovative games and adopted a mission of providing high-quality and creative games wherever their customers are. Though this rebranding strategy was still underway when the 7-year period came to an end, investors were bullish on LNW's shift towards internal and organic growth and drove share price post-pandemic.

Chart Industries (GTLS)

Company Overview

Incorporated in 1992, Chart Industries is a leading global manufacturer of highly engineered equipment, packaged solutions, and value-add services used throughout the gas to liquid cycle in all industries that require liquid gases or alternative equipment for gas generation, primarily in the clean energy, industrial gas, and biomedical industries. They have historically specialized in the cryogenic applications of their equipment and solutions within the energy and gas industries but have recently moved to be at the forefront of the clean energy transition through building an integrated value chain by acquiring companies in 2020 and 2021 relating to clean power, clean industrials, clean water and food, beverages, and agriculture market opportunities within its specialty product groups.

	1/1/2016	12/31/2022	
Stock Price*	$17.72	$115.23	
Market Cap	$541.3	$4,903.9	
Enterprise Value	$642.6	$4,625.2	
Shares Outstanding	30.6	42.6	
Net Debt	$96.3	-$287.6	
Debt/Equity	32.6%	86.3%	1
Dividend Yield	N/A	N/A	
P/E	13.7x	31.7x	
EV/Sales	0.6x	2.9x	2
EV/EBITDA	N/A	18.2x	
FCF/Share	$1.8	$0.2	3
Gross Margin	27.9%	28.2%	4
EBITDA Margin	N/A	15.8%	
Trailing 3yr Rev CAGR	0.8%	7.5%	
Trailing 7yr Rev CAGR		6.5%	5
Analyst Buy %	50.0%		
Analyst Hold %	50.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Samuel Thomas (2017-2017), William Johnson (2017-2018), Jillian C. Evanko (2018-Present), Previous CFO of Chart and Truck-Lite Co

CFO: Kenneth Webster (2016-2017), Scott Merkle (2017-2021), Joe Brinkman (2021-Present), Former VP of Industrial Gas Products

COO: William Johnson (2016-2017), Prior CEO of Dover Refrigeration & Food Equipment

Analysis

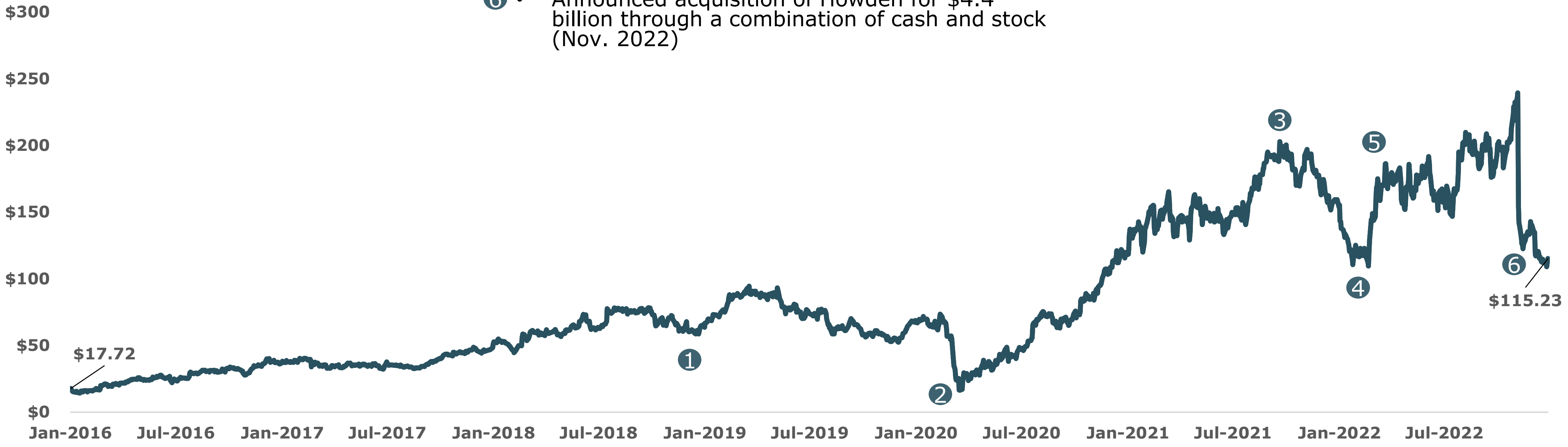
1. Debt increased 944.2% during the period, can be attributed to increased funding for numerous acquisitions
2. EV/Sales multiple expanded due to increased orders and backlog from overall market demand and acquisitions to expand core businesses (primarily in the equipment for distribution of industrial gases and hydrogen)
3. FCF/Share decreased in 2022 due to decrease in operating cash provided by working capital, particularly within inventory, A/R, and unbilled contract revenue in 2021
4. EBITDA margin increased to 16% in 2022; company became profitable in 2016 and increased earnings from rise in revenues with stable costs
5. 6.5% trailing 7-year revenue CAGR shows company's growth throughout the period attributed to divestment of high-cost businesses and various acquisitions that allowed Chart to focus on core businesses

Notable Events

Volatility

1. • Divested CAIRE Medical Business to focus on core cryogenic products (Dec. 2018)
2. • Saudi Arabia cuts oil prices in a power play; oil customers push back projects (Mar. 2020)
3. • Cryogenic Carbon Capture Technology received funding from the US Dept. of Energy (Oct. 2021)
4. • President Biden bans Russian oil imports (Feb. 2022)
5. • Increases in backlog and orders due to increased LNG and energy equipment demand as a result of Russia-Ukraine conflict (Mar. 2022)

# of 20%+ Drawdowns	7
Max Drawdown	-34%



Mergers and Acquisitions

- Acquired Hudson Products for $410 million in cash to complement their energy and chemicals segment (Sep. 2017)
- Acquired Air X Changers for $592 million in cash to penetrate compression market (May 2019)
- Acquired Sustainable Energy Solutions for their Cryogenic Carbon Capture Technology (Dec. 2020)
- Acquired Fronti Fabrications, a specialist in engineering for the cryogenic and gas industries for $20 million (May 2022)
- 6 Announced acquisition of Howden for $4.4 billion through a combination of cash and stock (Nov. 2022)

Other Notable Events

- Announced IPSMR+ process technology for LNG that increased efficiency 8% and decreased space by 25% (Apr. 2019)
- COVID-19 pandemic sparked emphasis on health and clean energy which incentivized government to inject capital into renewable energy sources, including hydrogen, CC, gas, and LNG (2020-)

Competitive Landscape

Competition

- **Linde (LIN ~$160.7B market cap):** Linde is a global industrial gas and engineering company that serves a variety of end markets such as chemicals and energy, food and beverage, electronics, healthcare, manufacturing, metals, and mining. Their industrial gases and technologies are used in countless applications including production of clean hydrogen and carbon capture systems critical to the energy transition, medical oxygen, and high-purity and specialty gases for electronics.
- **INOXCVA (Private):** INOXCVA is a market leader in cryogenic storage, distribution, and transportation solutions. They serve a variety of industries, including energy, oil and gas, healthcare, chemicals, and electronics. They specialize in the industrial gas, LNG, and cryo-scientific spaces along the value chain from infrastructure to distribution.
- **Wessington Cryogenics (Private):** Wessington Cryogenics is a leading producer of cryogenic vessels. They have a wide range of products which includes bulk-storage tanks, self-pressurizing vessels, road tankers, and many other storage products.

Chart Industries has built an integrated value chain over the seven-year period that has positioned it at the forefront of the clean energy transition by focusing on its core operations in liquified natural gas (LNG), hydrogen, biogas, carbon dioxide capture, water treatment, and other energy and industrial gas applications. While many of Chart's competitors tend to be regionally focused or product-specific, Chart supplies a wide range of solutions to companies worldwide. By constantly innovating and entering new markets, Chart has established strong financials through recessions and has managed to strategically allocate its capital to survive economics downturns. By creating a wide range of products that can be scaled to meet demand worldwide, Chart has established itself as a leader in their niche sector.

Moat – Process Power, Scale Economies

Process Power (strong): For over 70 years, Chart has built a worldwide reputation based on its ability to constantly innovate and engineer unique solutions for its customers' unique problems. Chart delivers value to its customers by first solving a problem they have, then creating a product line and scaling up its production to serve customers worldwide. They operate in all verticals within their core sectors, from the creation of the product down to the end-use application and service and repairs. Additionally, their dedication to quality and continuous improvement has pushed Chart to the top among its competitors. By investing in welding schools and other training for its employees, Chart has managed to produce the highest quality products across its value chain.

Scale Economies (weak): Operating primarily as a heavy equipment manufacturer, Chart's products are capital-intensive and require high fixed investments in machinery and equipment to manufacture its products. As Chart produces more units, it lowers its variable costs per unit by spreading these investments over a larger quantity of units. Additionally, as Chart increases production, their employees become more efficient at producing their products as their manufacturing processes require many human elements, such as welding.

Conclusion- What drove shareholder return?

1. **Vertical Acquisitions:** Chart completed several acquisitions over the seven-year time period to build an integrated value chain in preparation for the clean energy transition and focus on their core operations. In order to meet the growing requirements of the industries that Chart serves, they have undertaken a unique acquisition strategy by buying companies that position them in every phase of the liquid gas supply chain. In 2020-2022, Chart acquired numerous companies in the clean power, clean industries, clean water and food, beverages, and agriculture market opportunities within its specialty products segment. Additionally, they acquired companies relating to the production, manufacture, and distribution of hydrogen and other industrial gases to gain control over their costs and increase market share. As a result, Chart was able to increase their sales during the period and thus shareholder return.

2. **New Market Entry:** Chart's ability to rapidly enter new markets throughout the period has largely contributed to its financial health and ability to withstand economic downturns. Because their core businesses are very cyclical, Chart's entry into clean energy industries, LNG, and the hydrogen business has contributed to their rise in sales, particularly in 2021 and 2022 when Chart began leaning into the clean energy transition. Because many of Chart's historic customers are reliant on oil prices, during a slow period Chart has survived and exceeded the market by flexing capacity and reducing costs as well as offsetting these losses with clean energy products. This has contributed to Chart's rise in revenues during the period and has allowed them to withstand many recessions.

3. **Process Power:** Chart has adopted a hybrid manufacturing approach that combines elements of just-in-time (JIT) with traditional manufacturing methods. This has allowed Chart to be customer-centric and meet demand through constant innovation while still minimizing waste and maintaining low costs. Chart's dedication to its customers and understanding their needs in its production process has led them to outperform its competitors. By heavily investing in R&D and customer service, Chart has established long-term agreements with their larger customers that have driven their sales across their businesses. Unlike its competitors, Chart operates with its customers' needs in mind and oftentimes will create new custom-made products that then convert into entire product lines. Because this can cause manufacturing, SG&A, and development costs to increase, Chart stays competitive by ensuring that its manufacturing costs remain low by integrating lean manufacturing principles to minimize waste and improve efficiency across the production processes.

4. **Scale Economies:** Much like many other manufacturing businesses, Chart benefits from economies of scale through their high upfront fixed costs. As they produce more units, Chart benefits as their fixed costs are spread between a higher quantity of units. Chart has invested in numerous factories around the world and has divested parts of its business (biotech and medical) to reduce manufacturing costs and focus on its core businesses. While this moat does exist for Chart, I would consider this a weaker contributor towards their success as their competitors also benefit from economies of scale by the nature of the industry, they operate in.

Copart (CPRT)

Company Overview

Copart is a technology company that specializes in the online auctioning and remarketing of salvage and used vehicles. Copart operates under a two-sided marketplace through their global online auction platform. With ~80% of their revenues attributed to auction fees, Copart primarily supplies their vehicles from insurance companies that are looking to sell of their cars to auto mechanic shops, commercial buyers, or individuals worldwide. They operate in two segments: domestic and international. Because Copart's auction services are entirely virtual, this allows them to sell cars to buyers across the world to take advantage of international buyers that are willing to pay higher prices than in the US.

	1/1/2016	12/31/2022	
Stock Price*	$9.42	$60.89	
Market Cap	$4,529.3	$29,001.9	
Enterprise Value	$4,661.2	$27,578.2	
Shares Outstanding	480.9	476.3	
Net Debt	$131.9	-$1,423.7	
Debt/Equity	61.7%	2.4%	1
Dividend Yield	N/A	N/A	
P/E	22.3x	27.1x	
EV/Sales	4.1x	7.7x	2
EV/EBITDA	11.8x	18.0x	
FCF/Share	$0.4	$1.6	3
Gross Margin	41.8%	41.4%	4
EBITDA Margin	34.5%	42.7%	
Trailing 3yr Rev CAGR	7.4%	19.7%	
Trailing 7yr Rev CAGR		17.3%	5
Analyst Buy %	75.0%		
Analyst Hold %	12.5%		
Analyst Sell %	12.5%		

*Numbers in millions excluding stock price
**Jay Adair and Jeff Liaw are Co-CEOs

Management

CEO**: Jay Adair (2010-Present), Jeff Liaw (2022-Present), Previous CFO of Copart and Fleetpride

CFO: Jeff Liaw (2016-2020), John F North III (2020-2022), Leah Stearns (2022-Present), Former CFO of CBRE

COO: Sean Eldridge (1990-2020), Steve Powers (2020-Present), Former Copart's Eastern Division VP of Operations

Analysis

1. Aggressively paid of debt in 2018 and 2022; extinguished nearly entire debt balance in 2022 to maintain strong balance sheet
2. EV/Sales increased 87.8%; increase in revenues attributed to investment in physical infrastructure expansion; increase in used car prices; and maintaining strong relationships with insurance companies contribute to this increase
3. FCF/Share increased to $1.6 from $0.4 due to less aggressive capex spending from opening less facilities in 2020-2022; increased revenues; and improved gross margins
4. Maintained a strong gross margin throughout the period; possesses 50%+ market share in the industry which grants them pricing power; technological advancements kept costs low
5. Maintained a revenue CAGR of 17.3% throughout the period; attributed to US and international facility expansion; increased used car prices; and relationships with insurance companies

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Notable Events

Volatility

1 • Climbs to a new high in 9 years; Q1 '18 earnings beat despite $35.8 million costs attributed to Hurricane Harvey (Nov. 2017)

2 • Q4 '18 earnings miss; $10.5 million non-cash charge led to decrease of 230 bps in gross margin; $1.9 million write-downs of assets (Sep. 2018)

3 • Gross margin fell 320 bps due to elevated towing cost, higher ASPs, and inflationary cost pressures (Sep. 2022)

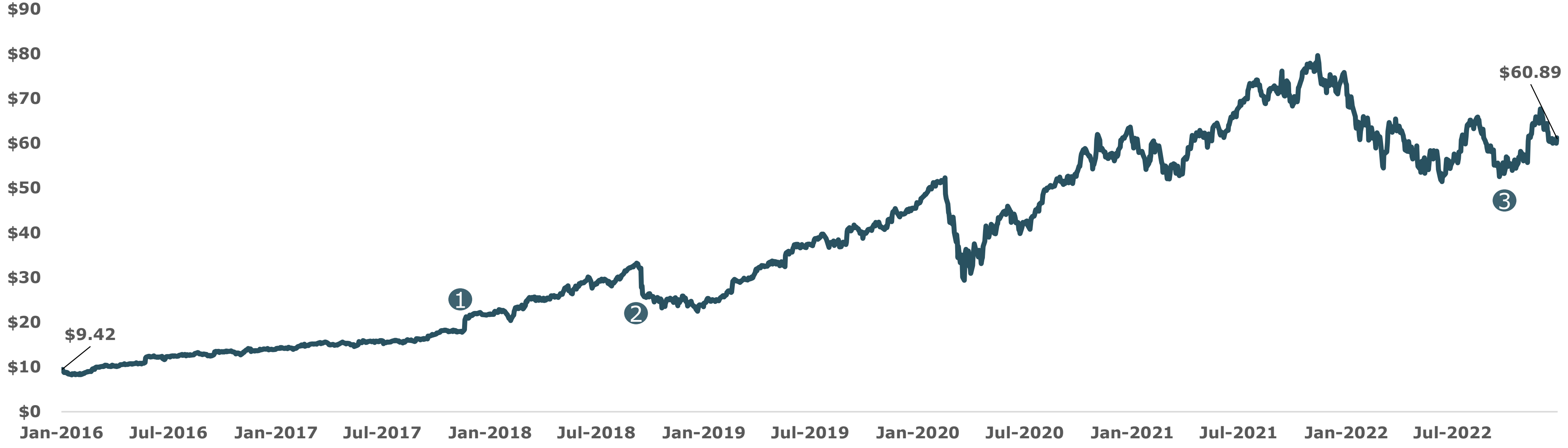
# of 20%+ Drawdowns	6
Max Drawdown	-44%

Mergers and Acquisitions

- Acquired National Powersport Auctions, which auctions pre-owned powersports vehicles on behalf of financing companies, dealers, and manufacturers (Jun. 2017)
- Acquired Autovahinkokeskus Oy, a salvage auto action company based in Finland (Mar. 2018)
- Acquired Vincent Auto Solutions, a remarketing of total-loss and fleet vehicles in the western Kentucky region (Mar. 2019)

Other Notable Events

- Opens numerous locations in the Brazil and Germany, expanding global footprint (2018)
- Opened and expanded 15+ locations in the US (2019)
- Launched Copart Max, the company's proprietary, industry-leading product suite that makes selling cars more cost-efficient and convenient (Oct. 2020)
- Used car prices began rising in June of 2020-Copart benefitted from increasing ASPs and profit margins (2020-2021)



Competitive Landscape

Competition

- **Insurance Auto Auctions (IAA ~$5.35B market cap):** IAA is a leading global digital marketplace connecting vehicle buyers and sellers of salvage and total-loss vehicles. They specialize in the remarketing and auctioning in the automobile aftermarket industry and focus primarily on vehicles that have been declared total losses by insurance companies due to accidents, thefts, floods, or other damage. IAA was acquired by RB Global (formerly Ritchie Bros. Auctioneers) in March 2023 for $7 billion.

- **OPENLANE (KAR ~$1.42B market cap):** OPENLANE, formerly KAR Auction Services before their strategic rebrand in May 2023, is a leading digital marketplace for used vehicles, connecting sellers and buyers across North America and Europe to facilitate fast, easy, and transparent transactions. They were a spinoff of IAA in 2019. Their marketplaces typically carry vehicles sold by commercial sellers including vehicle manufacturers and their captive finance companies, financial institutions, commercial fleet operators, and rental car companies. Their business model operates similar to Copart's, with two main revenue streams coming from auction fees and value-add services. They also own and operate ADESA, which is a technology that is sold and licensed to other auction providers.

- **LKQ Corporation (LKQ ~$15.57B market cap):** LKQ is on of the largest national dismantlers within the automotive aftermarket industry. They are a global distributor of vehicle products, including replacement parts, components, and systems used in the repair and maintenance of vehicles. Though their business model operates differently than Copart, they may purchase salvage vehicles directly from insurance companies, thereby bypassing companies such as Copart directly.

With a market cap of $29.0 billion, Copart is significantly larger than its competitors with over 50% market share in the industry. The next largest company is IAA, which operates around 30-40% of the market share in the industry, essentially making the market a duopoly. IAA had lagged behind Copart due to less focus on auctioning technology and international markets, which also put IAA's margins significantly below Copart's. However, in 2019 and 2020, IAA spun off KAR Auction Services and began expanding into international markets to mimic Copart's business. However, Copart's dedication to technology and expansion pushed them ahead during the COVID-19 pandemic as they were able to implement fully virtual bidding and auctions worldwide, and they have maintained their position as a leader in the auto auction business.

Moat – Process Power, Network Effect

Process Power (strong): Copart has been a leader in the auto auction industry due to its innovative take on technological advancements in a largely industrial market. Copart pioneered the move to online vehicle auctions in 1998 and has since focused heavily on evolving its auction technology. They were able to transform from a salvage vehicle junkyard to a technology company with an incredible global platform. Jay Adair, who has been with the company since he was 19, developed Copart's core auction technology, the Virtual Bidding Second Generation (VB2), and transformed the industry from brick-and-mortar auctions to fully virtual.

Network Effect (strong): By nature of the marketplace business model, Copart relies on a huge network effect to bring in revenues from both their sales and services segments. While there is no single customer that makes up their supply or demand, ~80% of Copart's cars come from insurance companies. By maintaining a good relationship with insurance companies and both commercial and individual auto buyers, Copart operates a two-sided marketplace where both sides benefit from an increased network.

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Conclusion - What drove shareholder return?

1. **Presence in International Markets:** Copart operates in two business segments: domestic and international. With over 200 locations in 11 different countries, Copart has opened numerous locations throughout the period to expand its international business. International sales have accounted for 9-12% of their service sales and 5-8% of their vehicle sales throughout the period. Though their international segment may be producing lower margins and ROA than Copart's US segment, their influence in international markets positioned Copart apart from their competitors. Particularly, Copart recognized that many international buyers will purchase totaled vehicles, as the cost of fixing it up is much less in certain areas overseas, whereas many US buyers see less value in these total-loss cars. Copart's largest competitor, IAA, has only in recent years (2020) begun to expand aggressively into international markets to mimic Copart's business model. However, they have not been able to achieve Copart's margins and still lag behind. Copart's ability to maintain profits in both markets gives them not only room to grow, but also allows them to sell all types of vehicles at consistent margins.

2. **Increases in Used Vehicle Value:** The Manheim Used Vehicle Value Index is a measurement of wholesale used-vehicle prices that is independent of underlying shifts in the characteristics of vehicles being sold. This index is recognized by analysts as the premier indicator of pricing trends in the used vehicle market and has moved Copart's stock price throughout the period. Used car prices began to skyrocket in 2020-2021, during the COVID-19 pandemic, as car manufacturers were forced to stop production at major factories. New car prices became incredibly expensive due to inventory issues, which, in turn, drove up used car prices. However, Copart benefitted from these high prices due to a combination of their business model, virtual auctioning technology, and large inventory. Because Copart benefits from increased used car prices, the limited global supply allowed Copart to charge higher prices and earn higher margins during this period by burning inventory when seeing a slowdown in car wrecks. Additionally, their fully virtual auctioning platform allowed them to operate throughout the pandemic's strict distancing policies. Ultimately, Copart's stock price skyrocketed from 2020-2021 post-pandemic due to these tailwinds from increased used car prices.

3. **Process Power:** Copart was the first auto auctioning company to launch a fully virtual platform that increased efficiency, lowered cost, and convenience for all parties involved in the auction process. Known for their VB2 and VB3 technology, Copart shifted from a brick-and-mortar junkyard to a fully virtual global auctioneering platform where customers can buy and sell vehicles from the comfort of their homes or office on their smartphones. This has allowed Copart to provide value-add services, such as auction algorithms, at a higher price to international customers who may want better and quicker prices. Copart also has strategically placed numerous physical locations for their car lots that prevent competitors from easily entering the market. By nature of the auto auctioneering business, there are high upfront capital costs withholding used cars. Copart has maintained customer convenience and low-costs by owning car lots right outside of busy metropolitan areas, where there's a lot of car traffic and urban density, ultimately possessing a geographic monopoly. Copart's strategic business model and physical positioning have allowed them to maintain a strong process power moat since 1998 and have grown their stock price throughout the period.

4. **Network Effect:** Copart benefits from a network effect due to the nature of their marketplace business model. They operate a two-sided marketplace, with their supply coming primarily from insurance companies, and their buyers containing auto mechanics, commercial buyers, and individuals both in the US and internationally. Copart strategically diversifies its seller base to avoid relying too heavily on one customer. As more sellers join the Copart marketplace, this provides a wider selection for buyers, and vice versa, as sellers want more individuals to bid up their prices. Thus, Copart has maintained strong relationships with insurance companies (~80% of supply) to maintain inventory and incentivize buyers as they have the widest range of vehicles. As Copart's network grows so has their revenues and share price.

Fair Isaac Corporation (FICO)

FICO

Company Overview

FICO, or Fair Isaac Corporation, is a data analytics company based in Bozeman, Montana, that focuses on credit scoring services. Its flagship product, the FICO score, is widely used by financial institutions for assessing credit worthiness. FICO offers decision management solutions that leverage predictive analytics to assist organizations in various industries with risk management, fraud detection, and operational efficiency. The company's software solutions follows a license or subscription-based business model, serving a customer base including banks, government agencies, and retailers. The FICO score has become an integral fixture of consumer lending in the United States.

	1/1/2016	12/31/2022	
Stock Price*	$93.06	$599.10	
Market Cap	$2,891.9	$14,949.9	
Enterprise Value	$3,410.6	$16,736.8	
Shares Outstanding	31.1	24.9	
Net Debt	$518.6	$1,786.9	1
Debt/Equity	146.6%	N/A	2
Dividend Yield	0.1%	N/A	3
P/E	30.5x	40.9x	
EV/Sales	4.0x	12.0x	
EV/EBITDA	19.3x	28.5x	
FCF/Share	$4.8	$18.2	4
Gross Margin	68.9%	77.8%	
EBITDA Margin	20.8%	41.9%	5
Trailing 3yr Rev CAGR	7.4%	5.9%	6
Trailing 7yr Rev CAGR		7.3%	
Analyst Buy %	75.0%		
Analyst Hold %	25.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: William Lansing (2012-Present), Former CEO of InfoSpace

CFO: Mike Pung (2004-2019), Michael McLaughlin (2019-2023), Steve Weber (2023-Present), Former VP of FICO, joined the company in 2003

COO: N/A

Analysis

1. 245% increase in net debt as FICO's cash position shrank and new debt was issued
2. Large share buyback initiatives throughout the period, over -$4 billion in treasury stock as of 2022, using FCF from high-margin scores business to repurchase
3. FICO stopped paying dividends to shareholders in FY2018, shifted focus to share buybacks
4. Large increase in FCF due to growing revenue streams coupled with continuous share repurchasing drove up FCF per share
5. 2x expansion in EBITDA margin indicative of the company's extension in its software business and beginning hiking the price of its scores business line contributing to high-margin growth
6. Slight decrease in trailing three-year revenue CAGR as a result of the business maturing and FICO's growth slowing

Notable Events

Volatility

1. • Q4 '18 EPS miss, slowdown in growth of scores business lowering guidance (Nov. 2018)

3. • FICO scores revenue booms on release of 10 and 10T scores suite (Jan. 2020)

4. • Impact of COVID-19 pandemic; less loans being issued drove demand of FICO scores down (Mar. 2020)

5. • Q4 '21 revenue miss and lowered outlook (Nov. 2021)

# of 20%+ Drawdowns	5
Max Drawdown	-50%

Mergers and Acquisitions

2. • FICO acquires EZMCOM, analytics and decision management technology provider (Aug. 2019)

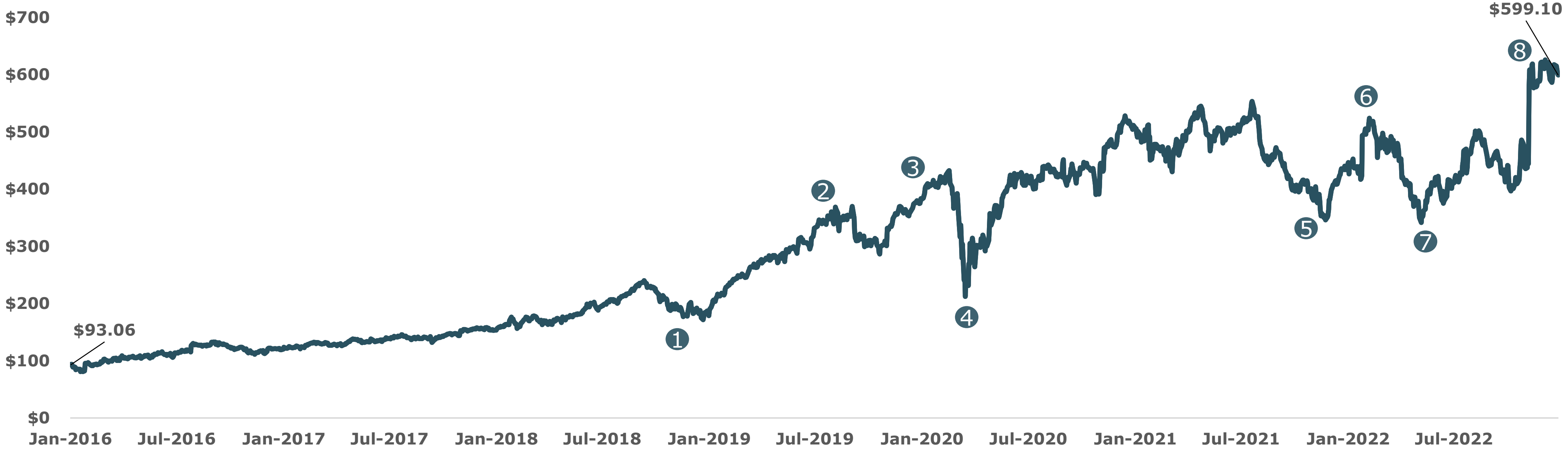
Other Notable Events

- Continuous share buybacks propping up EPS beginning heavily in 2018

6. • Q1 '22 EPS beat, $500 million stock repurchase program announced (Jan. 2022)

7. • Anticipation of FHFA decision regarding credit score models, FICO future demand uncertain (Apr. 2022)

8. • 5% EPS beat, revenues growing faster than street expected, higher-than-expected scores demand, strong outlook (Nov. 2022)



Competitive Landscape

Competition

- **VantageScore* (Private):** VantageScore is a credit scoring model established in 2006 by the three major credit reporting bureaus: Experian, Equifax, and TransUnion. The company provides alternative credit assessment solutions to lenders and consumers. VantageScore was initially created as an alternative and direct competitor to FICO scores. They emphasize score consistency across credit bureaus and offer customized scoring models for differing lending purposes. With increasing adaptation, VantageScore has become a trusted player in the credit score space and is FICO's only direct competitor in assessing credit scores and credit worthiness.
- **Intuit: CreditKarma (INTU ~$109.3B market cap):** CreditKarma, a subsidiary of Intuit, is a consumer financial technology company founded in 2007. It offers free credit scores, credit monitoring, and personalized financial recommendations to its users. Credit karma operates an online platform that allows its customers to access and track their credit information form an easy-to-use UI. The company generates revenue through partnerships with financial institutions, offering tailored product recommendations to its user base. CreditKarma competes with FICO as VantageScore is the company's primary credit ratings tool.

In 2016, FICO was a widely used product but lacked any recent innovation. FICO scores, making up around 50% of the company's revenue, remained the same price since their inception, costing anywhere from less than one cent to $1 depending on the use cases. In 1995 Fannie Mae and Freddie Mac institutionalized FICO scores, requiring them for mortgage origination. It wasn't until 2018 that FICO began increasing the price of their credit rating scores and dominating the market, driving shareholder return. Their primary competition, VantageScore, was launched by the three major credit bureaus claiming to be able to score more individuals and higher accuracy, but FICO swiftly nullified this claim when they released the latest iteration of scores, FICO 10 and 10T, in January of 2020.

Moat – Branding

Branding (strong): The brand of FICO represents another strong moat. FICO, as previously stated, is the industry standard in credit ratings from mortgages to car loans. The FICO brand is associated with credit scores and the company is even seen by many as being a government agency, illustrating the dominance of their brand. As the company has grown, rating more individuals and expanding its software solutions, its brand has only grown stronger, and the term "FICO score" is now a generically used term for credit ratings. FICO also has a strong competitive advantage as the company has high switching costs which come from a derivative of its brand strength. Agencies and companies who do not use FICO's scoring system are typically unable to securitize loans and sell them to financial institutions, representing a very high switching cost to using VantageScore. The FICO scores are widely used to determine credit enhancements that are required to make the securities attractive to investors. On average, a firm that uses VantageScore ratings pays anywhere from zero to 50bps more in their interest rates when securitizing because the security is viewed as a lower-quality offering.

*VantageScore is FICO's only true competitor for credit ratings, FICO had a monopoly on scores until their inception in 2006

Conclusion - What drove shareholder return?

1. **Market Dominance:** FICO dominates the consumer credit risk market. Its scores are a fixture of consumer lending and are used when assessing mortgage loan decisions, car loans, credit cards, and many other cases. FICO's software solutions also dominate in specific sectors, like fraud detection and customer management, contributing to the company's growing recurring revenue stream. While FICO has maintained this market dominance, it wasn't until 2018 when they began increasing the cost of getting an individual's FICO score that the company's share price started to climb. This increase in the price of scores has margins of over 95% and has been successful in generating more revenue without creating significantly higher costs to the company and is a large reason behind its historic 544% gain from 2016 to 2023.

2. **Switching Costs:** A company that switches away from FICO scores to VantageScore loses the ability to securitize its debt at attractive interest rates. As an example, Moody's and S&P rate around 90% of all debt in the world, and when an offering uses a different provider, the issuer typically pays 50 basis points more in their interest rates. FICO scores are the industry standard, like Moody's and S&P. When a company offers securitized loans using anything other than a FICO score, the offering is seen as less trustworthy, and thus the company loses out on a substantial amount of money, representing a very high cost of switching. These high switching costs have led to increasing demand for FICO scores, thus driving more sales and revenue leading to a higher shareholder return over the period.

3. **Software Solutions:** FICO also operates a software side of the business. The software business represents 50% of the company's revenue but only 25% of its operating income due to the lower margins associated. FICO sells multi-year subscriptions to their software which assists companies in fraud detection, customer management, marketing, and other solutions, of which FICO is the industry leader in fraud detection and customer management. In 2017, FICO began investing heavily in creating its platform to host software solutions, successfully reducing margins. The platform has grown around 40-60% YoY on average since 2016. The company's net revenue retention rate on its software services has been over 100%, illustrating that FICO's customers are continuing to stay on the platform and only investing more. The power of the company's platform services is that it is very scalable. Its subscription-based model provides a constant revenue stream and gives the company more pricing power, resulting in even higher margins, and driving shareholder return.

4. **Branding:** FICO is seen as the gold standard for credit rating risk assessments across all industries. The company's brand has grown into a large intangible asset and is a primary reason that they still dominate the market the same they have for decades. The FICO score and the company's software operations are synonymous with credit ratings, and this development of its brand image is a competitive advantage that has been a partial explanation for much of its growth as a company. Insurance agencies and financial institutions automatically think of FICO when they need to get a credit rating on an individual, and the FICO score has become a genericized trademark since the early 2000s.

5. **Monopoly on Credit Scores:** A final reason for FICO's 500%+ return from 2016 to FYE2022 is its strong cornered resource. FICO held a complete monopoly on credit rating risk scores beginning in 1995 when Fannie Mae and Freddie Mac institutionalized FICO scores by requiring them for mortgage origination. It wasn't until VantageScore launched in 2006 that FICO had any real competition. Despite VantageScore's entrance, FICO's high switching costs and strong branding helped the company retain its status as a market leader. FICO began to raise prices on each credit risk score in 2018 and lost no demand by doing so, illustrating their pricing power. Furthermore, the company's scores are the primary instrument used, as previously discussed, in securitizing loans and selling these securities to banks. Because many financial institutions will only take on a securitized loan if it has a FICO rating attached to it, the company has a cornered resource as they originate the ratings. Through patents and proprietary information about the mathematical models used to determine the individual scores, FICO's cornered resource, their FICO scores, have helped drive shareholder return over the time period.

ON Semiconductor (ON)

onsemi

Company Overview

ON Semiconductor, operating under the onsemi brand, provides intelligent power and sensing solutions globally. Founded in 1999 as a spinoff of Motorola's Semiconductor Components Group, onsemi has grown to be a top 20 semiconductor company with presence in North America, Europe, and the Asia Pacific regions. During 2021, onsemi began to weed out less profitable products and focus on faster-growing end markets. Most notably, onsemi shifted their primary focus to the automotive and industrial infrastructure industries and have specialized in end-to-end manufacturing for silicon carbide (SiC) chips for electric vehicles. However, they continue to serve a broad base of end-user markets, including communications, computing, aerospace and defense, and consumer.

	1/1/2016	12/31/2022	
Stock Price*	$9.70	$62.37	
Market Cap	$4,003.2	$26,970.3	
Enterprise Value	$4,803.2	$27,582.2	
Shares Outstanding	412.7	432.4	
Net Debt	$776.3	$593.4	1
Debt/Equity	85.4%	56.6%	
Dividend Yield	N/A	N/A	
P/E	23.2x	11.9x	
EV/Sales	1.4x	3.3x	
EV/EBITDA	8.2x	9.4x	
FCF/Share	$0.5	$3.7	2
Gross Margin	33.3%	48.5%	3
EBITDA Margin	16.7%	35.4%	
Trailing 3yr Rev CAGR	6.5%	14.7%	4
Trailing 7yr Rev CAGR		13.2%	
Analyst Buy %	70.6%		
Analyst Hold %	23.5%		
Analyst Sell %	5.9%		

*Numbers in millions excluding stock price

Management

CEO: Keith Jackson (2002-2020), Hassane El-Khoury (2020-Present), Former CEO at Cypress

CFO: Bernard Gutmann (2012-2021), Thad Trent (2021-Present), Former CFO at Cypress

COO: N/A

Analysis

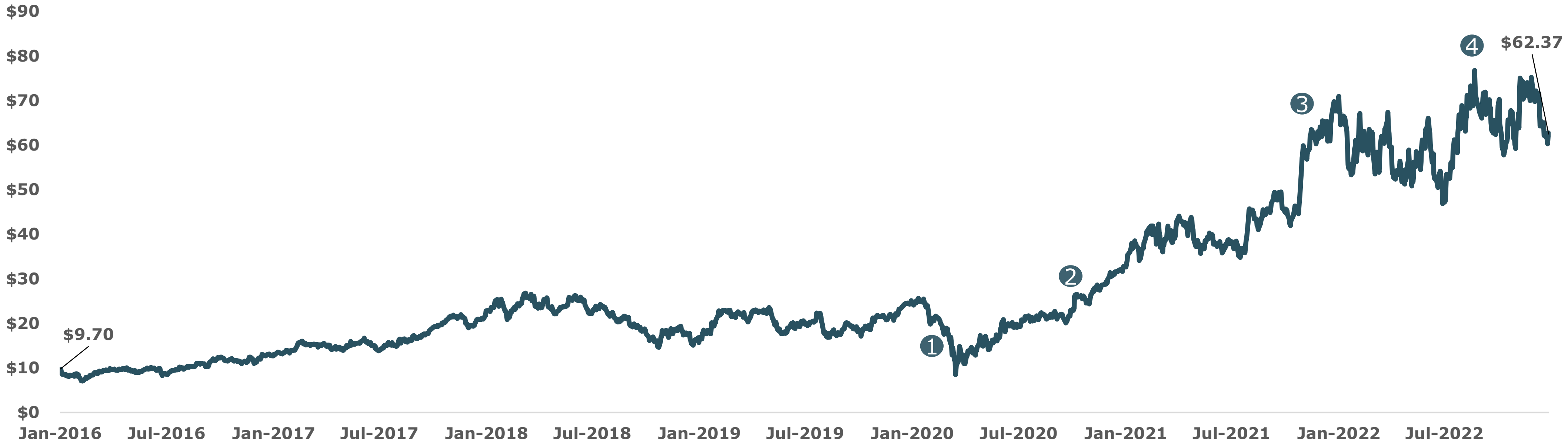
1. Net debt decreased due to repayment from 2017-2018 and 2020-2022; drew down $1.2 billion from revolving credit facility in March 2020 out of caution to have sufficient liquidity during COVID-19 pandemic; consistently repaid debt after withdrawal and increased FCF
2. FCF increased dramatically over the 7-year period due to the adoption of a fab-lite model leading to decreases in capex and increases in sales
3. Gross margins increased 48.5% over the 7-year period due to various sell-offs and acquisitions of wafer fabs leading to improved efficiency and focus on key end-markets
4. Has maintained a 13.2% revenue CAGR during the period and 14.7% from 2019-2022; incredible growth in the latter 3 years attributed to shift to a fab-lite model and focus on the electrification of the auto industry

Notable Events

Volatility

- ❶ Q4 '19 missed earnings due to decreased demand for and sensor products and US-China trade power management war disruptions (Feb. 2020)
- ❷ Activist investor Starboard Value took a stake in onsemi after presenting a bullish thesis at an investor conference (Oct. 2020)
- ❸ Announces $2 billion+ of committed revenue over the next 3 years attributed to SiC solutions (Nov. 2021)
- ❹ Opened new SiC production facilities days after President Biden signs CHIPS Act (Aug. 2022)

# of 20%+ Drawdowns	13
Max Drawdown	-68%



Mergers and Acquisitions

- Acquired Fairchild Semiconductor (Sep. 2016)
- Acquired IBM mmWAVE Advanced Sensor Design Center (Mar. 2017)
- Acquired SensL Technologies (May 2018)
- Acquired Quantenna (May 2019)
- ❸ Acquired GT Advanced Technologies, a leading SiC substrate technology producer (Nov. 2021)
- Acquired EFK facility from GLOBALFOUNDRIES, the largest onsemi manufacturing facility in the US (Dec. 2022)

Other Notable Events

- Announced partnerships with Subaru, Arrow McLaren SP, Mercedes-Benz, and NIO in a shift towards auto end-markets (2020-2022)
- GT Advanced Technologies announces 5-year agreement to supply SiC for onsemi (Mar. 2020)
- Executive leadership changes, CEO and CFO from Cypress Semiconductor (2020-2021)
- Divested 3 fabs to transition to more efficient fabs as part of a "fab-liter" strategy (2022)

Competitive Landscape

Competition

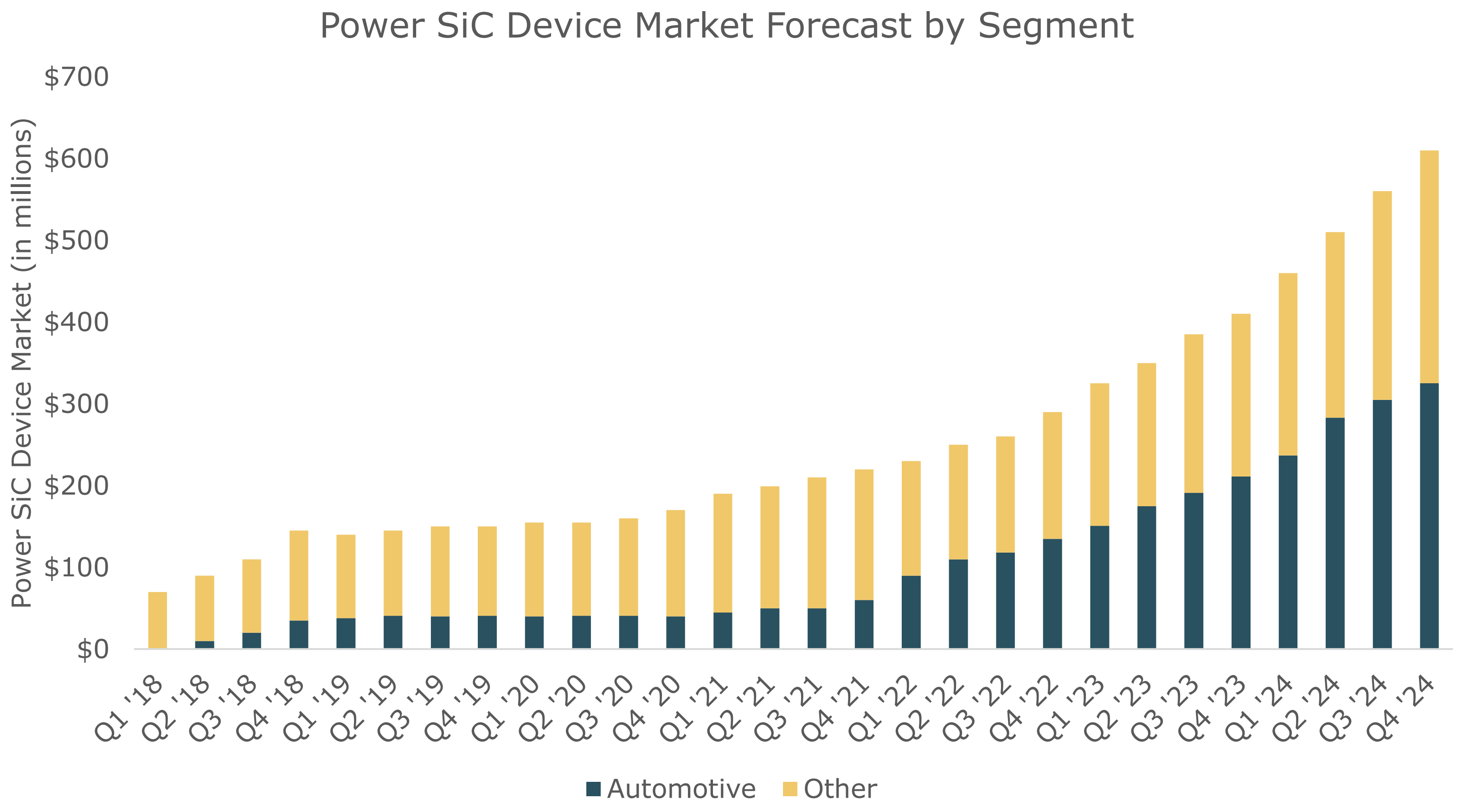
- **STMicroelectronics (STM ~$32.1B market cap):** STMicroelectronics is a global semiconductor company that designs, develops, manufacturers and markets a broad range of products used in a wide variety of applications for 4 end-markets: automotive, industrial, personal electronics and communications equipment, computers, and peripherals. ST operates under a fab-lite strategy like onsemi, with a focus on SiC and GaN solutions for electric vehicles.
- **Infineon Technologies AG (IFX.DE ~$40.7B market cap):** Infineon Technologies AG is a leading global provider of semiconductors. They focus on key end-markets in the automotive, industrial, and consumer sectors, with a focus on SiC and GaN products for automotives and electric vehicles due to expanding growth in this space. Infineon covers the main stages of the semiconductor value chain: from the development and design, via frontend and backend manufacturing and marketing, to delivery to customers.
- **NXP Semiconductors (NXPI ~$41.0B market cap):** NXP Semiconductors is a leading global semiconductor company and a long-standing supplier in the industry. They serve primarily the 4 end-markets of automotive, industrial and IoT, mobile, and communication infrastructure. In recent years, NXP has also shifted focus to the automotive industry and is an innovator in SiC and GaN semiconductor chips.

Onsemi's share price began to jump up in 2020, due to a combination of "fab-liter" and low-cost strategies they put into place, changes in management, as well as secular growth trends for EVs, vehicle autonomy, and industrial applications that will continue to stretch out the chip shortage. After the beginning of the COVID-19 pandemic, onsemi took advantage of its pricing power as a result of the chip shortage and continued to ride out that wave by selling off less efficient fabs and buying more cost-efficient wafer fabs specialized for SiC chip manufacturing. This increased their gross margin, and with the rise in EV technology, onsemi began investing in their automotive products to increase sales dramatically post-pandemic.

Moat – Process Power

Process Power (strong): Onsemi benefits from a strong process power moat due to its end-to-end manufacturing capabilities- in particular, for its silicon carbide chips. Their underlying growth driver can be attributed to their innovative SiC chips for electric vehicles which are more energy efficient and long-lasting than traditional silicon chips. Compared to many of their competitors who are fab-less and struggle to build fabs due to the high capex costs, onsemi benefits from historically owning fabs in the space. As part of their fab-liter strategy, onsemi has sold off non-core wafer fabs and bought more efficient fabs that are designed to produce wafers and chips designed for auto and industrial markets. Shifting to these key end-markets and focusing on cost optimization in their manufacturing processes, has allowed onsemi to lower their fixed costs and increase their margins. Onsemi controls all their processes from start to finish, which offers superior performance and exacting quality standards of products and has ultimately put them at the forefront of the auto and industrial chipmaker market.

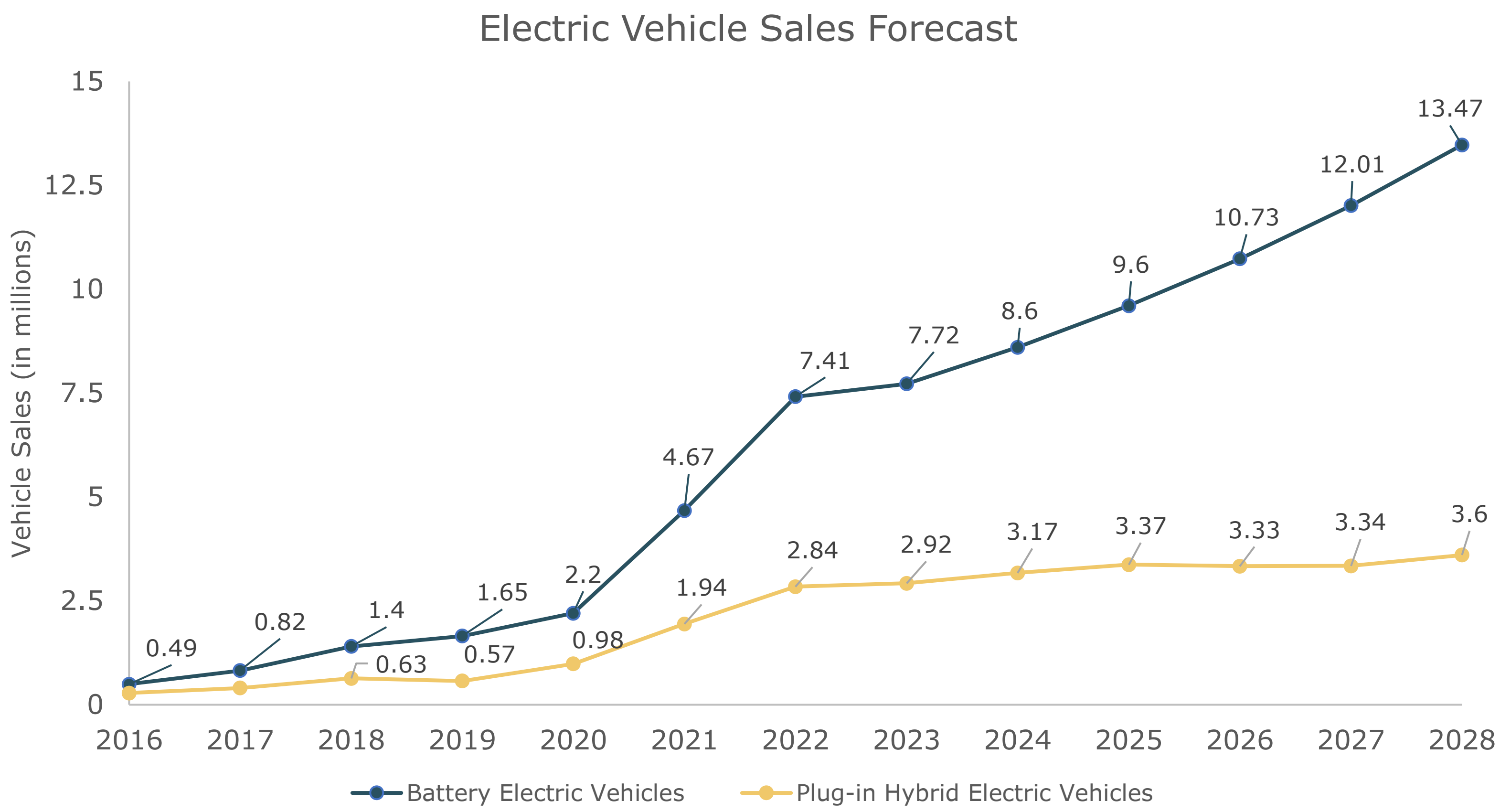
Power Silicon Carbide Device Market Growth



Source: Industry Data and Guava Estimates

Electric Vehicle Sales Growth

onsemi



Source: Industry Data and Guava Estimates

Conclusion - What drove shareholder return?

1. **“Fab-Liter” Strategy:** In 2020, onsemi began executing their “fab-liter” strategy that aimed at achieving sustainable financial performance through the upscaling capacity for products in the automotive and industrial markets after seeing changes in their CEO and CFO. Coming from Cypress Semiconductors and previously facilitated their sale to Infineon. Rather than building their own fabs, onsemi began to sell off many existing wafer fabs that were less cost-effective and buy older fabs that better suited their customers’ needs in these key markets and lowered overall costs. Onsemi was able to increase its gross margin to 49.2% in 2022 from just 32.7% in 2020, which allowed them to offset headwinds from fixed costs rising from macroeconomic and geopolitical headwinds coming off the COVID-19 pandemic. Through the fab-liter strategy, onsemi has also succeeded at shifting its market focus to the automotive and industrial spaces, with 40.4% and 27.5% of revenues coming from these sectors in 2022, compared to 34% and 19% in 2016. This strategy has allowed onsemi to lower their fixed costs and grow revenues, driving their shareholder return.

2. **Global Chip Shortage and Electric Vehicle Market Growth:** Onsemi has focused on auto and industrial equipment over the past few years and has taken advantage of both the global chip shortage and growing vehicle electrification and automation markets. Onsemi’s Power Solutions Group (PSG) portfolio consists of hardware that helps auto manufacturers build EV models with various power management parts, while their Advanced Solutions Group (ASG) and Intelligent Sensing Group (ISG) designs and produce vision sensor and image processors used in advanced driver-assist systems. These products have applications in both the automotive and industrial spaces, which make up nearly 90% of Onsemi’s revenues. However, onsemi’s shift to the auto and industrial spaces has not been accidental- they’ve strategically ridden out the wave of auto electrification post-pandemic, which has an estimated CAGR of 17.0% by 2030. The pandemic caused a chip shortage in 2020 that has extended into 2022. Demand for work-from-home technology increased exponentially and automakers were competing for the semiconductor capacity in Asian foundries. These supply chain bottlenecks coupled with slowdowns in backend operations in parts of Asia, the auto industry to see limited production and could not meet demand. At the same time, EV demand began to skyrocket, which required more than double the number of chips than a non-electric vehicle. These larger macroeconomic events granted onsemi pricing power over their products as well as the opportunity to shift to the auto industry and benefit from surging demand. As a result, onsemi’s sales in the auto and industrial divisions skyrocketed as did their share price.

3. **Silicon Carbide Chip Development:** Onsemi has maintained significant strength in the auto chips space due to its increased investment in silicon carbide chips. SiC chips can operate at much higher voltages, temperatures, and frequencies than traditional silicon-based semiconductors. One of the only chip companies that are investing heavily in SiC chips, onsemi is positioned to be at the forefront of the electrification of the auto industry. SiC chips are the fastest-growing product line at onsemi and saw its sales grow at a CAGR of 70% through 2027, with an estimated market share of 25-40% by 2027. These estimates have shown investors that onsemi has incredible growth potential, which they’ve maintained through their increasing sales and margins. Additionally, onsemi held a competitive advantage by being an end-to-end manufacturer, meaning that they control everything from wafers, to chip fabrication, and packaging, so they’re able to manage their costs efficiently.

4. **Process Power:** Onsemi’s ability to use end-to-end manufacturing within their product lines, and especially within their SiC chips, has been a large contributor to their shareholder return. Because they have sold off less productive fabs and bought various smaller companies and facilities designed to produce chips for the auto and industrial markets, onsemi has benefitted tremendously from the EV and electrification megatrends. Their ability to lower fixed costs and increase profit margins has dramatically increased their earnings over time which has directly contributed to their shareholder return throughout the period.

Deere & Company (DE)

Company Overview

Deere & Company, commonly known as John Deere, is an American corporation that manufactures agricultural, construction, and forestry machinery. Founded in 1837, John Deere is one of the largest manufacturers of farming equipment globally and offers a wide range of products and services to support various aspects of land management. While John Deere specializes in the production of tractors, combines, cotton pickers, sprayers, and other agricultural machinery, they also develop and manufacture drivetrain components and engines for industrial and marine equipment as well as generator drives. John Deere prides itself on offering precise and innovative agriculture solutions by leveraging technology and data to optimize farming practices and increase productivity.

	1/1/2016	12/31/2022	
Stock Price*	$76.08	$428.76	
Market Cap	$24,094.5	$127,872.2	
Enterprise Value	$26,085.9	$133,096.2	
Shares Outstanding	316.7	298.2	1
Net Debt	$1,977.2	$5,129.0	2
Debt/Equity	545.3%	257.9%	
Dividend Yield	3.1%	1.1%	3
P/E	13.1x	18.5x	4
EV/Sales	0.9x	2.5x	
EV/EBITDA	5.4x	11.0x	
FCF/Share	$3.0	$3.2	
Gross Margin	30.5%	34.3%	
EBITDA Margin	16.8%	23.0%	
Trailing 3yr Rev CAGR	-7.2%	10.2%	5
Trailing 7yr Rev CAGR		8.9%	
Analyst Buy %	23.1%		
Analyst Hold %	50.0%		
Analyst Sell %	26.9%		

*Numbers in millions excluding stock price

Management

CEO: Samuel Allen (2009-2019), John May (2019-Present), Former COO of John Deere

CFO: Raj Kalathur (2012-2022), Joshua Jepsen (2022-Present), Former Director of Investor Relations

COO: N/A

Analysis

1. John Deere retired 5.8% of shares and boosted EPS in 2022 due to positive outlooks for tractor and machinery demand, as well as increases in commodities prices
2. Though John Deere increased their leverage through the COVID-19 pandemic to have more liquidity on hand, their leverage ratios have decreased signifying that they are not overly leveraged
3. Dividend yield decreased by 64.5%, however, John Deere's management has repeatedly said that it prioritizes operation performance and long-term growth over dividends; also attributed to dramatic increase in stock price
4. Slight multiple expansion due to technological advances in precision farming and profitability from increased farmers' spending; EPS also grew 303.1% due to share buybacks and increased net income attributed to decreased COGS/R&D and increased profit margin
5. Trailing 3-year revenue CAGR increased 241.7% due to constant innovation, crop commodities price increases leading to increased profitability for customers, and strategic acquisitions

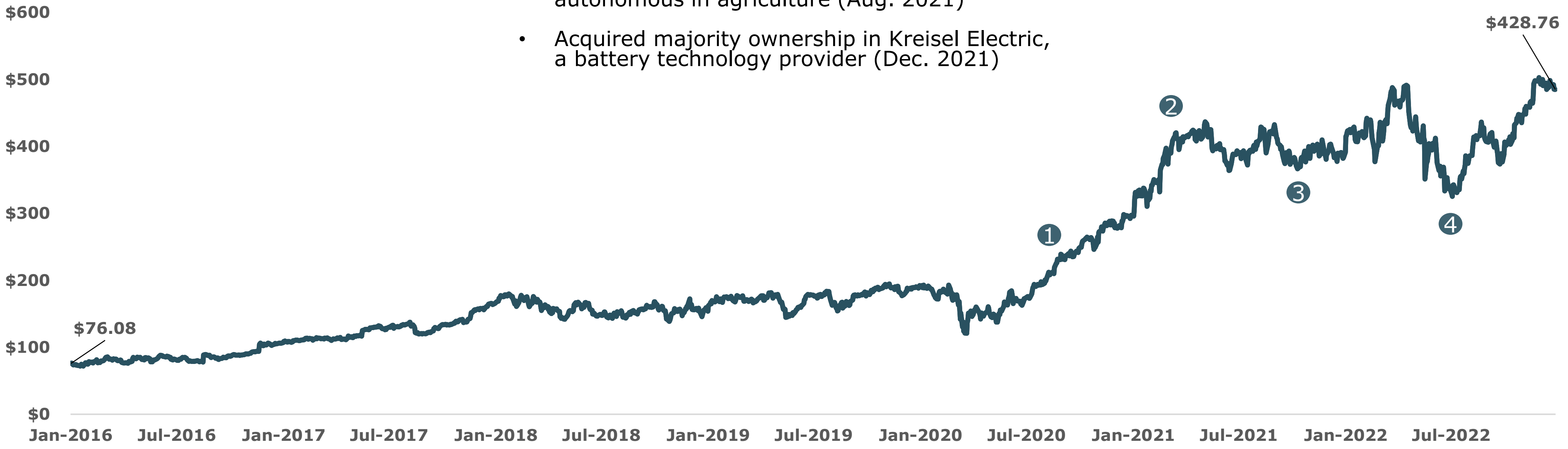
Notable Events

JOHN DEERE

Volatility

1. Beat earnings in Q3 '20; despite uncertain ag markets profitability increased YoY due to aging tractors and relief programs (Aug. 2020)
2. Increased dividend 18% due to higher shipment volumes, favorable tax ruling, and price realization (Feb. 2021)
3. 10,000+ workers on strike due to wage raise rejections (Oct. 2021)
4. Q3 '22 earnings miss due to parts shortages and price rises (Jul. 2022)

# of 20%+ Drawdowns	5
Max Drawdown	-38%



Mergers and Acquisitions

- Acquired precision planter manufacturer Monosem (Feb. 2016)
- Acquired numerous sprayer technology companies (Hagie Manufacturing, Mazzotti, Blue River Technology, PLA SA) (2016-2018)
- Acquired Wirtgen Group, leading manufacturer of road construction equipment, for $5.2 billion using a combination of cash and new equipment (Dec. 2017)
- Acquired carbon fiber technology manufacturer King Agro (Mar. 2018)
- Acquired Bear Flag Robotics to support autonomous in agriculture (Aug. 2021)
- Acquired majority ownership in Kreisel Electric, a battery technology provider (Dec. 2021)

Other Notable Events

- US-China trade war depressed US farm commodity prices and hurt agriculture equipment demand (2018-2019)
- Announced new operating model to unlock new value for customers and rapidly introduce new ag technologies (Jun. 2020)
- Numerous product launches primarily in the ag and forestry sectors (2020-2022)

Competitive Landscape

Competition

- **Caterpillar (CAT ~$124.3B market cap):** Widely regarded as John Deere's largest competitor in the forestry and construction sectors, Caterpillar is an American multinational corporation that specializes in manufacturing heavy equipment, machinery, engines, and related products for various industries. They are one of the world's leading manufacturers of construction and mining equipment, diesel and natural gas engines, industrial gas turbines, and diesel-electric locomotives.
- **CNH Industrial (CNHI ~$21.6B market cap):** CNH Industrial is a global industrial company that specializes in the manufacturing of agricultural machinery, construction equipment, commercial vehicles, and powertrains. They produce a wide range of ag equipment including tractors, combines, harvesters, sprayers, and other machinery with a strong emphasis on innovation and sustainability.
- **AGCO Corporation (AGCO ~$10.4B market cap):** AGCO is an agricultural equipment company that designs, manufactures, and distributes a wide range of agricultural equipment and related solutions for farmers and ag businesses worldwide. They also integrate precision agriculture technologies into its equipment, promoting productivity.

At the beginning of the period, John Deere suffered through a few tough years due to a general downturn in the agriculture industry and reduced spending on new machinery. However, in 2018, John Deere saw improved equipment demand and was able to increase sales dramatically in the agricultural sector. Additionally, John Deere acquired Wirtgen Group, a leading construction machinery manufacturer, in 2018 which increases construction and forestry-related sales by nearly 78%. Though John Deere's stock seemed to be cyclical at the beginning of the period, they were able to outperform their competitors in the latter years due to constant innovation in the precision ag and autonomous tractor spaces.

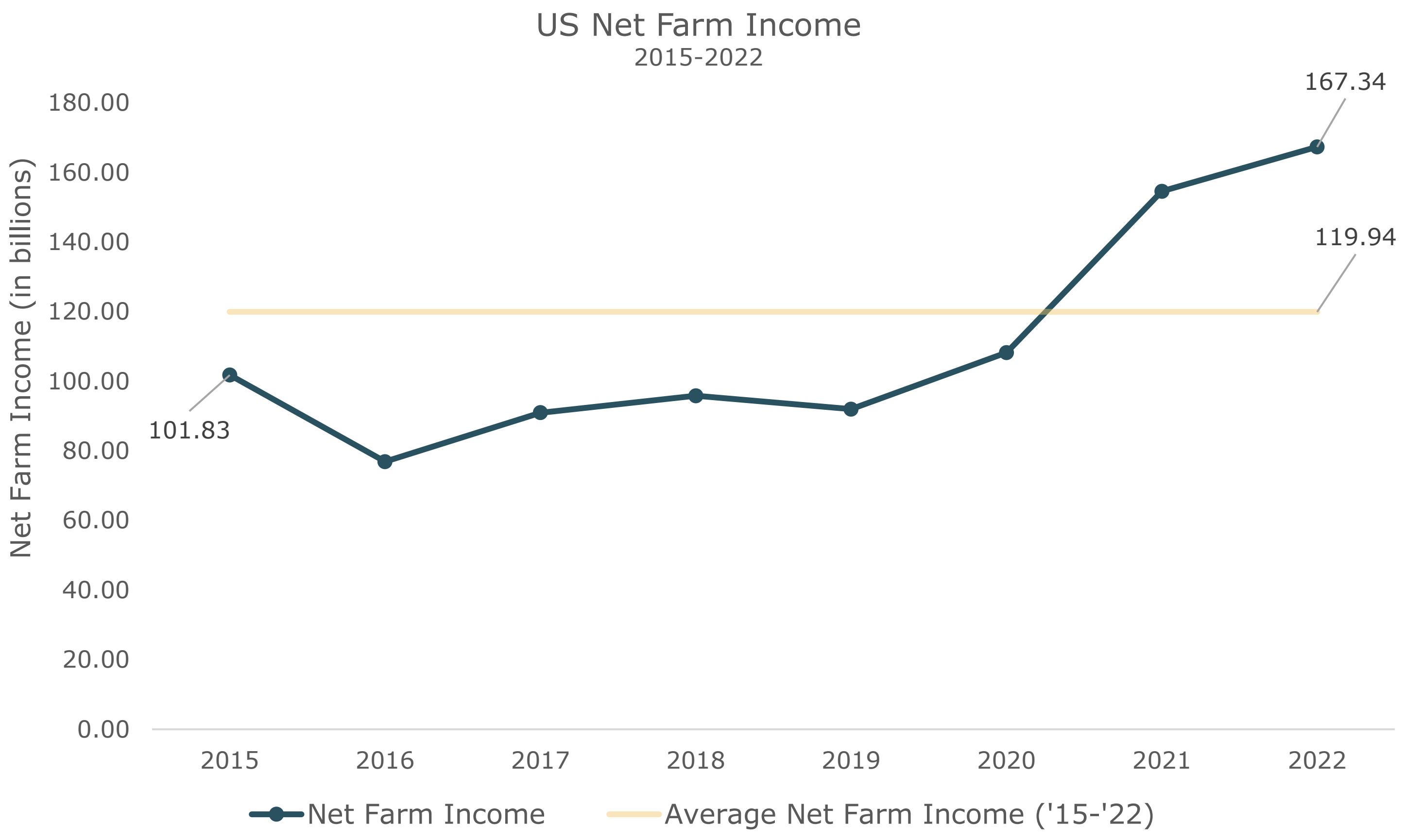
Moat – Branding

Branding (strong): Founded in 1837, John Deere has built up its reputation throughout the years by maintaining high quality, durability, and reliability within its business by constantly innovating and improving their current product lines. Characterized by their iconic bright green and yellow color scheme, John Deere's tractors are instantly recognizable and strongly associated with the company's agricultural equipment. Due to their commitment to innovation and the integration of advanced technologies in their equipment, such as their advancements in precision agriculture and autonomous driving in tractors, they've established a strong brand reputation in constantly being at the forefront of the ag tech field.

Increases in US Net Farm Income

US net farm income began to rapidly grow in 2020 due to increased commodity prices of corn, wheat, and soybeans, as well as a jump in cash receipts from livestock due to higher prices. Additionally, the government made significant payments to US farmers to support them throughout the COVID-19 pandemic which attributed to higher profitability.

In turn, because most Deere's customers are US farmers, they have more cash to spend on new equipment to meet growing food demand and thus Deere saw its revenues rise post-pandemic.



Conclusion- What drove shareholder return?

1. **Technological Advancements:** Unlike most of its competitors, John Deere has made significant advancements in the ag tech space to increase efficiency and productivity among its customers. In 2018, they unveiled a new operations plan to unlock value for customers through rapid product releases such as the first autonomous driving tractor and new sprayer technologies. They accomplished these product launches by exiting certain businesses that were less profitable and reinvesting capital into R&D. For example, John Deere invests a lot of capital into their precision ag division, which utilizes data management and technology to increase precision on their existing tractors. Thus, John Deere has been able to stay competitive and ahead of the market through these innovations, driving shareholder return.

2. **Increased Commodity Prices and Food Demand:** By nature of the agricultural equipment market, John Deere's share price has largely moved with certain commodity prices, such as wheat, corn, and soybeans. This is due to John Deere's reliance on farmers' demand for new machinery, which is directly correlated with their crop profits each year. As such, much of John Deere's stock price volatility throughout the years can be attributed to these price fluctuations, as well as larger macro events, such as the US-China trade war in 2018-2019 and depressed food demand from 2016-2018. Looking at 2021-2022, commodities prices rose as did farmers' profits, and so did John Deere's performance in the agriculture equipment division. Global food demand has also surged with increases in the world population, and farmers have benefitted from increased demand and high prices for crops in recent years.

3. **Strategic Acquisitions:** Throughout the period, John Deere has made many strategic acquisitions in the sprayer and construction technology spaces to essentially buy market share. As a result, they have accumulated nearly 18% market share of the global farming equipment market, the largest of any corporation. However, as John Deere saw slowdowns in the agriculture industry in 2014-2018, they strategically acquired Wirtgen Group at the end of 2017, a leader in road construction equipment manufacturing, to offset headwinds in their agriculture industry and increased revenues within their construction and forestry segment dramatically in 2018. Through these strategic acquisitions, John Deere has been able to both acquire more market share and customers as well as hedge themselves against volatility in the commodities market to outperform the market during the period.

4. **Government Infrastructure Spending:** On November 15, 2021, US President Joe Biden signed The Infrastructure and Jobs Act, also known as the Bipartisan Infrastructure Bill, into law. The legislation allocated approximately $1.2 trillion in funding over eight years for a wide range of infrastructure projects and initiatives. Due to this increase in government infrastructure spending, John Deere saw increases in their construction revenue growth from hiked demand for construction machinery and will continue to benefit from these projects.

5. **Branding:** John Deere's green and yellow scheme can be recognized by people around the world, and they built this strong brand recognition through years of innovation and consistent improvement within their product lines. By constantly putting its customers at the center of its mission, John Deere has built a reputation for trust and high-quality products. As such, they've built impressive distribution channels and loyal customers within the farming industry. With this strong network and brand trust, John Deere has consistently been able to release new products with strong revenue growth, and has been able to increase their gross margins with higher prices due to their reputation for having the best tractors on the market.

KLA Corporation (KLAC)

Company Overview

KLA Corporation was founded in 1975 and is a global leader in process control solutions for the semiconductor and related industries. The company's core products and services enable chipmakers to improve yield and performance during the manufacturing process of semiconductors. KLA offers a comprehensive portfolio of inspection, metrology, and data analytic solutions that assist their customers in the optimization of production processes, enhance product quality, and reduces costs. The company's business model is focused on providing advanced technology and expertise to address the evolving needs of the chip industry, contributing to the development of cutting-edge electronic devices and technologies.

	1/1/2016	12/31/2022	
Stock Price*	$68.69	$437.02	
Market Cap	$10,711.9	$53,432.1	
Enterprise Value	$11,602.2	$56,792.1	
Shares Outstanding	155.9	141.7	1
Net Debt	$890.3	$3,360.0	2
Debt/Equity	856.5%	239.2%	
Dividend Yield	3.3%	1.2%	
P/E	19.1x	14.9x	
EV/Sales	4.1x	5.4x	
EV/EBITDA	13.7x	12.3x	
FCF/Share	$5.2	$20.6	3
Gross Margin	60.4%	59.5%	
EBITDA Margin	29.8%	44.0%	
Trailing 3yr Rev CAGR	-3.9%	26.3%	4
Trailing 7yr Rev CAGR		18.5%	
Analyst Buy %	15.8%		5
Analyst Hold %	84.2%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Richard Wallace (2006-Present), Former COO of Cypress Semiconductor

CFO: Bren Higgins (2013-Present), Former VP of Corporate Finance

COO: N/A

Analysis

1. Continues shareholder buybacks throughout the time period, shares outstanding decreased by ~9%
2. $1 billion and $3 billion debt issuance in 2019 and 2022 respectively to fund R&D and Capex initiatives
3. Decrease in shares outstanding and increase in revenue contributed to higher FCF conversion
4. Trailing three-year revenue CAGR turned from negative to positive due to unprecedented semiconductor boom
5. KLA appeared to be a low-growth company with a bleak outlook in 2016 with only 15.8% of analysts rating the stock "buy"

Notable Events

Volatility

- ❷ Demand of KLA's manufacturing machines increase as demand for chips skyrocketed (2020-2021)
- ❸ Large EPS and revenue beat due to heightened demand and future growth (Oct. 2021)
- ❹ EPS beat but bleak outlook due to chip shortage for KLA machinery (Apr. 2022)

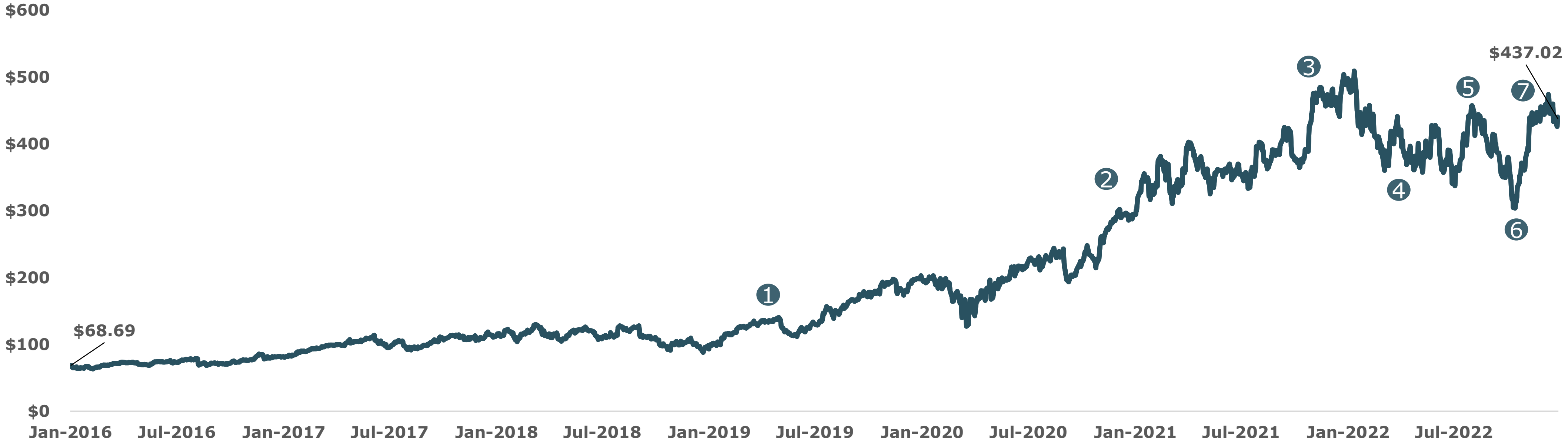
Mergers and Acquisitions

- KLA-Tencor acquisition of Orbotech for $3.2 billion (Mar. 2018)
- Acquisition of MicroSense (Feb. 2019)
- ❶ Capres A/S acquired by KLA-Tencor (Mar. 2019)

Other Notable Events

- ❺ Senate passes CHIPS Act, $52 billion in subsidies for domestic chip production companies (Jul. 2022)
- ❻ KLA to cease sales to China in compliance with US export laws (Oct. 2022)
- ❼ Large earnings and revenue beat due to higher-than-expected demand and lowered capex outlook (Oct. 2022)

# of 20%+ Drawdowns	5
Max Drawdown	-40%



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Competitive Landscape

Competition

- **Applied Materials (AMAT ~$82.2B market cap):** Applied Materials, Inc. is a prominent American corporation specializing in the provision of equipment, services, and software for the manufacturing of semiconductor chips, flat panel displays, and solar products. The company serves a wide range of industries, including electronics, computer displays, smartphones, televisions, and flexible electronics. The company's offerings also extend to supplying equipment to produce coatings used in various applications.
- **ASML Holdings (ASML ~$221.1B market cap):** ASML Holding is a leading Dutch company that specializes in advanced technology and manufacturing equipment for the semiconductor industry. Headquartered in the Netherlands, ASML is recognized globally for its innovation and expertise in lithography systems, which are essential to produce integrated circuits (ICs) used in various devices. The company's lithography machines enable chipmakers to manufacture smaller, faster, and more powerful ICs.
- **Hitachi High-Technologies Corporation (Private):** Hitachi High-Technologies Corporation is a Japanese company that specializes in providing advanced technology solutions across a wide range of industries. With its headquarters in Tokyo, the company is known for its expertise in scientific instruments, analytical equipment, semiconductor manufacturing equipment, and industrial systems. Hitachi High-Technologies offers a diverse portfolio of products and services, including electron microscopes, analytical instruments, medical equipment, industrial machinery, and automation solutions.

At the beginning of the period, KLA, then KLA-Tencor, was a smaller player in the manufacturing of semiconductor wafer fab equipment vertical. KLA-Tencor was a market leader in key areas of the semiconductor manufacturing process like process control. The company invested heavily in R&D over the time period to ensure its market share was not eroded and successfully maintained its status in the industry vertical. As the entire semiconductor industry began to rapidly grow as demand spiked, KLA was in the perfect position to capitalize. At the end of the period, KLA continues to be the market leader in chip process control.

Moat – Process Power, Switching Costs

Process Power (strong): KLA Corporation has a strong moat in its process power surrounding the innovation, development, and manufacturing of its top-of-the-line semiconductor process control machines and equipment. The company uses proprietary information and trade secrets only known by the company's management team and their 20+ years of industry experience to develop and continue innovating in the semi-product control vertical. KLA's competitors are unable to compete, undercut, or out-innovate the company due to its sophisticated knowledge of the production of semiconductor product control chip manufacturing machines. KLA is estimated to have ~4x the market share as its closest competitor in the semi-PC market, with the company's largest customers being advanced semiconductor chip foundries like TSMC and Samsung.

Switching Costs (strong): KLA's switching costs are extremely high for its customers, creating a strong competitive advantage. Because chip yield, the number of functional and acceptable chips as a percentage of total chip production, is of the utmost importance in advanced semi-fabs, KLA's cutting-edge semi-process control machines are considered mission-critical for the success of companies like TSMC and Samsung. As a result, the cost of switching to a competitor is essentially infinite. No company that desires having a high yield for advanced semiconductor chips would ever use any product except for KLA, as evidenced by their dominant market share.

Conclusion - What drove shareholder return?

1. **Niche Market Dominance:** Through innovation and YoY increases in spending on research and development, KLA has come to dominate the semiconductor process control industry vertical. This is a very niche market, yet it is crucial in the development and manufacturing of modern advanced semiconductors that are used in end products like cars, cell phones, computers, and other pieces of technology. ~80% of KLA's revenue on average over the period has come from semi-process control machines. KLA sells these machines to chip foundries, or companies who manufacture the physical semiconductor chips, like Samsung and TSMC. The company claims to have around four times the market share in the semi-process control industry niche as its closest competitors (ASML), illustrating its dominance. This niche market dominance has allowed KLA to operate a quasi-monopoly over a segment of the growing semiconductor industry. Because of its strategic placement in the market, as the demand for semiconductors skyrocketed the company's stock price did in tandem.

2. **Innovation and R&D:** The remarkable 536% return on KLA Corporation's share price can partially be attributed to the company's rapid innovation and research and development initiatives. KLA continuously increased their spending on R&D from 2016-FYE2022, spending an average of $648.8 million per year with the spending peaking in 2022 at $928.5 million expensed to R&D. The company, on average, spends 14% of their revenue on research and development alone. This unwavering commitment to research and development illustrates the innovative nature of the company and of the semiconductor industry more generally. KLA Corporation's continued R&D spending and as a result, innovation has led to the development of a strong competitive advantage in process power. KLA's process power comes in the form of the extremely sophisticated and proprietary semiconductor process control machines they manufacture. They are the only company in the world that can make the most advanced testing machines for the most advanced chips. The company's commitment to R&D and continuous innovation has allowed KLA to drive shareholder return since 2016.

3. **Mission-Critical Product (Switching Costs):** A final reason to explain KLA's outstanding shareholder return, roughly ~5x from 2016 to FYE2022, is the prevailing consumer sentiment that the company's products are mission-critical to the successful development of advanced semiconductor chips. KLA Corporation's semiconductor process control is the most advanced and sophisticated machine to ensure a high yield for chip fabs. Companies like TSMC and Samsung exclusively purchase their process controls from KLA because KLA is the only company that manufactures these machines at a high enough level to correctly determine if these companies' chips are acceptable. If a consumer of KLA did not use their products, their yield would decline substantially and thus their revenue. As a result, the switching costs of using a competitor's product are extremely high and are often not considered a possibility. KLA Corporation's high switching costs have allowed the company to have pricing power over its products and constant demand. The company's shareholder return has reflected this market dominance as the stock has surged in price as the semiconductor industry has expanded.

Arista Networks (ANET)

ARISTA

Company Overview

Arista Networks is an American computer networking company headquartered in Santa Clara, California. The company focuses on designing and delivering ultra high-performance networking platforms for large-scale data centers and cloud computing environments. Arista utilizes a software-driven approach, leveraging their extensible operating system (EOS) to provide flexible and scalable networking solutions. The company offers a range of ethernet switches that are built to deliver low-latency, high-density, and high-throughput performance. Arista's business model centers around catering to the growing demand for cloud networking solutions.

	1/1/2016	12/31/2022	
Stock Price*	$19.35	$121.35	
Market Cap	$5,244.3	$37,081.2	
Enterprise Value	$4,600.9	$34,121.4	
Shares Outstanding	271.0	305.6	1
Net Debt	-$643.4	-$2,959.9	2
Debt/Equity	5.6%	1.0%	
Dividend Yield	N/A	N/A	
P/E	38.3x	31.1x	
EV/Sales	5.5x	7.8x	
EV/EBITDA	28.2x	21.5x	
FCF/Share	$0.7	$1.5	3
Gross Margin	63.6%	60.3%	
EBITDA Margin	19.5%	36.3%	4
Trailing 3yr Rev CAGR	52.3%	22.0%	5
Trailing 7yr Rev CAGR		26.7%	
Analyst Buy %	70.4%		
Analyst Hold %	22.2%		
Analyst Sell %	7.4%		

*Numbers in millions excluding stock price

**Arista did not list a COO before 2019

Management

CEO: Jayshree Ullal (2008-Present), Former VP of Data Centers at Cisco

CFO: Ita Brennan (2015-Present), Former CFO of QuantumScape,

COO: Anshul Sadana (2019-Present)** Former CCO at Arista

Analysis

1. 12.7% dilution in shares outstanding due to four-for-one stock split in November 2021
2. 100% decrease in debt as of FY2019 coupled with increasing net cash caused a 360% decrease in net debt
3. Revenue growth compounding at 26.7% per year while share dilution only increased 12.7%, lead to a 108.6% increase in FCF/Share ratio
4. EBITDA Margin expansion by 89% since 2016 due to large revenue growth and primarily fixed cost structure
5. ~58% decrease in trailing three-year revenue CAGR due to Arista maturing as a business

Notable Events

ARISTA

Volatility

- ❷ Weak revenue guidance citing softening business from key customer (Oct. 2019)
- ❸ Q3 2021 earnings beat on record revenues, solid demand, and new customers (Oct. 2021)
- ❹ Conservative revenue guidance, no upside to FYE2022 outlook (May 2022)

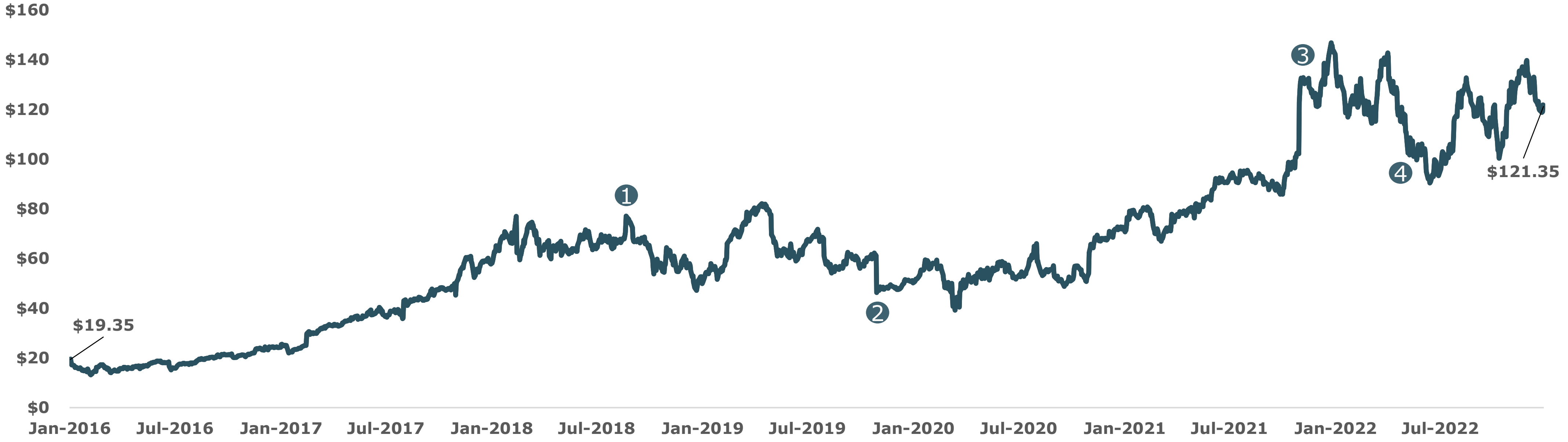
Mergers and Acquisitions

- ❶ Arista acquisition of Mojo Networks, inventor of Cognitive Wi-Fi (Aug. 2018)
- Acquisition of Metamako and its latency technology solutions (Sep. 2018)
- Big Switch Networks acquired by Arista (Jan. 2020)
- Awake Security and its NDR platform acquired by Arista Networks (Sep. 2020)
- Arista acquisition of Plurbis Networks for the company's unified cloud networking fabric (Sep. 2022)

Other Notable Events

- Arista Networks agrees to pay Cisco a $400 million settlement regarding claims of IP infringement (Aug. 2018)
- Arista Networks wins $100 million contract with the Pentagon for upgrading military computer networking gear (Oct. 2018)

# of 20%+ Drawdowns	8
Max Drawdown	-52%



Competitive Landscape

Competition

- **Cisco (CSCO ~$195.7B market cap):** Cisco Systems, or Cisco, is an American multinational digital communications technology company headquartered in California. Cisco is known for its hardware, software and services offerings, catering to a diverse customer base including enterprises, service providers, and governments. Cisco has established itself as a key player in the information technology and communications technology sector and is Arista's primary competitor in the space.
- **Juniper Networks (JNPR ~$10.4B market cap):** Juniper Networks is a leading provider of networking solutions in the networking hardware space. The company develops and markets routers, switches, network management software, network security products, and software-defined networking technology for its customers. With a strong emphasis on scaling, Juniper enables customers to quickly build agile and secure networks.
- **Extreme Networks (EXTR ~$2.4B market cap):** Extreme Networks is a provider of end-to-end networking solutions. The company designs, develops, and manufactures wired and wireless network infrastructure equipment and develops the software for customers networking management, analytics, and access controls.

Arista Networks, at the beginning of the time period, was an up-and-coming network company that specialized in low-latency ethernet switches. As an ethernet switch provider, Arista focused on a niche client for the company's formative years: high-frequency trading companies. These HFT firms viewed Arista's best-in-class products as critical for their success and profits. Over the span of the seven-year period, Arista has branched out its product offerings and was well positioned to benefit from the growth in demand for cloud computing. Arista was very innovative and quick to adapt to this change in demand, meeting large cloud customers' requirements in terms of speed, scale, flexibility, and pricing. In specific, Arista has found large-scale success with enterprise clients such as Microsoft and Meta. As Microsoft developed its cloud offering, Microsoft Azure, Arista has become the company's go-to provider of cloud networking software and hardware. Microsoft and Meta made up 45% of Arista's revenue in 2022, amounting to roughly $2 billion. The company's fearless innovation and best-in-class product offerings have led Arista to outcompete larger companies like Cisco, who were slow to adapt to the changing market environment.

Moat – Process Power

Process Power (strong): Arista has a strong moat in its process power surrounding the design process of its advanced multilayer network switches. Was a relatively niche company during its inception, focusing on high-performance and low-latency switches. The company created the fastest switches and cut-through switches on the market and had a strong foothold on the IP and innovation necessary to continue to develop the most cutting-edge technology for its market. This market was limited to some enterprise solutions and high-frequency trading firms, which required the fastest possible switches to succeed in their industry. The rise of cloud computing saw Arista as well-positioned to sell their switches and develop new solutions for enterprise customers who wrote the company much larger checks. Because Arista was the market leader in low-latency switches at the time, when the demand for the company's products skyrocketed in the late 2010s, Arista capitalized. The company's competitors were slow to react and do not possess the resources and expertise that Arista has in the space, allowing Arista to grow their revenue and company significantly. The ability of Arista to create a better product than its competitors is an example of a strong process power as the company's competitors were unable to keep up with Arista's expertise, sophistication, and innovation.

Conclusion - What drove shareholder return?

ARISTA

1. **Market Positioning and Industry Growth:** Arista's 500%+ growth since FYE2015 can be partially attributed to the company's unique and ideal positioning within the computer networking market. Arista Networks initially produced software-defined networking for high-performance computing and high-frequency trading environments, gaining much traction with their best-in-class low-latency cut-through switches for HFT firms. Arista developed a strong brand image as the highest-class switch designer and producer in the industry, however, this was a relatively small market at the time because few customers required the company's level of quality and sophistication. During the 2010s, cloud computing skyrocketed in the United States. AWS was launched in 2006 and Microsoft's Azure was announced in 2008. Suddenly, Arista's switches were in high demand. Because the company's familiarity with making cutting-edge switches, they were perfectly positioned to capitalize on the growth of cloud computing. Microsoft and Meta, in specific, are the two companies that relied heavily on Arista to grow their cloud product offering by using Arista's low-latency cut-through switches. During the COVID-19 pandemic, the cloud computing market skyrocketed, growing ~20% in 2021. Arista's products were considered critical to the success of Microsoft Azure and Meta's cloud offerings, as the two companies make up 45% of Arista's revenue in 2022. Arista's strategic positioning as the designer of cutting-edge ethernet low-latency cut-through switches, constantly pushing the boundaries of latency, coupled with the rise of cloud computing and two major clients taking on Arista have driven the company's shareholder return from FYE2015 to FYE2022.

2. **Niche Market Dominance:** The 527% return Arista has provided its shareholders is also a result of the company's dominance in the networking equipment market niche. Through the company's relentless innovation and dedication to developing cut-through ethernet swathes with the lowest possible latency, Arista has become the market leader in this niche. When the cloud computing market began to rapidly expand, and larger companies grew demand for low-latency switches, Arista was well-positioned to capitalize. Entrenched with decades of legacy solutions, Arista's competitors, like Cisco and Juniper Networks, were slow to innovate and develop more advanced solutions to meet their largest customers growing demands. Through strategic niche market dominance, Arista was able to carve significant market share in the low-latency switch market and now provides to some of the largest cloud-computing and hyper scale clients in the industry.

3. **Process Power:** A final reason for Arista's ~5x return over the seven-year period FYE2015 to FYE2022 is the company's strong moat from its process power surrounding the design and sale of advanced low-latency switches. Arista has strong proprietary knowledge of the sophisticated process of developing 300GB/second switches for its customers. Arista has a competitive advantage in the advanced innovation that has allowed the company to continue to stay in front of its competition since the rise in cloud computing. Arista has continuously grown its customer count for its 400 GB/sec Ethernet gear, from just 300 in 2021 to over 600 in 2022. The company is also out shipping Cisco, its closest rival, in switches that run at 100 GB/sec, 200GB/sec, and 400GB/sec speeds. At the end of the time period, in 2022, Arista sold 45% of all low-latency switch ports while Cisco sold only 17.9%. This strong process power has allowed Arista to dominate its industry niche, cater to large clients who provide $1 billion + lucrative deals, and in turn drive shareholder return over the time period.

Iridium Communications Inc. (IRDM)

iridium

Company Overview

Iridium Communications Inc, formerly known as Iridium LLC, was founded in 2001 and is headquartered in McLean, Virginia. The company operates a global satellite communications network called the Iridium satellite constellation, comprising of 66 interconnected satellites in low orbit around Earth. Iridium's core products and services include voice calls, messaging, broadband data, and IoT connectivity, catering primarily to industries like maritime, aviation, government, and emergency services. The company is a key player in the satellite field and has unparalleled global coverage and reliability, particularly in remote and underserved regions.

	1/1/2016	12/31/2022	
Stock Price*	$8.29	$51.40	
Market Cap	$787.1	$6,458.0	
Enterprise Value	$2,011.9	$7,796.0	
Shares Outstanding	94.9	125.6	1
Net Debt	$999.8	$1,338.0	2
Debt/Equity	113.0%	133.5%	
Dividend Yield	N/A	0.9%	3
P/E	10.8x	696.8x	
EV/Sales	4.9x	10.8x	
EV/EBITDA	16.0x	20.5x	4
FCF/Share	-$2.9	$2.1	
Gross Margin	75.2%	70.6%	
EBITDA Margin	30.5%	52.7%	
Trailing 3yr Rev CAGR	2.4%	8.7%	
Trailing 7yr Rev CAGR		8.3%	5
Analyst Buy %	60.0%		
Analyst Hold %	40.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Matthew Desch (2009-Present), Former CEO of Airspan

CFO: Thomas Fitzpatrick (2010-Present), Former CFO of Centennial Communications Corp

COO: Scott Smith (2013-2019), Suzi McBride (2019-Present), Former COO of OneWeb Systems

Analysis

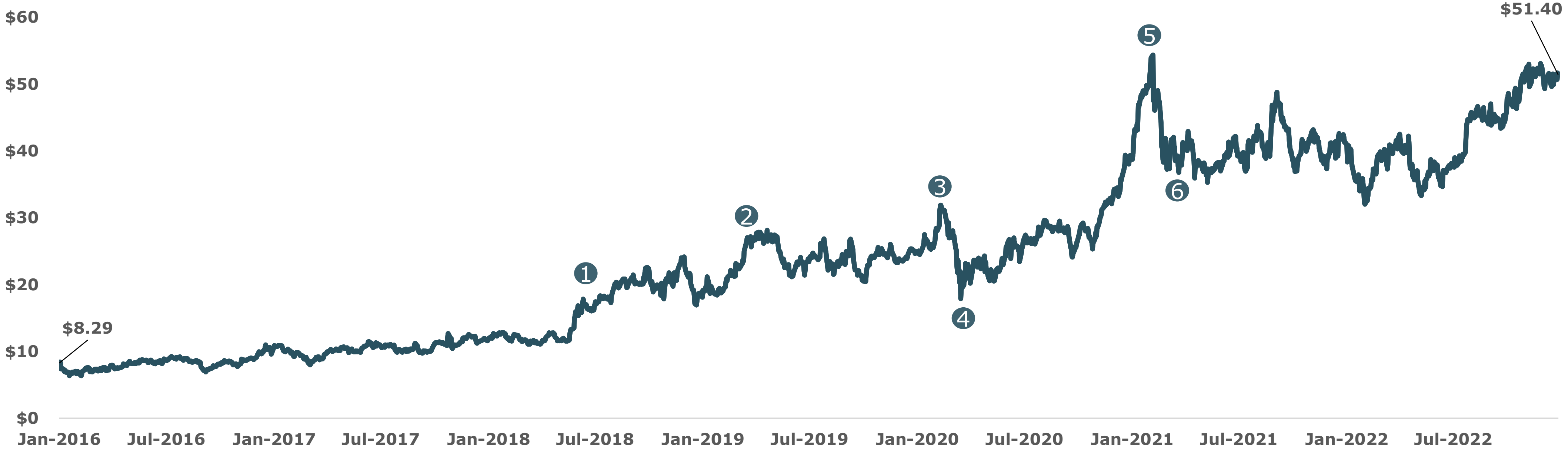
1. 32% increase in shares due to continued issuance, Iridium recently began buying back shares in FY2021
2. 34% increase in net debt as company continued to refinance and issue more debt while cash position remained constant
3. Iridium began paying quarterly dividends of $0.13 per share in 2022
4. Multiple expansion of 28% over seven years due to success of Iridium NEXT constellation systems and increased government contracts from US DoD
5. Trailing 7-year revenue CAGR relatively modest due to nature of business model, not a rapid growth company

Notable Events

Volatility

1. CEO issues statement that LEO constellation "Rush" is not a threat to Iridium (Apr. 2018)
2. Iridium reports double digit revenue and subscriber growth Q1 '19 (Apr. 2019)
3. Iridium constellation was certified for use in the Global Maritime Distress and Safety Systems (Jan. 2020)
4. CEO states minimal business impact of COVID-19 pandemic (Mar. 2020)

# of 20%+ Drawdowns	8
Max Drawdown	-43%



Mergers and Acquisitions

- N/A

Other Notable Events

- First of eight Iridium NEXT launches from California (Jan. 2017)
- Iridium awarded 7-year $738.5 million contract by US DoD (Sep. 2019)
- 5 Rapid revenue growth due to higher-than-expected subscriber numbers and growth of partner system (Jan. 2021)
- 6 Lower-than-expected revenue guidance, management discussion of company's growth being "complete" (Mar. 2021)

Competitive Landscape

Competition

- **Inmarsat (Private):** Inmarsat is a global satellite communications company with headquarters in London. The company operates a diverse network of satellites that provide reliable and secure mobile communication services worldwide. Inmarsat offers voice and data connectivity, broadband internet access, and IoT solutions to maritime, aviation, government, media, and enterprise industries. The company follows a B2B model, partnering with service providers and channel partners to deliver its services to customers.
- **Globalstar (GSAT ~$2.4B market cap):** Globalstar is a provider of satellite-based voice and data communication solutions, with headquarters in Louisiana. The company operates a low Earth orbit (LEO) satellite constellation. Globalstar offers services like satellite phone connectivity, data transmissions, and asset tracking solutions, catering to diverse industries and customers worldwide.
- **ORBCOMM (Private):** ORBCOMM is an American company that offers industrial internet and machine to machine communications, hardware, and software solutions designed to track, monitor, and control fixed and mobile assets in various markets. The company operates a network of satellites which enable seamless connectivity, empowering businesses to optimize operations and enhance supply chain visibility.

At the beginning of the period, in 2016, Iridium Communications was a small company reeling from its poorly received previous satellite constellation and in the process of developing its new and improved satellite constellation, Iridium NEXT. Iridium NEXT launched throughout 2017-2019 and proved to be a success, becoming the first and only fully global on-net coverage provider. This revolutionized the company’s capabilities, offering enhanced coverage, faster data speeds, and improved connectivity, setting Iridium apart from its competitors. Iridium quickly became the only communication operator to provide truly on-net global coverage in L-band, high-reliability, low-bit-rate spectrums with a modern P2P satellite networking system.

Moat – Process Power

Process Power (strong): Iridium Communications has a strong moat in its process power. Process power is defined as a company organization or activity which enables lower costs and superior products, which can be matched only by an extended commitment. Iridium is the only company that provides truly global coverage on-network. They have achieved this dominant advantage over their competitors through massive investment into the Iridium NEXT satellite constellation, investing $3 billion into the creation of the 66 satellites along with hundreds of millions more in deals to launch the satellites into space with SpaceX. This large investment is only possible with vastly extended commitment and implicit knowledge of Iridium’s proprietary technology that allows their network of satellites to seamlessly communicate with each other. Iridium’s market dominance can be attributed to its process power as the development of a 100% global coverage satellite constellation, the most sophisticated and advanced of its kind, is only possible through both extended commitment and proprietary information.

Conclusion- What drove shareholder return?

1. **Market Dominance:** Iridium Communications has emerged as a dominant force in the highly competitive satellite communications market. With a strategic vision and commitment to excellence, the company has achieved unparalleled market dominance. The successful deployment of the groundbreaking Iridium NEXT satellite constellation, featuring enhanced coverage and cutting-edge technology, has positioned Iridium at the forefront of innovation. By strategically targeting key sectors such as maritime, aviation, government, and IoT, Iridium has effectively captured niche markets, leveraging its comprehensive offerings to meet the unique needs of these industries. Through strong partnerships and a global network of distributors, Iridium has cultivated a loyal and diversified customer base, solidifying its position as the preferred provider for critical satellite communications. Continually driving technological advancements and delivering unmatched reliability, Iridium Communications exemplifies the pinnacle of market dominance in the satellite communications industry. This market dominance and production of the best product has driven growth and revenue over the seven years, driving up the stock price by over 500%.

2. **Relationship with US Government:** Iridium's relationship with the United States Government, specifically the Department of Defense has been instrumental in their growth and driving shareholder return. The US government is Iridium's single largest customer, and the company has provided airtime services to the DoD since its inception. The DoD views Iridium's encrypted handsets, IoT devices, DTCS, and other products as mission-critical services and equipment. In September 2019, the company entered the EMSS contract and continues to see usage of Iridium's network under this contract. Iridium was awarded one of the largest government contracts of 2019, $738.5 million, by the DoD for continued development and use of its satellite network, further illustrating Iridium's dominance in the field. The DoD would only contract from the top supplier and manufacturers as they want only the best products for the military, and they meaningfully choose Iridium. This relationship has been instrumental for Iridium's revenue and helped drive shareholder return over the period.

3. **Cost Structure:** The largely fixed-cost infrastructure of Iridium's business model has been accretive to operating margin expansion. The company's business model is characterized by high capital costs, primarily incurred every 10 to 15 years in connection with designing, building, and launching new generations of the satellite constellation, and low incremental costs of providing service to additional end users. The service revenue, which makes up 78% of Iridium's revenue on average since 2016, has proved to be the most meaningful source of growth and profits. The company has been successful in leveraging its largely fixed-cost infrastructure in this sense, and in doing so they have been able to continue to increase shareholder returns since 2016.

4. **The Constellation:** The remarkable surge of 520% in Iridium's stock price since 2016 can be attributed to a combination of strategic factors that set the company apart from its competitors. The key catalyst behind this impressive growth lies in Iridium's unique satellite constellation, which provides unparalleled global coverage that remains resilient even in adverse weather conditions. Unlike its rivals who rely on GEO satellites with limited visibility, Iridium's interlinked mesh architecture and LEO satellite design offer a distinct advantage: it enables global connectivity without the need for numerous ground stations. This innovative approach minimizes transmission delays, reduces infrastructure requirements, lowers costs, and enhances resistance to weather interference, creating a competitive edge for Iridium in the satellite communications sector. The market has recognized the company's technological prowess and global reach and propelled the stock price to unprecedented levels as a result of the dominance of Iridium's constellation.

Monolithic Power Systems (MPWR)

Company Overview

Monolithic Power Systems (MPS) is a leading semiconductor company that was founded in 1997 and has headquarters in San Jose, California. The company specializes in high-performance semiconductor-based power electronics solutions. Their integrated circuits (ICs) for power conversion and power management, are known for their efficiency, reliability, and compact size. The company serves industries like consumer electronics, industrial equipment, and automotives. MPS also offers technical support to their customers and collaborates closely with clients on custom designs, increasing their brand reputation and visibility in the industry.

	1/1/2016	12/31/2022	
Stock Price*	$60.97	$376.00	
Market Cap	$2,409.5	$16,599.2	
Enterprise Value	$2,174.5	$15,865.1	
Shares Outstanding	39.5	46.9	1
Net Debt	-$234.9	-$734.1	
Debt/Equity	0.0%	0.2%	2
Dividend Yield	1.2%	0.6%	
P/E	64.7x	38.6x	3
EV/Sales	6.5x	8.8x	
EV/EBITDA	34.6x	27.8x	
FCF/Share	$1.8	$4.0	4
Gross Margin	54.0%	58.2%	
EBITDA Margin	18.9%	31.8%	
Trailing 3yr Rev CAGR	15.9%	41.9%	5
Trailing 7yr Rev CAGR		27.2%	
Analyst Buy %	87.5%		
Analyst Hold %	12.5%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Michael Hsing (1997-Present), Founder and chairman of the board of directors for MPS

CFO: Bernie Blegen (2016-Present), Former Controller of Monolithic Power Systems

COO: N/A

Analysis

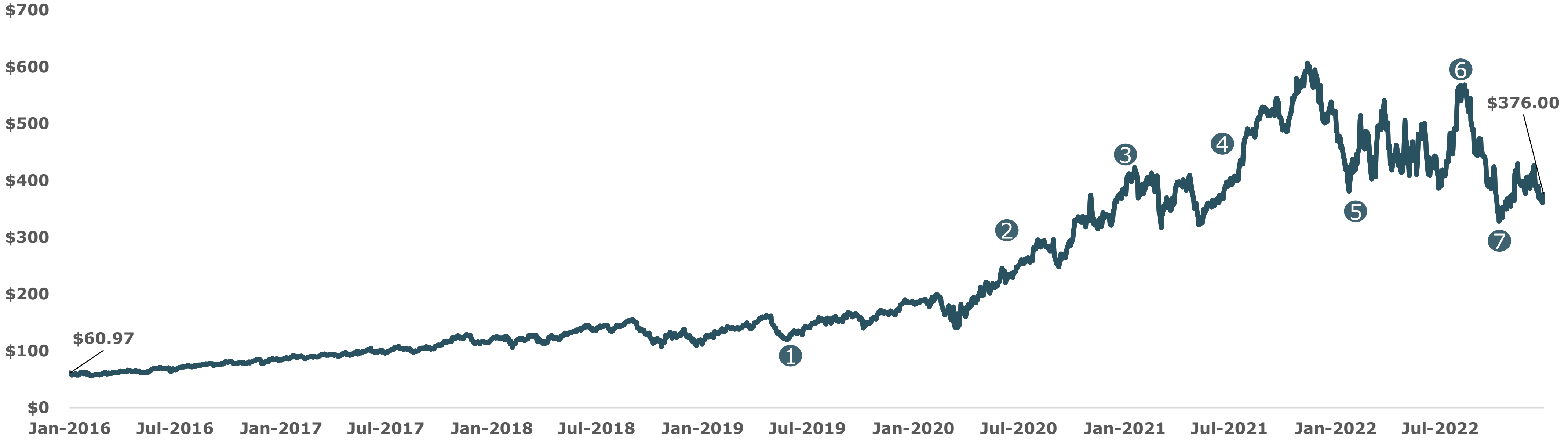
1. 18.7% increase in shares outstanding, large secondary public offerings beginning in 2019
2. MPS has never issued debt and thus has a 0% debt-to-equity
3. P/E multiple compression of ~40% as the company has matured since 2016 and grown into its initial valuations
4. 122% growth in FCF/Share due to revenue growth and relatively stable margins coupled with minor share dilution
5. 163.5% increase in trailing three-year revenue CAGR as a result of company's organic growth and heightened demand in tandem with semiconductor industry as a whole

Notable Events

Volatility

1. • Revenue miss and diminishing outlook regarding future demand for ICs (May 2019)
2. • Continuous EPS beats as a result of growing demand due to COVID-19 pandemic-initiated work-from-home environment (2020-2021)
3. • MPWR added to the S&P 500 index (Jan. 2021)
4. • Semi industry rally driven by speculation surrounding integration of AI (Jul. 2021)

# of 20%+ Drawdowns	7
Max Drawdown	-45%



Mergers and Acquisitions

- N/A

Other Notable Events

5. • Falling demand of chips leading to industry-wide decline (Feb. 2022)
6. • Large EPS and revenue jump over analyst expectations, strong sales of power chips (Aug. 2022)
7. • Export controls set by US government against supplying Chinese markets with semi equipment (Oct. 2022)

Competitive Landscape

Competition

- **Analog Devices (ADI ~$83.5B market cap):** Analog Devices is a semiconductor company that was founded in 1965 and headquartered in Massachusetts. The company specializes in designing and manufacturing analog, mixed-signal, and digital signal processing ICs. Analog's products are used across various industries like automotive, communications, industrial, and healthcare.
- **Infineon Technologies (IFX.DE ~$40.7B market cap):** Infineon Technologies is a German semiconductor company that specializes in technology solutions. The company's products include power semiconductor chips, microcontrollers, sensors, and security solutions. Infineon's products are used in various industries and the company is known for its expertise in power management, automotive electronics, and chip card and security solutions.
- **ON Semiconductor (ON ~$26.9B market cap):** ON Semiconductor was founded in 1999 and headquartered in Phoenix, Arizona. The company operates in the power management, connectivity, and custom semiconductor chip solutions. ON focuses on innovation and delivering energy efficient and sustainable solutions that address the evolving needs of their customers.

At the beginning of the period in 2016, Monolithic Power Systems was a small cap company that created and manufactured various integrated circuits and power systems with the bulk of their sales coming from Asia, and specifically China. As a result of the COVID-19 pandemic and a rise in demand for technology, MPS's revenue skyrocketed. The company also diversified its geographic end customers to avoid growing geopolitical issues. In FYE2022, the company's revenue comes from 36% United States, 36% China, 11% Europe, and 9% South Korea. MPS also operates as a fabless company, meaning the company does not own any factories or manufacturing plants to produce its chips and power systems. This business model helped MPS differentiate itself from its competitors through limiting capex and fixed costs while enabling the company to focus on its strengths: engineering and R&D.

Moat – Process Power

Process Power (strong): Monolithic Power Systems has a strong competitive advantage in its process power surrounding the design and engineering of the company's specialized and sophisticated integrated circuits and other power systems. MPS prides itself on the company's deep system-level knowledge, strong experience in the semiconductor industry, and innovative proprietary technologies. The nature of semiconductor power is an extremely complicated industry vertical, and MPS has come to dominate this industry vertical through its core strengths and continuous R&D expenditures. The company has, on average, spent 17% of its revenue on R&D alone, ensuring that MPS maintains its status as the best-in-class provider of power ICs. To match MPS' development and innovation in the power IC market, a company would have to undertake an extended commitment and spend hundreds of millions of dollars, yet even then MPS would continue innovating in order to stay ahead of their competitors. MPS offers the lowest failure rates of their devices, below 0.9 PPM on average since 2016. Through the company's strong process power in the semiconductor power and IC sectors, MPS has become the most trusted company in the power management space.

Conclusion - What drove shareholder return?

1. **Niche Market Dominance:** Monolithic Power Systems' remarkable 516% shareholder return can, in part, be attributed to the company's dominance in the power IC and semiconductor power solution industry vertical. MPS, through constant R&D spending and deep system-level knowledge of the semiconductor power industry, has come to dominate the industry vertical and derive extremely high returns as a result. The company's best-in-class power ICs have allowed them to gain the largest and most advanced customer base. As the semiconductor industry began to take off in 2020, MPS was very well positioned to capitalize on this large growth in demand. During the global pandemic, demand for MPS power systems further increased as more individuals began to work from home as well as purchase gaming consoles, of which MPS dominates the power supply. Monolithic Power System's dominance over the power ICs niche market within the semiconductor industry allowed the equity price to increase ~5x since 2016 in tandem with the semi-industry (MPWR and a semiconductor industry ETF are 97.7% correlated).

2. **Brand Strength:** From 2016 to 2022, Monolithic Power Systems experienced a significant increase in shareholder return, partially driven by the company's robust brand strength. MPS's commitment to innovation, efficiency, and reliability has earned them a solid reputation in the power management industry. Their ability to consistently deliver high-performance solutions and meet the evolving needs of customers has translated into strong market demand and revenue growth. The company's brand strength, customer satisfaction, and technological advancements, has attracted investors' confidence, leading to increased shareholder value. The company boasts an industry-wide lowest failure rate in its end-to-end integrated circuits and is a producer of advanced power systems for the world's largest automotive manufacturers, OEMs, data centers, and other innovative companies. MPS's ability to maintain a competitive edge through its brand strength has enabled the company to deliver sustainable, organic growth, ultimately rewarding its shareholders over the years.

3. **Process Power:** A final reason behind Monolithic Power System's 500+% rise in shareholder value over the time period is the company's unique process power surrounding its understanding of the semiconductor power system market. The company designs, develops, and markets the world's most advanced and efficient integrated circuits. It offers DC-to-DC converter ICs that are used in cutting-edge innovation. The innovation required to develop and maintain the company's status as an industry niche leader in the semi-power market comes with a large competitive advantage in process power. MPS has an extremely deep IC system-level knowledge coupled with strong semiconductor experience by its executives, with the founder and CEO Michael Hsing having been at the company for 30+ years, as well as innovative proprietary technologies protected by patents and IP laws. The combination of these three core company strengths has allowed MPS to maintain its edge over its competition. As the demand for semiconductors took off in 2020, MPS was in the perfect position to capitalize on this rise and continue innovating, keeping up with Moore's law at the forefront of the semiconductor industry. This strong process power has assisted the company in realizing a 516% increase in shareholder value since FYE2015 as the company has grown out of its microcap status into a large player in the industry vertical.

Builders FirstSource (BLDR)

Company Overview

Builders FirstSource (BFS) is a leader in the building industry. They are one of the largest supplier and manufacturers of building materials, manufactured components, and construction services. BFS caters to professional homebuilders, sub-contractors, remodelers, and consumers alike, delivering an exceptional range of integrated solutions. They perform a complete spectrum of services, from manufacturing and supply to the installation of a comprehensive lineup of structural and related building products. They are most known for their READY-FRAME, released in 2021, which utilizes computerized framing technology to pre-cut custom-made home frames. Additionally, BFS also provides a broad offering of outsourced professional grade building products, such as dimensional lumber and lumber sheet goods and various window, door, and millwork lines.

	1/1/2016	12/31/2022	
Stock Price*	$11.09	$64.88	
Market Cap	$1,211.8	$9,548.8	
Enterprise Value	$3,098.4	$12,959.9	
Shares Outstanding	109.3	147.2	1
Net Debt	$1,886.6	$3,411.1	2
Debt/Equity	1308.1%	70.4%	3
Dividend Yield	N/A	N/A	
P/E	29.6x	3.8x***	4
EV/Sales	0.9x	0.6x	
EV/EBITDA	20.8x	3.0x	
FCF/Share	$1.3	$20.8	
Gross Margin	26.3%	34.1%	
EBITDA Margin	4.2%	18.8%	
Trailing 3yr Rev CAGR	49.3%	46.1%	
Trailing 7yr Rev CAGR		30.3%	5
Analyst Buy %	75.0%		
Analyst Hold %	25.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price
**BFS did not have a COO prior to the BMC merger
***Forward trailing 12-month P/E multiple was 14.3x

Management

CEO: Chad Crow (2017-2020), David Flitman (2021-2022), Former President and CEO of BMC Stock Holdings prior to the BFS and BMC merger

CFO: Peter Jackson (2016-Present), Former CFO of Lennox Intl Inc.

COO**: Steve Herron (2023-Present), Former VP of Operations of Builders FirstSource

Analysis

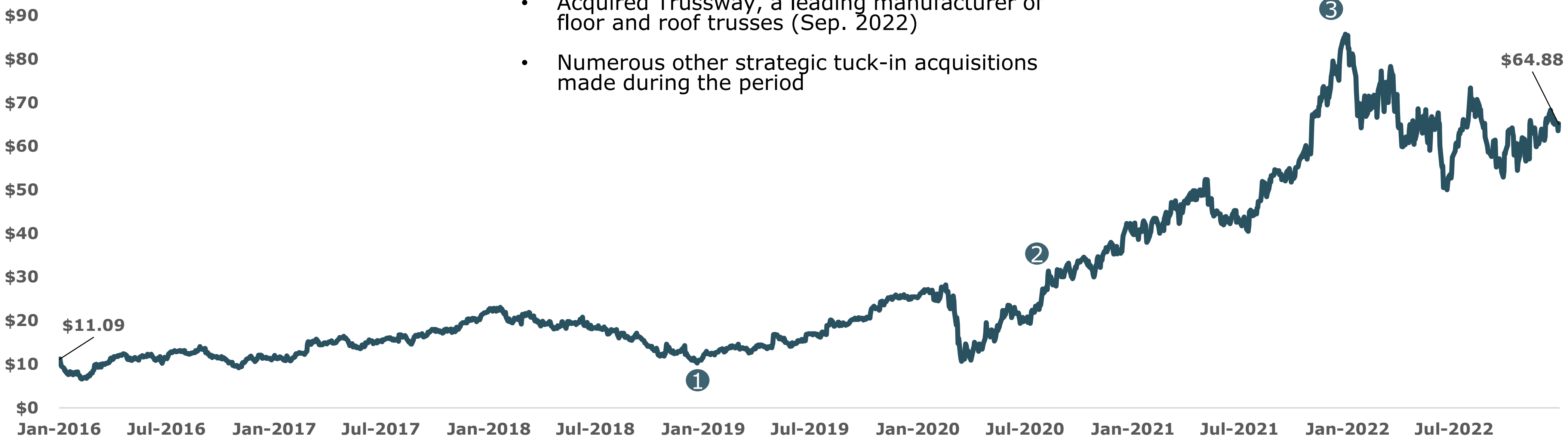
1. Shares outstanding increased due to BMC merger; began repurchase program shortly after merger and reduced shares outstanding from 2021-2022
2. Increased net debt due to numerous senior notes offerings for recapitalizations; assumed BMC's debt post-merger; cash balance only saw moderate growth
3. Decreased D/E ratio due to jump in net income as a result of the BMC merger
4. P/E multiple compression due to jump in earnings attributed to BMC merger; forward trailing 12-month P/E multiple is 14.3x which accounts for increase in market cap from merger
5. Able to maintain a 30.3% trailing 7-year revenue CAGR; attributed to constant tuck-in acquisitions, the BMC merger, and constant product development

Notable Events

Volatility

1. • Framing lumber and sheet goods prices declined 39% and 32% during Q3 '19 (Dec. 2018)
2. • Announced all-stock merger of Building Materials and Construction Stock Holdings and BFS for a combined $11 billion in sales (Aug. 2020)
3. • Q3 '21 earnings beat; gross margins expanded; BMC merger synergies tracking full year ahead of plan (Nov. 2021)

# of 20%+ Drawdowns	12
Max Drawdown	-62%



Mergers and Acquisitions

- BFS and BMC deal closes (Jan. 2021)
- Acquired Cornerstone Building Alliance, the largest independently operated supplier of building materials in Arizona, for $400 million (Jul. 2021)
- Acquired Paradigm, a software development and consulting services company for the building products industry (Aug. 2021)
- Acquired Katerra – Apollo software assets for $4.5 million (Sep. 2021)
- Acquired John's Lumber (May 2021)
- Acquired Trussway, a leading manufacturer of floor and roof trusses (Sep. 2022)
- Numerous other strategic tuck-in acquisitions made during the period

Other Notable Events

- Various debt offerings throughout the period to raise money for recapitalization (2017-2022)
- Share buyback program repurchased 80.7m shares for $5.3 billion (Aug. 2021)
- Lumber prices spiked to a new annual record post-pandemic due to strong housing remodeling demand that drove BFS's revenues attributed to commodity price inflation (2021)

Competitive Landscape

Competition

- **84 Lumber (Private):** Founded in 1956, 84 Lumber is one of the largest privately-owned suppliers of building materials, manufactured components, and industry-leading services for single- and multi-family residences and commercial buildings in the United States. They offer a wide range of products, including lumber, engineered wood, roofing, siding, windows, doors, hardware, and other building materials. They also provide a variety of services, such as kitchen and bath design, installation, and project planning support.
- **US LBM (Private):** US LBM is a leading distributor of specialty building materials in the United States. They operate a vast network of building material distribution centers and lumberyards across the country, serving professional contractors, builders, and remodelers. They provide a wide variety of materials, including lumber, millwork, windows, doors, roofing, siding, decking, cabinets, and other specialty products. They also offer value-added services such as product selection assistance, custom millwork, door and window assembly, and just-in-time delivery.
- **Universal Forest Products (UFPI ~$4.9B market cap):** Universal Forest Products, or UFP, is a leading manufacturer and distributor of wood and wood-alternative products for various industries. They specialize in providing a wide range of building materials, components, and structures to customers in the construction, industrial, and retail sectors. UFP offers lumber, engineered wood, decking, fencing, trim, siding, and other related products.

Builders FirstSource is the largest living building material (LBM) supplier and distributor in the United States, which gives them significant market share in the homebuilding space. By constantly innovating, refining the quality of their products and services, as well as incorporating more multi-family products into their mix, BFS has been able to improve gross margins significantly throughout the period and benefit from annual cost savings of around 3-5%. This has allowed BFS to maintain constant revenue growth and cash flows to invest in several tuck-in acquisitions each year. BFS has swallowed numerous lumber yard companies, software companies, as well as millwork and other value-add companies to expand their portfolio and gain market share. However, their most notable acquisition during the time period was an all-stock merger with BMC Stock Holdings, which increased revenues dramatically from 2020-2022. They tracked a full-year ahead of schedule for revenue and cost synergies and reported $160 million in savings by 2022.

Moat – Process Power

Process Power (strong): Builders FirstSource has gained their market share and position as a leading LBM company through their ability to continuously acquire smaller companies, lumber yards, and other service facilities. With over 550 distribution and manufacturing locations and a presence in 42 states, BFS has built the network to reach a large customer base. Their ability to maintain a strong balance sheet with consistent cash flows has directly contributed to their tuck-in acquisition strategy, which grants them to focus on continuously expanding their core operations. Additionally, BFS has leveraged innovative technologies and their merger with BMC to create the READY-FRAME, which has revolutionized efficient home building across the US.

Conclusion - What drove shareholder return?

1. **US Residential Underbuilding:** By nature of the LBM market, BFS benefits significantly from US residential underbuilding and rising demand in single- and multi-family homes. The US housing market has experienced significant underbuilding over the past 12 to 15 years, which has allowed BFS to take advantage of growing revenues and filling demand in the long-term. During the COVID-19 pandemic when BFS's stock began to take off, much of shareholder return can be attributed to an influx of stimulus checks being spent on new single-family homes as well as home remodeling during COVID-19 pandemic-related shutdowns. Additionally, because BFS's share price and margins are largely affected by fluctuations in commodity prices, especially lumber, they saw incredible margin expansion in 2021 due to all-time high lumber prices. 30.4% of BFS's revenues in 2021 can be attributed to commodity price inflation, which boosted investor sentiment and shareholder return. It was able to maintain and increase these margins into 2022 by cost-saving strategies coming from the BMC merger in 2021.

2. **Strategic Capital Structure:** BFS has maintained a strong balance sheet throughout the period by executing various strategic capital restructurings to lower their D/E ratio while still maintaining consistent cash flows to fund their operations and acquisition strategy, as well as return capital back to investors through opportunistic share buybacks post-BMC merger. At the beginning of the period, BFS had a D/E ratio of 1308%, and was able to lower that to 70% in 2022. They accomplished this by rapidly paying off debt in 2016-2019 (during this time they had minimal acquisition costs) to maintain control over their debt. However, they began to issue debt through 2021-2022 to fund the BMC merger which after acquisition increased their earnings dramatically and contributed to a stronger balance sheet.

3. **Building Materials and Construction Holdings Merger:** In January of 2021, BFS completed their merger with BMC (a direct competitor) which created a nearly $12 billion player in the building supply business. Not only was the size of the merger transformative for BFS, but the speed at which they effectively joined forces contributed to BFS's incredible growth from 2020-2021. They tracked a year ahead of schedule in achieving synergies in 2021 and achieved $160m of cost savings by the end of 2022. BFS saw a 212% increase in revenues from 2019-2022, which can be attributed to the synergies of the merger. An important factor of the merger was BFS and BMC's decision to stock up on materials during the pandemic's early stages even as pries surged, as this allowed them to maintain flow of product while competitors were struggling to manufacturer. A large contributor to the merger's success was the development of the new and improved READY-Frame. BMC previously sold the READY-FRAME under their name, however, after the merger, BFS combined their Better Framing Systems with BMC's previous READY-FRAME and adjusted the bundle, shipping, and pricing strategies to increase margins. This merger ultimately boosted BFS's shareholder return from 2020-2022 and helped them expand to be the top competitor in the industry.

4. **Technological Advancements:** The homebuilding industry has been one of the slowest markets to technologically revolutionize, as many have tried and failed to solve the construction industry's challenges related to labor and efficiency. However, BFS takes a customer-centric approach, and evolves around their customers' needs. Rather than fundamentally change the way that homes are built, BFS utilized software and data to provide a platform for builders to be more efficient with their building process- as shown through their READY-Frame product. Additionally, BFS has acquired a few software and data assets and companies, most notably Apollo software assets from Katerra, which addresses efficiency issues in the home building process. These innovative advancements has made BFS a top pick for homebuilders, as their products puts builders ahead of schedule and reduces labor hours.

5. **Process Power:** BFS's ability to constantly acquire companies, yards, and facilities to expand their core operations geographically has granted them a strong process power. Their ability to maintain strong financials throughout the period has allowed them to invest heavily in both organic and inorganic growth and has positioned them to be at the front of the LBM business. BFS has relied heavily on inorganic growth through numerous tuck-in acquisitions to grow their sales as well as improve their margins, with nearly 60 completed acquisitions since 1998. They acquire across all segments they operate in, as well as new software and technology that improves efficiency in the LBM business and focus on geographic locations with fast-growing home building populations and building component capacity. Particularly, their ability to constantly acquire lumber yards at discounted prices due to their size has largely grown their lumber business to make up nearly half of their revenues. This allowed them to quickly achieve scale, maximize profitability, and leverage existing customer relationships in regional markets to drive shareholder return during the period.

Dexcom (DXCM)

Dexcom
CONTINUOUS GLUCOSE MONITORING

Company Overview

Dexcom is a California-based medical device company that develops, manufacturers, produces, and internationally distributes continuous glucose monitoring (CGM) systems for diabetes management. Founded in 1999, Dexcom managed to change the landscape of diabetes monitoring by launching the world's first real-time, integrated CGM system to eliminate the need for routine fingerstick tests. As the market changed over the years, Dexcom constantly adapted and advanced their technology to suit the needs of individuals with diabetes by integrating mobile compatibility into their CGM systems. Since Dexcom's creation of the first FDA-approved CGM, they have gone on to launch the Dexcom G4, G5, G6, and G7. By focusing on a singular product and continuously improving their CGM system, Dexcom has secured significant market share and powerful partnerships to become a leader of diabetes care technology.

	1/1/2016	12/31/2022	
Stock Price*	$19.62	$113.24	
Market Cap	$6,380.8	$43,739.9	
Enterprise Value	$6,267.9	$43,432.9	
Shares Outstanding	325.2	386.3	
Net Debt	-$112.9	-$307.0	
Debt/Equity	1.0%	100.8%	1
Dividend Yield	N/A	N/A	
P/E	N/A	142.5x	2
EV/Sales	15.6x	14.9x	
EV/EBITDA	N/A	79.4x	
FCF/Share	$0.1	$0.8	
Gross Margin	69.7%	66.4%	3
EBITDA Margin	N/A	18.8%	
Trailing 3yr Rev CAGR	59.1%	25.4%	4
Trailing 7yr Rev CAGR		32.7%	
Analyst Buy %	83.3%		
Analyst Hold %	12.5%		
Analyst Sell %	4.2%		

*Numbers in millions excluding stock price

Management

CEO: Terry Gregg (2007-2015), Kevin Sayer (2015-Present), Former COO of Dexcom

CFO: Jess Roper (2005-2017), Quentin Blackford (2017-2021), Jereme Sylvain (2021-Present), Former VP of Dexcom

COO: Quentin Blackford (2017-2021), Jacob Leach (2021-Present), Former CTO of Dexcom

Analysis

1. Increased debt balance starting in 2017 due to issuances of long-term senior convertible notes to fund increased R&D and product development
2. EPS and net income became positive in 2019 due to increased revenues driven by continuous releases of new products
3. Gross margins decreased by 4% over the 7-year period due to increases in manufacturing costs
4. Trailing 7yr revenue CAGR at 32.7%; increase in revenue during the period attributed to company's consistent innovation and aggressive sales strategy in the CGM space

Notable Events

Dexcom
CONTINUOUS GLUCOSE MONITORING

Volatility

- ❶ Fitbit and Dexcom partnership to advance CGM using Fitbit's wearable device (Sep. 2017)
- ❷ Insulet and Dexcom global commercialization agreement to combine Dexcom's CGM systems with Insulet's insulin delivery pod (Feb. 2020)
- ❸ Nick Jonas and Patti LaBelle partner with Dexcom to promote diabetes awareness through The Global Movement for Time in Range (Nov. 2021)
- ❹ Rumored merger with Insulet (Mar. 2022)

# of 20%+ Drawdowns	11
Max Drawdown	-58%

Mergers and Acquisitions

- Acquired TypeZero Technologies for $11 million in an all-cash deal to integrate TypeZero's inControl algorithm for use on closed-loop systems for insulin delivery (Aug. 2018)

Other Notable Events

- Launched the G5 and G6 mobile CGM systems (2016 and 2017)
- Entered in an agreement with Tandem Diabetes Care to launch the first sensor-augmented insulin pump (Aug. 2017)
- Eli Lilly and Company and Dexcom create a joint program to integrate Dexcom CGM into Connected Diabetes Ecosystem (Nov. 2017)
- Dexcom and Verily Life Sciences jointly develop the G7 mobile CGM (Mar. 2022)
- Announces Dexcom ONE to be launched in the UK (Apr. 2022)

Competitive Landscape

Competition

- **Abbott Laboratories (ABT ~$191.4B market cap):** Abbott Diabetes Care is a division of Abbott Laboratories, a global healthcare company. They specialize in developing and manufacturing medical devices and technologies for diabetes management. A direct competitor of Dexcom, Abbott is best known for its FreeStyle brand of glucose monitoring systems, which includes its Libre CGM mobile system.
- **Medtronic (MDT ~$103.4B market cap):** Medtronic is a global medicine technology company known for its innovative therapies. They develop advanced medical devices across multiple therapeutic areas, including cardiology, neurology, diabetes, and spinal care. Specifically, they have a line of CGM systems (Guardian Connect) that offer advanced features such as predictive alerts, smartphone connectivity, and integration with Medtronic insulin pumps for closed-loop insulin delivery.
- **Roche Diagnostics (ROG ~$292.7B market cap):** Roche Diagnostics is a Swiss multinational healthcare company that operates under both Pharmaceuticals and Diagnostics. Roche Diabetics Care, a division under Roche Diagnostics, has a CGM system (Eversense) that consists of a sensor, transmitter, and mobile app that can be worn longer than most other CGM products on the market.

Dexcom, though much smaller than its competitors, has maintained a high market share in the CGM market by being at the forefront of innovation by producing the world's first CGM system with Android and iOS compatibility. From there, Dexcom was able to identify its niche in the wider medical technology space early on to continuously improve its CGM system by investing in R&D, UI development, and undertaking numerous partnerships with other universities and insulin pump companies to produce solutions for closed-loop insulin delivery. Additionally, Dexcom has established trust in its name within the CGM world by partnering with celebrities such as Nick Jonas, who went on to feature in Dexcom's first Superbowl ad.

Moat – Process Power, Cornered Resource

Switching Costs (strong): Dexcom possesses high switching costs due to the approval duration and quantity restrictions that health insurance companies impose on CGMs. While most health insurance plans cover CGMs, they only allow patients to select one type of CGM for the next 6-12 months. Once patients choose a Dexcom CGM for the approved period, they are unable to switch to an alternate supplier without spending their own money, incurring high financial and opportunity costs. Additionally, while there aren't complex instructions for using a CGM, patients generally feel safer with medical products they are used to and incur a high relational cost when switching suppliers.

Cornered Resource (strong): Dexcom has several patents for its CGM system that its competitors lack. As of February 2017, Dexcom had obtained 334 issued US patents with 327 additional US patent applications pending, along with 100+ international application patents pending. At the end of 2022, Dexcom had 1210 granted patents globally, including several innovative technologies that have made their CGM system more accurate and reliable. Being a medical technology company that relies on constant innovation to stay competitive, these patents have kept Dexcom at the forefront of CGM technology and are valuable assets to their business.

Global Diabetes Growth

Dexcom
CONTINUOUS GLUCOSE MONITORING

Global Diabetes Related Health Expenditures

('07-'21)

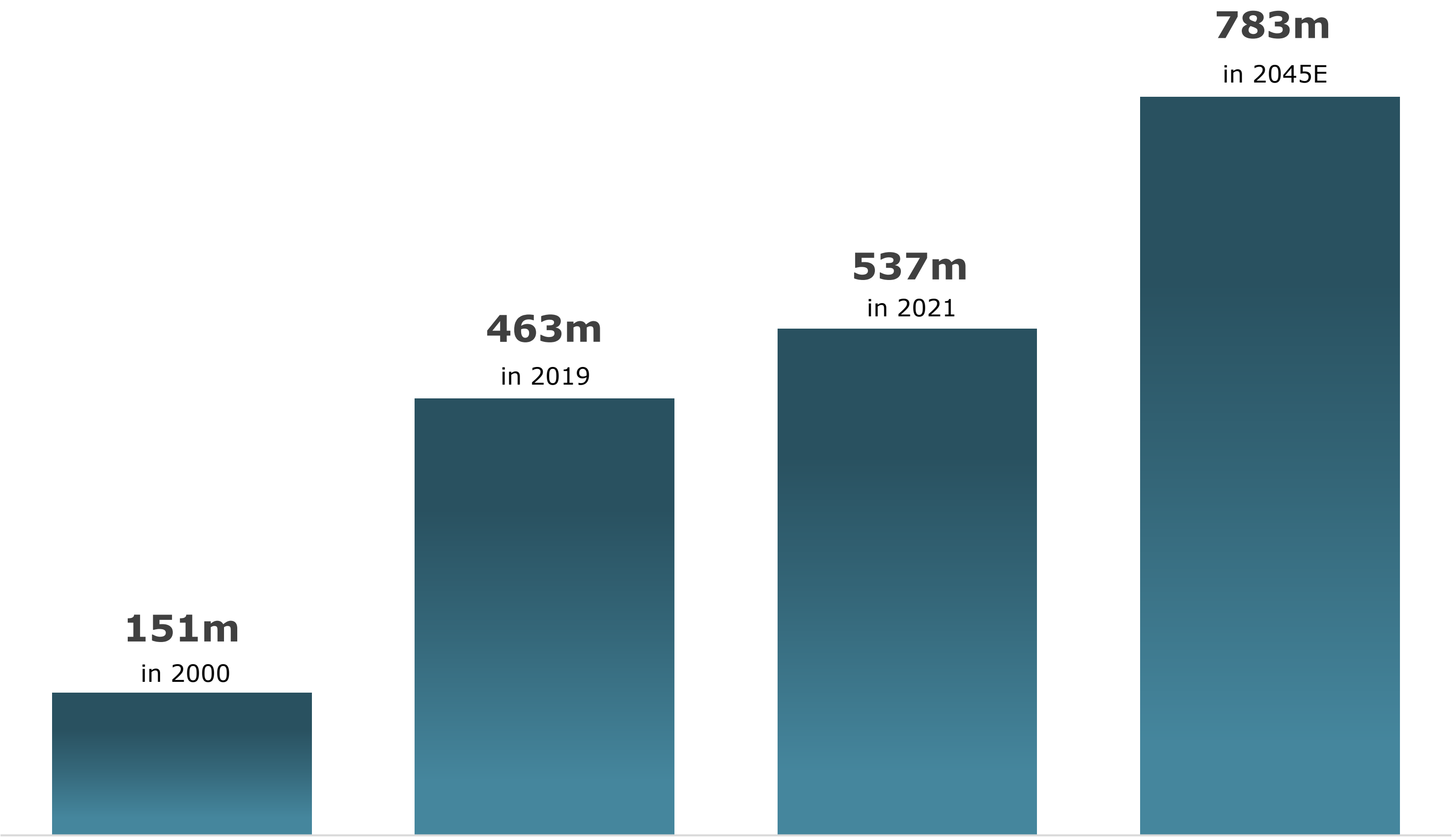
$232b
2007

$966b
2021

+316% Increase

Diabetes Diagnoses Worldwide

Adults (aged 20-79) with Diabetes Globally



Source: American Diabetes Association

Conclusion- What drove shareholder return?

1. **Narrow Product Line:** Unlike its competitors, Dexcom focuses on only producing and improving its CGM products, namely the G5, G6, and G7 mobile CGM systems. This allows Dexcom to be at the forefront of innovation in the CGM field and provide the most accurate solutions for their patients. Dexcom's concentrated offering provides the highest accuracy product on the market and has been a large factor contributing to high shareholder return.

2. **Direct-to-Consumer Marketing**: Dexcom had undertaken a direct-to-consumer marketing strategy that has included a variety of media forms, including print publications, blogs, search, social media, events, video ads, in-office advertising, and information packets. Because Dexcom's products are expensive relative to competitors such as Medtronic and Abbott, they needed to invest more in advertising to convince consumers to pay the higher price. Their DTC strategy has proved successful by driving CGM awareness at the patient level rather than advertising to hospitals and distributors as their competitors tend to do. Dexcom has created many social media and advertising initiatives to establish its name in the CGM space. They have produced targeted campaigns through engaging videos and billboards, partnered with celebrities such as Nick Jonas and Patti LaBelle, and created an educational campaign called "The Global Movement for Tie in Range" to reach a wider audience and establish an element of trust. With this aggressive marketing strategy, Dexcom was able to expand its consumer base from 200,000 customers at the end of 2016 to 1.7 million by the end of 2022.

3. **Strategic Partnerships:** Being a smaller player relative to their competitors, Dexcom has been able to continuously improve its CGM system by maintaining a smaller product line and outsourcing additive technologies (such as insulin pumps) to its CGM products through partnerships and acquisitions. Unlike competitors such as Medtronic which is producing closed-loop insulin delivery systems in-house, Dexcom has taken steps to outsource these solutions to keep development and manufacturing costs relatively low. They pursued partnerships with Tandem and Omnipod to integrate their insulin pumps into the CGM system and acquired TypeZero for their closed-loop algorithm. This strategy has allowed Dexcom to boost revenues and stay competitive through the 7-year period.

4. **Switching Costs:** Because CGMs need to be replaced every few days and operate under a "subscription model" with most health insurance plans, Dexcom has partnered with over 90% of commercial health insurance plans in the United States to reach more customers and increase their retention rate. Because customers are bound to a single type of CGM for 6-12 months at a time(through most insurance plans), customers remain with one CGM supplier each period and grant Dexcom high financial switching costs. Additionally, customers are more likely to continue to use Dexcom's CGMs as they feel safer and more familiar with their product, which increased Dexcom's customer retention rate from 86% to 92% over the 7 years. Because of the replaceable nature of CGMs, Dexcom's partnerships with health insurance plans and increases in customer retention rate were a major factor in their increasing revenues by 623.8% and thus leading to a high shareholder return.

5. **Cornered Resource:** Being in the medical technology space, Dexcom relied on trade secrets, technical know-how, and continuing innovation to develop and maintain its competitive position. Through various US and international patents, Dexcom has managed to stay at the forefront of the CGM market and create a product that is more convenient, reliable, and accurate than its competitors. Because Dexcom was the first company to launch a CGM system with mobile compatibility and consistently continued to innovate their G series CGMs, they have been able to acquire patents and release products at a faster pace than their competitors. As a result, Dexcom has been able to prevent competitors from using their technology without permission and charge a premium for their products, driving revenues and thus shareholder return.

Planet Fitness (PLNT)

Company Overview

Planet Fitness, founded in 1992, is a leading fitness company with over 2,400 locations worldwide. They offer affordable monthly memberships, focusing on creating a non-intimidating and judgement-free environment for individuals of all fitness levels. Their gyms provide a range of fitness equipment, group exercise classes, and additional amenities. Planet Fitness has established a distinctive brand identity with its purple and yellow color scheme, catchy slogans, and policies. Through the company's unique approach, Planet Fitness has carved out a niche market, successfully attracted a large customer base, and continues to expand their presence globally.

	1/1/2016	12/31/2022	
Stock Price*	$15.40	$89.75	
Market Cap	$1,520.1	$7,057.4	
Enterprise Value	$1,987.9	$9,009.4	
Shares Outstanding	36.6	83.4	1
Net Debt	$453.5	$1,964.5	
Debt/Equity	N/A	N/A	
Dividend Yield	N/A	N/A	2
P/E	N/A	62.3x	3
EV/Sales	6.0x	9.6x	
EV/EBITDA	19.1x	21.9x	
FCF/Share	N/A	$1.7	
Gross Margin	59.0%	73.8%	
EBITDA Margin	31.5%	43.9%	
Trailing 2yr Rev CAGR**	25.2%	51.8%	4
Trailing 7yr Rev CAGR		16.0%	5
Analyst Buy %	91.7%		
Analyst Hold %	8.3%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

**Revenue data unavailable before FY2013

Management

CEO: Chris Rondeau (2013-Present), Former COO of Planet Fitness

CFO: Dorvin Lively (2013-2020), Tom Fitzgerald (2020-Present), Former CFO of Potbelly Sandwich

COO: Bill Bode (2020-2023), Edward Hymes (2023-Present), Former CEO of Jiffy Lube

Analysis

1. 128% increase in shares outstanding due expansion efforts
2. Dividend payment at the discretion of the board of directors, occasional dividend payments throughout the time period
3. Became profitable in FY2017, and the company's rapid franchisee growth has contributed to a high P/E multiple when compared to the industry average of ~14x
4. 105.6% increase in trailing two-year revenue CAGR due to overwhelming success of business model and expansion of gym locations around North America
5. Notably large seven-year revenue CAGR as a result of fast growth in franchisee business model and successful expansion into Mexico and Canada

Notable Events

Volatility

1 • Strong earnings outlook from success of new business model and customer growth (Feb. 2018)

3 • 41% decrease in revenue during COVID-19 pandemic as gyms were some of the first to close (Mar. 2020)

4 • Correction post-pandemic as PLNT showed resilience, closing zero gyms (Jun. 2020)

Mergers and Acquisitions

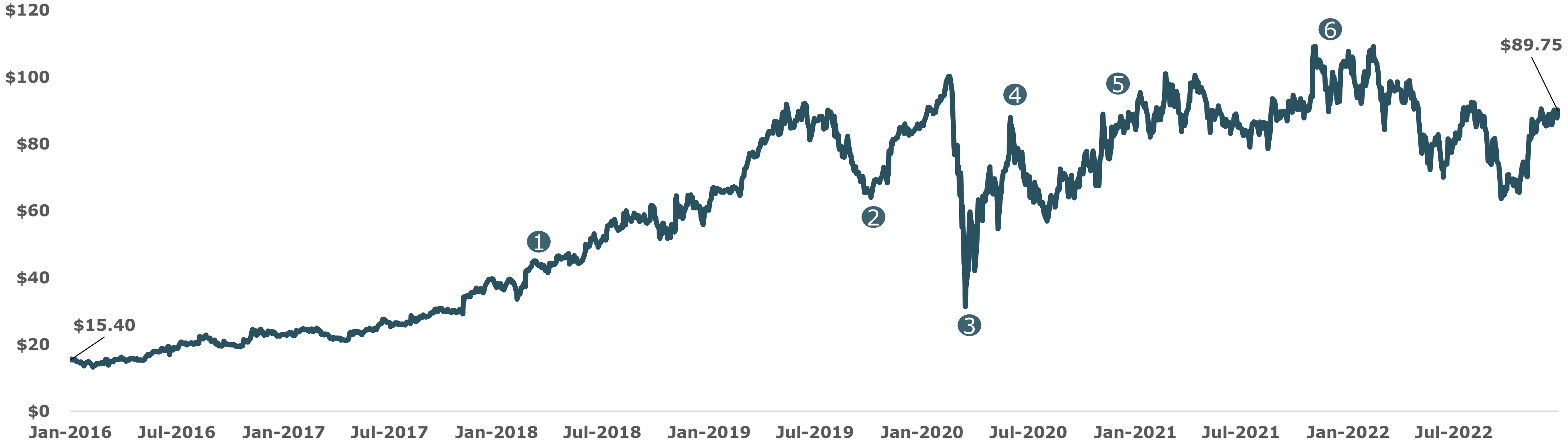
6 • Announced acquisition of Sunshine Fitness and their 114 locations for $800 million (Jan. 2022)

Other Notable Events

2 • Large slowdown in revenue growth rate, diminishing guidance (Sep. 2019)

5 • No decrease in gym attendance during Delta and Omicron variant spread, PLNT remained open (2021)

# of 20%+ Drawdowns	5
Max Drawdown	-68%



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Competitive Landscape

Competition

- **LA Fitness (Private):** LA Fitness is a well-established fitness company with multiple health club locations in the US and Canada. Founded in 1984, they provide a variety of fitness amenities and services, such as advanced equipment, group classes, swimming pools, and personal training. Known for their comprehensive offerings, LA Fitness is a popular choice among individuals looking for diverse workout options and state-of-the-art facilities.

- **Life Time Fitness (LTH ~$2.3B market cap):** Life Time Fitness, a subsidiary of Life Time Group, is a fitness company that operates upscale health clubs across the Untied States and Canada. The company offers a premium fitness experience guaranteeing top-of-the-line equipment, personalized training sessions, group classes, spa services, pools, and other recreational activities. Life Time Fitness appeals to those who seek a holistic and high-quality fitness lifestyle.

- **Peloton (PTON ~$2.7B market cap):** Peloton is a leading fitness technology company that produces and manufacturers at-home bicycles for individual use. Founded in 2012, the company offers a range of connected fitness products including stationary bikes, treadmills, and digital fitness subscriptions. Their innovative platform combines live and on-demand workout classes led by professional instructors with real-time performance tracking and a large community experience.

Planet Fitness went public in 2015, it was already a large competitor in the gym space. It was less well known than more established and national brands like LA Fitness and Life Time Fitness. Planet Fitness gained popularity very quickly due to its very cheap price point, rapid expansion of physical locations by using a franchisee model, and inclusive environment. Quickly, Planet Fitness came to dominate the industry by touching on a new customer base that incumbent fitness companies had never thought about: people who find working out a chore rather than a hobby. Legacy gyms and fitness centers catered their subscriptions and services to those who worked out multiple times a week and had been doing so for a very long time. Planet Fitness, on the other hand, took the approach of focusing on those who are more casual about working out and who are too intimidated to go into a large gym for the first time. In doing so, PLNT came to eat up much of the incumbents' market share and now is the largest gym by membership in the United States.

Moat – Counter Positioning, Scale Economies

Counter Positioning (strong): Planet Fitness has a strong competitive advantage as it is an example of counter-positioning in the fitness and gym industry. The company disrupted the traditional gym market by identifying a gap in the market by recognizing that many individuals felt intimidated or uncomfortable in traditional gyms due to factors like high membership costs, complex equipment, and a perceived judgmental environment. Planet Fitness introduced a business model that offered low-cost monthly memberships ($10 a month), emphasized a judgment-free zone, and overall created a more welcoming environment. This proved to be a success as legacy gym companies could not lower their membership costs and had already developed reputations of intimidation and judgment, something that is impossible to change. Planet Fitness attracted a large new customer base and was able to rapidly expand and market itself to this wider audience.

Scale Economies (strong): Planet Fitness also has scale advantages that other fitness companies do not have. They have enhanced purchasing power and extended warranties with their fitness equipment and other suppliers and can attract high-quality franchisee partners due to the success of the company. In addition, the company estimates that the large US advertising fund, funded by franchisees and Planet Fitness, together with the requirement that franchisees spend 7% of their monthly membership dues on local advertising, enabled the company and franchisees to spend over $275 million in 2022. This expands the company's reach and allows Planet Fitness to attract even more customers through advertisements, something that other fitness companies do not have the budget to do.

Conclusion- What drove shareholder return?

1. **Market Dominance:** Planet Fitness dominates the cheap fitness market through several key strategies. Firstly, their focus on affordability has allowed them to attract a broad customer base with members paying only $10 a month to come to the gym. They also offer a free summer gym membership for teens, aged 14-19, which has proved successful in retaining the young members after the free trial ends. Furthermore, their distinct marketing around creating a non-intimidating and judgment-free environment has resonated with customers who feel uncomfortable in traditional gyms. This distinct positioning sets them apart and strengthens their market dominance over the incumbent fitness centers. Additionally, the company has perused an aggressive expansion strategy, continuously opened new locations, and expanded into new markets, both domestically and internationally.

2. **Counter Positioning:** Planet Fitness is a strong example of counter positioning in the fitness center and gym industry. The company created a very disruptive business model that catered to an unserved population: casual gym goers. Planet Fitness benefits from the use of its low-cost memberships to attract those who want to go to the gym but are not constantly going to the gym. They provide a judgment-free environment by putting large quotes on the walls of the gyms such as “You belong” and “no critics”. In doing so, the company has been able to continue to attract these more casual gym goers who previously felt judged and intimidated by the complex machinery and typical gym stereotypes. Planet Fitness’s counter positioning in the industry has led to its rapid growth across the US and expansion into Canada, Mexico, Panama, Dominican Republic, and Australia. This growth has contributed to the massive increase in PLNT’s stock price over the seven years.

3. **Perceived Brand Reputation:** The company operates over 2,400 gyms around the world. Customers know and trust the brand as a reliable workout, with the same machines and weights in every gym. Planet Fitness has been successful in developing a highly relatable and recognizable brand focused on providing their members with a judgement-free environment. This success can be attributed to market campaigns and the unique purple and yellow color scheme that is constant across all locations. According to Brand Health research, a consumer study that is updated tri-annually, Planet Fitness is among the highest aided and unaided brand awareness scores in the US fitness and gym industry.

4. **Franchise Model:** Planet Fitness operates a franchise model that is built for rapid growth and expansion. The company operates only 234 stores, while 2,176 are franchisee owned in 2022. Planet Fitness offers a very easy-to-operate model, strong store-level economics, and brand strength to attract a team of successful franchisees from a variety of industries. The franchisee-owned model enables PLNT to scale more rapidly than a predominantly company-owned strategy. The mode focuses on fixed labor costs, minimal inventory, automatic billing, and limited cash transitions to make the burden on franchisee owners as light as possible. Furthermore, Planet Fitness boasts that franchisees re-invest their capital into the brand, with over 90% of new store owners in 2022 opened by the existing franchisee base, a trend that has only increased since 2016. The company charges an initial franchise fee of $20,000 that covers the cost of being able to use the name and logo. Total franchise fees and investment range from $936,600 to $4,558,000. Through the utilization of franchisees, Planet Fitness has been able to rapidly expand its physical gym location base and, in turn, increase revenue which has driven shareholder return since 2016.

IDEXX (IDXX)

Company Overview

IDEXX Laboratories is an American multinational corporation specializing in veterinary diagnostics and software solution. Founded in 1983, IDEXX has been a leader in the veterinary industry by securing significant market share (65% in 2022) through their innovative products. They operate primarily in three business segments: diagnostic and information technology-based products for the veterinary market (CAG), water quality products (Water), and diagnostic products for livestock and poultry health (LPD). CAG, their largest source of revenue stream, focuses on the health and well-being of pets by providing various diagnostic tests and services to veterinarians. Their principal products in their water division are tests that detect the presence of total coliforms and E. coli in water. Lastly, their LPD division specializes in diagnostic tests, services, and related instrumentation that are used to manage the health status of livestock and poultry for government and private laboratories.

	1/1/2016	12/31/2022	
Stock Price*	$71.12	$407.96	
Market Cap	$6,469.3	$33,786.0	
Enterprise Value	$7,296.9	$35,048.7	
Shares Outstanding	90.9	82.8	1
Net Debt	$827.5	$1,262.7	
Debt/Equity	N/A	225.9%	2
Dividend Yield	N/A	N/A	
P/E	33.7x	50.8x	
EV/Sales	4.6x	10.4x	3
EV/EBITDA	19.8x	33.7x	
FCF/Share	$1.5	$4.7	
Gross Margin	54.5%	58.5%	4
EBITDA Margin	23.0%	30.9%	5
Trailing 3yr Rev CAGR	7.4%	11.8%	
Trailing 7yr Rev CAGR		11.2%	
Analyst Buy %	37.5%		
Analyst Hold %	50.0%		
Analyst Sell %	12.5%		

*Numbers in millions excluding stock price
**Jonathan Ayers stayed as advisor to the company

Management

CEO: Jonathan Ayers (2002-2019)**, Jay Mazelsky (2019-Present), Former VP of Idexx

CFO: Brian McKeon (2014-Present), Former VP of Iron Mountain Inc.

COO: N/A

Analysis

1. Retired 9% of shares through share repurchase program; management felt share price was undervalued and inflated EPS
2. High D/E ratio due to debt issuance and share repurchase program depleting shareholders' equity; net income and retained earnings remained positive
3. Multiple expansion; investors believe that future sales will increase and value IDEXX at a premium
4. Maintained high gross margin throughout the period due to strong reputation in the industry and high-quality products
5. High trailing 3yr and 7yr revenue CAGRs; revenues increased due to new product launches, innovation, and increased number of pet owners

Notable Events

Volatility

1. • IDEXX joins the S&P 500 and the NASDAQ-100 Index (Jan. 2017 and Mar. 2017)
2. • SmartFlow joins IDEXX Family (Jul. 2018)
3. • Senior management changes following CEO's step down (Jan. 2020)
4. • Pent-up demand following vet clinics being constrained due to COVID-19 pandemic increased revenues (Q3-Q4 2020)
6. • Missed earnings Q2 2022 due to costly discrete R&D investments (Aug. 2022)

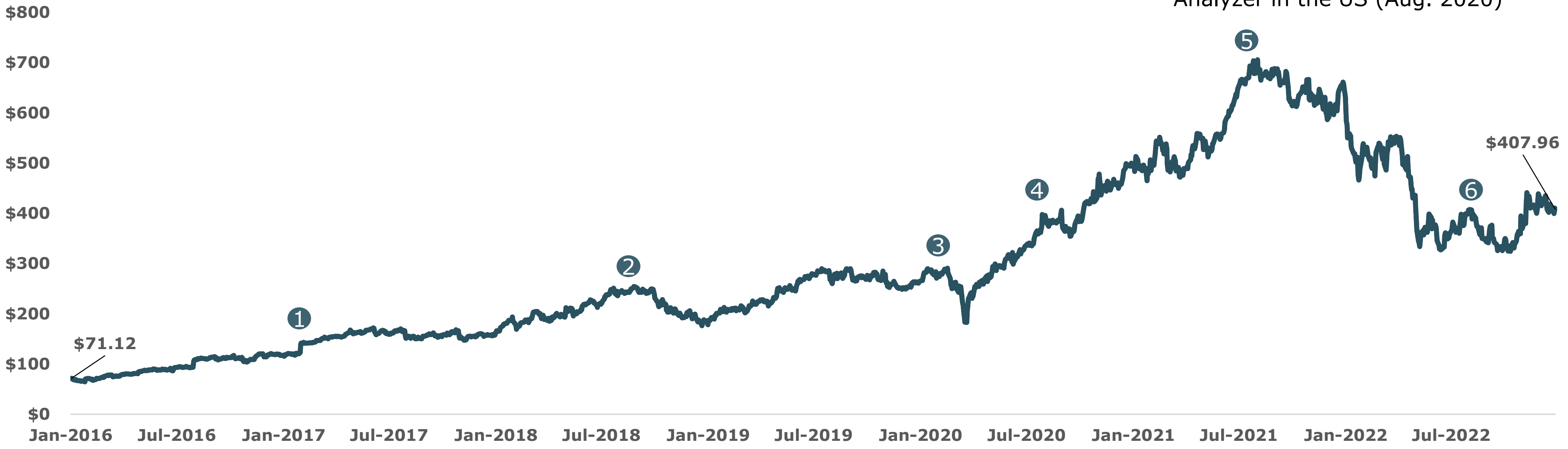
# of 20%+ Drawdowns	3
Max Drawdown	-34%

Mergers and Acquisitions

5. • IDEXX acquires Smart Flow (Jul. 2018)
- IDEXX acquires Marshfield Laboratories veterinary arm (Nov. 2019)
- IDEXX acquires ezyVet (Jun. 2021)

Other Notable Events

- Launched Legiolert, a water test to combat Legionnaire's Disease (Jul. 2016)
- Released Catalyst SDMA Tests as part of their Catalyst vet diagnostics portfolio (Jan. 2018)
- Released updates for SediVue Dx Urine Sediment Analyzer (Feb. 2018 and Jan. 2019)
- Announced canine progesterone test for Catalyst analyzers (Jan. 2019)
- Launched new rapid digital cytology service (Jan. 2020)
- Launches new ProCyte One Hematology Analyzer in the US (Aug. 2020)



Competitive Landscape

Competition

- **Antech Diagnostics (Private):** Antech diagnostics, owned by Mars, is an American multinational conglomerate that provides veterinary diagnostic testing services, including clinical pathology, hematology, endocrinology, and microbiology. They also offer advanced imaging services such as digital radiography, ultrasound, CT scans, MRI, and nuclear scintigraphy. However, unlike IDEXX, which has various product lines in three business segments, Antech focuses on veterinary solutions for pets in the US and Canada.
- **Covetrus (Private):** Covetrus, a privately held global animal health technology and services company serving the companion, equine, and large-animal veterinary markets, was formed in 2019 through the merger of Henry Schein Animal Health and Vets First Choice. They are IDEXX's largest competitor in North America and the UK within their veterinary software, services, and diagnostic imaging systems products. While IDEXX offers a wide range of diagnostic and software options, Covetrus focuses on technology and software solutions and services.
- **Zoetis (ZTS ~$68.3B market cap):** Zoetis, a global animal health company that specializes in the research, development, manufacturing and commercialization of a wide range of veterinary pharmaceuticals and vaccines is one of IDEXX's largest competitors in the diagnostic department for both companion animals and livestock. They operate primarily in the pharmaceutical, diagnostic, genetics and genomics, and digital health solutions product spaces.

IDEXX has maintained significant market share and has enjoyed high revenue growth throughout the 7-year period by efficiently producing the most accurate and high-quality products, continuously innovating and investing in R&D, and undertaking strategic partnerships. Not only has IDEXX secured a strong customer base, but they've also enjoyed increased demand for their products due to a rise in pet ownership, advancements in diagnostic technology, and an increased focus on pet health.

Moat – Process Power, Switching Costs

Process Power (weak): IDEXX has remained competitive throughout this period due to its low manufacturing costs, pricing power, and product quality. IDEXX is vertically integrated and owns its own manufacturing and distribution facilities, allowing them to control their own costs and cut out supplier premiums. Additionally, IDEXX invests significantly more in R&D than its competitors and has allowed them to stay at the forefront of veterinary diagnostics and imaging by creating the most accurate products on the market. For example, IDEXX was the first company to develop an SDMA test in 2015 and was the only competitor to be able to perform such a test. Because of their strong track record of innovation and high-quality products, this allows IDEXX to price their products higher than their competitors and maintain a higher gross margin.

Switching Costs (weak): Over the 7-year period, the majority of IDEXX's revenue can be attributed to their CAG business (87.8%). Within their CAG products, their point-of-care analyzers are their main source of sales. By nature these products, are designed and created to be used jointly. For example, each test that they produce is specifically developed to be used with IDEXX analyzers. Their tests are calibrated for the most accurate and reliable results when used with IDEXX's analyzers. Thus, there is a high financial and procedural switching cost for veterinary clinics to switch analyzers and tests as veterinarians also undergo an educational and training period when using IDEXX's diagnostic and imaging products. Looking at their software products, there is also a high procedural cost to switch systems as that would require retraining all employees and transferring confidential information to an alternate software.

Conclusion- What drove shareholder return?

1. **Outsourcing Technology:** IDEXX has outsourced numerous technology rather than developing their solutions in-house, especially in their veterinary software solutions division. Outsourcing information technology software rather than producing them in-house, has allowed IDEXX to invest more capital into their R&D and manufacturing for diagnostics and imaging products to stay ahead of their competitors. The majority of IDEXX's software portfolio has been outsourced and all work in conjunction with each other to revolutionize how vet hospitals manage their clinical workflow. Additionally, by acquiring SmartFlow and ezyVet, IDEXX has integrated these solutions into their software platforms to provide a more enjoyable customer experience.

2. **Direct Distribution Model:** IDEXX has been able to foster strong relationships with vets and animal hospitals by implementing a direct distribution model. IDEXX sells its products directly to customers without relying on intermediaries to market their products. They employ a robust sales force that directly interacts with customers to educate them about IDEXX's product lines. By adopting this direct distribution approach, IDEXX has been able to establish closer relationships with its customers and create a more intimate sales experience. From a financial standpoint, this model allows IDEXX to cut intermediate costs or premiums that wholesale distributors may charge and has granted them high margins.

3. **Process Power:** The two components that make up a large portion of IDEXX's business are real-time diagnostic tests and imaging consultants that are run through their reference libraries and in-house analyzers. By constantly investing in R&D and innovating its products, IDEXX has been able to produce the highest-quality tests and analyzers on the market. This grants them pricing power: IDEXX can charge higher prices for both real-time testing and veterinary diagnostic equipment. They have maintained a 56.8% gross margin over the 7-year period, which is significantly higher than their competitors. Looking at their costs, IDEXX has maintained low costs through outsourcing software solutions through strategic acquisitions as well as streamlining their development and manufacturing processes. These factors have contributed greatly to IDEXX's success and ultimate shareholder return.

4. **Switching Costs:** Due to the nature of veterinary diagnostic technology products, IDEXX's diagnostic and imaging products have a high upfront cost for consumers. After purchasing IDEXX's equipment, vets are only able to use IDEXX's tests in conjunction with their analyzers. IDEXX produces their tests and analyzers with high accuracy in mind- thus, customers will incur a high financial switching cost as they will have to repurchase the test and analyzer. Additionally, there is a training component to IDEXX's products which then imposes a procedural switching cost on vets as they will have to be retrained on the new equipment. Due to these high switching costs, IDEXX has maintained a solid consumer base and has established strong relationships with vets and animal hospitals worldwide. An increased consumer base and high retention rate have boosted IDEXX's revenues and investor return. However, this factor only holds for IDEXX's analyzers and software, as IDEXX does not enjoy high switching costs for real-time testing and imaging consulting. IDEXX employs a different strategy for their diagnostic tests that still allows them to stay competitive and attract customers.

Veeva Systems (VEEV)

Company Overview

Veeva Systems is an American cloud-computing company founded in 2007 and based in Pleasanton, California, that focuses on pharmaceutical and life sciences industry solutions. Their core products include Veeva CRM for sales and marketing, Veeva Vault for document management, and Veeva network for data management. Operating on a subscription-based model, Veeva serves large pharmaceutical and biotech companies, offering tailored solutions to met regulator requirements. Through strategic acquisitions and partnerships, the company has expanded its product portfolio and established itself as a trusted provider in the highly regulated life sciences industry

	1/1/2016	12/31/2022	
Stock Price*	$28.69	$161.38	
Market Cap	$3,815.6	$25,125.0	
Enterprise Value	$3,476.2	$22,164.3	
Shares Outstanding	81.5	140.9	
Net Debt	-$339.5	-$2,960.7	1
Debt/Equity	0.0%	1.8%	
Dividend Yield	N/A	N/A	
P/E	82.1x	65.9x	2
EV/Sales	9.1x	10.7x	
EV/EBITDA	38.7x	43.3x	
FCF/Share	$0.4	$4.9	3
Gross Margin	65.4%	72.1%	
EBITDA Margin	23.5%	24.7%	
Trailing 2yr Rev CAGR	72.1%	24.9%	4
Trailing 7yr Rev CAGR	N/A	26.8%	5
Analyst Buy %	66.7%		
Analyst Hold %	33.3%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

**Prior to Tom Schwenger's appointment, Veeva did not list a COO

Management

CEO: Peter Gassner (2007-Present), Founder

CFO: Tim Cabral (2010-2020), Brent Bowman (2020-Present), Former VP at Veeva

COO: Tom Schwenger (2019-Present)**, Former Managing Director at Accenture

Analysis

1. Increase in cash position and debt repayments over time period further decreased net debt by 772%
2. 15% multiple compression due to Veeva growing from a mid-cap to large-cap company
3. Veeva generated a substantial amount of FCF to ~4x the multiple given a 59.4 million share increase during the time period
4. Slowdown of growth in two-year revenue CAGR due to Veeva maturing from its status as a mid-cap company into an established dominant large-cap company
5. Remarkable seven-year revenue CAGR representing strong and continuous revenue growth due to competitive positioning and COVID-19 pandemic increasing demand for Veeva's products

Notable Events

Volatility

- ❷ COVID-19 pandemic accelerated use and adoption of Veeva applications, increasing revenue growth (2020)
- ❸ EPS beat due to unexpected optimistic future guidance and increase in subscription sales (May 2021)
- ❹ EPS beat due to higher-than-expected sales and improved guidance (Jun. 2022)

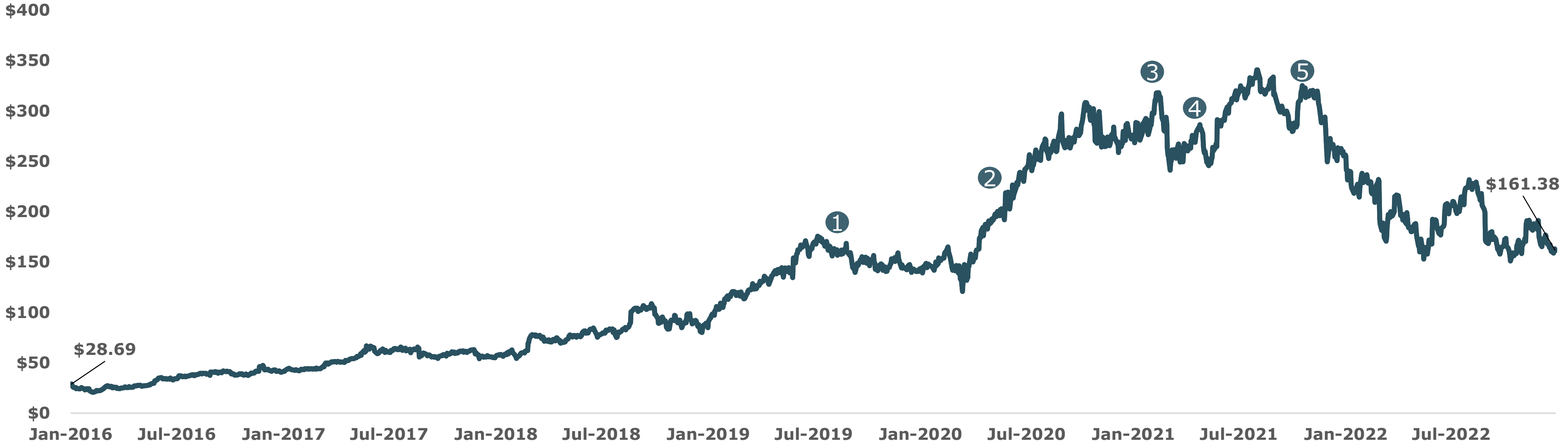
Mergers and Acquisitions

- ❶ Acquisition of Crossix for $430 million all cash deal (Sep. 2019)
- Veeva acquisition of Physicians World (Nov. 2019)
- Acquisition of Learnaboutgmp (Aug. 2021)
- ❺ Acquisition of Veracity Logic (Dec. 2021)

Other Notable Events

- Conversion to a Public Benefit Corporation (Jan. 2021)
- Shrinkage in revenue growth guidance due to return to in-person work (Dec. 2021)
- Slowdown in growth post-COVID-19 pandemic as companies grew less reliant on software solutions during return to office (Jan. 2022)

# of 20%+ Drawdowns	5
Max Drawdown	-52%



Competitive Landscape

Competition

- **IQVIA (IQV ~$38.1B market cap):** Because of Veeva's sheer mass and variety of products, there are no true competitors, but IQVIA offers the closest competition. IQVIA is an American multinational company that serves health information technology and clinical research. The company focuses on appealing to small and mid-sized companies with a cheaper subscription price tag than Veeva. It offers a CRM application built on the Salesforce Platform that rivals Veeva's own Veeva CRM application. However, Veeva Vault still offers a larger range and more integrated products than IQVIA.
- **Definitive Health (DH ~$1.7B market cap):** Definitive Healthcare is a healthcare technology company that provides intelligence on the healthcare provider market. The company delivers data, insights, and analytics on the healthcare market to help companies accelerate their go-to-market efforts. Definitive competes with Veeva's OpenData, Link, Crossix, and Data Cloud branches but is not in competition with its other business segments.
- **Oracle (ORCL ~$220.4B market cap):** Oracle, specifically Oracle Cloud Infrastructure (OCI), is a competitor to Veeva's VeevaVault application. Oracle Cloud offers customers cloud computing services such as servers, storage, and network applications through a global network of OCI managed data centers. The company allows these services to be provisioned on demand over the internet. OCI does not match the unique capabilities of VeevaVault's products.

In 2016, at the beginning of the period, Veeva was written off by VCs over a perceived small market size. At this time, it had one single CRM product for its niche industry, and it was considered that pharma and biotech companies would gravitate towards larger and more established cloud computing companies like Oracle for their needs. Veeva was in the right place at the right time. The legacy on-prem solutions did not match up to Veeva's faster, cheaper, and more technologically advanced applications and quickly, many major pharma and biotech companies switched their operations to Veeva. Its specialization in the industry and care for every one of its customers is what led to an increase in market share and as a result a dominance over the six-year period from 2016 to 2022.

Moat – Counter Positioning, Switching Costs

Counter Positioning (strong): Veeva System's competitive advantage lies in its counter-positioning within the life sciences industry, allowing the company to dominate with its new and innovative approach to CRM. By focusing exclusively on the life sciences vertical, Veeva was able to tailor its software solutions specifically to the unique needs and regulator requirements of pharma and biotech companies. Veeva jumped into the market in 2007 and took on legacy on-premises data center solutions. Veeva quickly chipped away at the market share as they were able to offer a technologically superior product and offer lower costs. Incumbent on-prem providers had no chance of competing with Veeva's innovative solutions without altering their entire business model.

Switching Costs (strong): Veeva also has a strong moat in its high switching costs. Veeva's products are designed to be completely integrated, covering CRM, content management, and data management for life sciences companies. This comprehensive integration creates a strong lock-in effect, making it challenging for pharma companies to switch to alternative software providers without disrupting their entire operational ecosystem. This is further evidenced by Veeva's 121% net revenue retention in 2020, and over 100% since 2016, as existing customers continue to increase their revenue and capital commitment to Veeva's solutions.

Conclusion- What drove shareholder return?

1. **Niche Industry Dominance:** A substantial portion of Veeva's dominant shareholder return, netting a 462% return for shareholders since 2016, can be attributed to the company's control over the niche industry of cloud computing solutions in life sciences. Veeva was founded in 2007 during a time in which cloud computing and CRM were a vastly expanding market. Peter Gassner, the founder, and CEO, noticed that cloud computing was largely non-existent in the life sciences industry, with many pharmaceutical and biotech companies relying on on-premises solutions like Sibel Life Sciences and Cegedim. Focusing exclusively on this industry niche, Veeva developed highly specialized, efficient, and easy-to-use software solutions that addressed the complex challenges and regulatory requirements specific to pharma and biotech companies. Veeva was able to chip away at the market share of legacy on-prem solutions and marketed at around 60% of the price of both these incumbent companies. Veeva's cloud-based solutions were both cheaper and more technologically advanced than the on-prem solutions, leading many large life science companies to make the switch and subscribe to Veeva's superior family of products.

2. **Impact of COVID-19 Pandemic:** As the healthcare industry grappled with the challenges posed by the pandemic, Veeva's specialized software solutions became even more essential. The need for remote collaboration, efficient data management, and streamlined workflows surged at this time, and Veeva's cloud-based products, like CRM and Vault, proved invaluable for pharma and biotech companies adapting to the circumstances. The increased demand for Veeva's software solutions coupled with its ability rapidly innovate and respond to customer needs resulted in accelerated revenue growth and heightened investor confidence in the company. The accelerated use and adoption of Veeva applications during the COVID-19 pandemic contributed to increasing revenue growth and thus drove shareholder return.

3. **Counter Positioning:** Veeva Systems' counter positioning within the life sciences industry has also been a driving force behind shareholder returns from 2016 to 2020. By strategically focusing its efforts on the life sciences sector, Veeva differentiated itself from the legacy CRM software and data management firms by providing a more efficient, cheaper, and all-encompassing product. The cloud-computing industry was booming with Veeva being founded in 2007. Gassner noticed that cloud computing was largely non-existent in the pharmaceutical and biotech space. As a result, Veeva offered its customers a unique product that was better and cheaper than competitors, and quickly took market share. The timing of the creation was ideal and Veeva was able to successfully able to capture numerous large customers which turned into more revenue and thus drove shareholder return. Beyond their counter positioning, Veeva also entered an exclusive contract with the Salesforce1 CRM Platform. The company's agreement with Salesforce both made Veeva the only CRM software client of Salesforce in the life sciences and biotech sector and limited Salesforce from entering any similar arrangements with other entities that provide sales automation applications for the industries.

4. **Switching Costs:** After capturing significant market share in the life sciences CRM and cloud-computing industry through counter-positioning against legacy on-prem companies, Veeva's high switching costs maintained and grew their dominance in the industry, ensuring continued shareholder growth into the future. Veeva offers a complete system of products, from CRM to patient data to digital asset management solutions. Once a company purchases Veeva's yearly subscription, they have access to all products in Veeva's inventory. By creating an all-encompassing software system, Veeva is creating a very high switching cost. Once a company has been fully integrated into Veeva's products, it creates a very high cost of changing to a different service provider due to the time and effort required. Veeva also offers a consulting segment to their business. While this segment makes up only 20% of its revenue in 2022, it has grown over the time period and creates an additional switching cost. Customers can connect with Veeva agents to ensure that the customer is maximizing their use of the product. As a company becomes more engrossed in the Veeva ecosystem, they gain personal relations with the consulting representatives from Veeva who know their business as well as they do and are constantly providing recommendations on how to make more efficient use of the Veeva solutions. These high switching costs have led Veeva to generate over 100% net revenue retention rates over the past 10+ years and drive shareholder return as a result.

Molina Healthcare Inc (MOH)

Company Overview

Molina Healthcare is a prominent healthcare company founded in 1980 by Dr. David Molina. Headquartered in Long Beach, California, the company specializes in providing managed healthcare services to low-income individuals and families. Its core business revolves around managing and administering government-sponsored healthcare programs, such as Medicaid and Medicare. Molina healthcare operates as an intermediary between healthcare providers and the government, offering cost-effective and quality healthcare services to its members. With a strong emphasis on preventive care and disease management, the company has expanded its presence across American states, catering to underserved populations and vulnerable communities.

	1/1/2016	12/31/2022	
Stock Price*	$59.37	$330.22	
Market Cap	$3,329.6	$19,284.9	
Enterprise Value	$808.6	$12,310.9	
Shares Outstanding	56.1	58.4	
Net Debt	-$2,521.0	-$4,974.0	1
Debt/Equity	103.3%	85.4%	
Dividend Yield	N/A	N/A	
P/E	21.6x	19.6x	2
EV/Sales	0.1x	0.4x	
EV/EBITDA	1.6x	10.3x	3
FCF/Share	$19.2	$2.4	4
Gross Margin	12.2%	12.2%	
EBITDA Margin	3.6%	4.4%	
Trailing 3yr Rev CAGR	33.8%	23.8%	5
Trailing 7yr Rev CAGR		12.3%	
Analyst Buy %	50.0%		
Analyst Hold %	50.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Joseph Molina (1996-2017), Joseph Zubretsky (2017-Present), Former CEO of Hanover Insurance Group

CFO: John Molina (2003-2017), Joseph White (2017-2017), Thomas Tran (2017-2020), Mark Keim (2020-Present), Former Executive VP at Hanover Insurance Group

COO: John Kotal (2021-2022), James Woys (2023-Present), Executive VP of Health Plan Services

Analysis

1. Increase in cash position due to improved operating performance and regulatory success decreasing net debt by ~97%
2. 9.3% multiple compression as a result of lowering earnings growth and changes in market sentiment
3. EV/EBITDA multiple expansion as strategic acquisitions grew Molina's market share, EV/Sales remained constant due to higher operating costs that came with more customers
4. 87.5% decrease in FCF per share due to decline in operating profit and increased costs that come with major acquisitions
5. 10% decrease in three-year revenue CAGR as a result of lack of rapid expansion into new states and company maturing out of small cap status

Notable Events

Volatility

- ① Molina successfully spread into Puerto Rico, expanding market and revenue opportunities (Apr. 2015)
- ② Increase in Medicaid enrollment during COVID-19 pandemic due to continuous enrollment provision (2020)
- ④ US vs Molina, settlement to pay $4.6 million to resolve allegations that it violated False Claims Act (Jun. 2022)

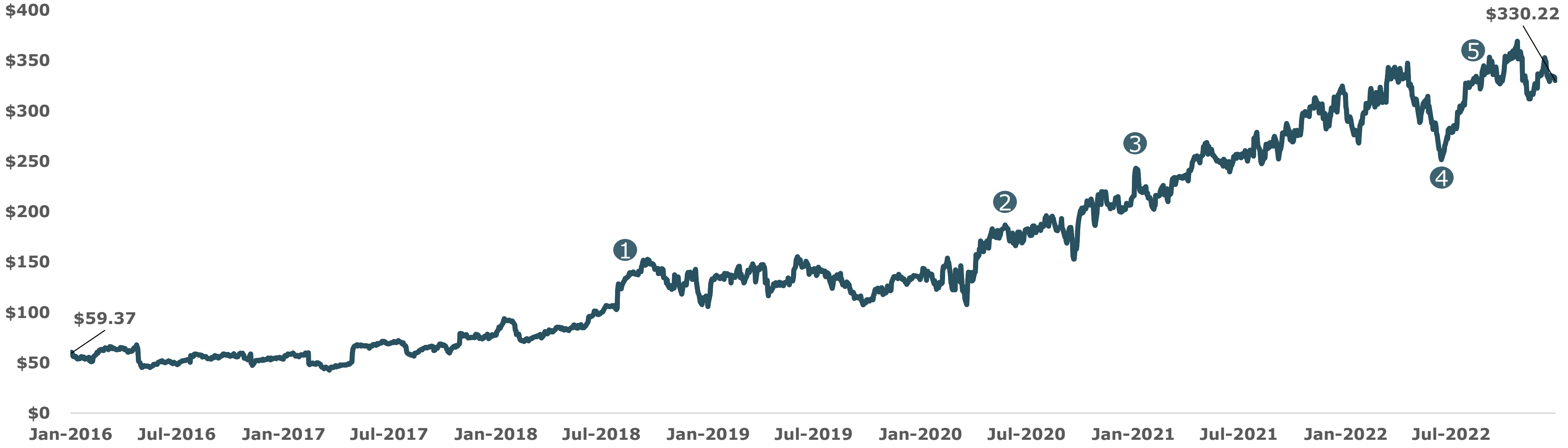
# of 20%+ Drawdowns	9
Max Drawdown	-37%

Mergers and Acquisitions

- Molina acquisition of YouCare Health Plan (Oct. 2019)
- Acquisition of Magellan Complete Care (Apr. 2020)
- Affinity Health Plan acquired by Molina (Sep. 2020)
- ③ Molina acquires Magellan Complete Care from Magellan Health for $820 million (Jan. 2021)
- ⑤ My Choice Wisconsin acquisition (Jul. 2022)

Other Notable Events

- Loss of Medicate contract with the state of Texas (Oct. 2019)
- Molina acquires Passport Health Plan in Kentucky (Sep. 2020)
- Molina acquires Cigna's Medicaid contracts in Texas for $60 million cash (Apr. 2021)
- Molina acquires Affinity Health Plan in New York for $380 million (Sep. 2020)



Competitive Landscape

Competition

- **CVS Health Corporation (CVS ~$122.5B market cap):** CVS is a prominent integrated healthcare company in the US. Its pharmacy service segments offers pharmacy benefit management services to Medicare and Medicaid programs, assisting in managing prescription drug costs and improve medication adherence. The company's health care benefits segment provides health insurance plans, including Medicare Advantage and Medicare Managed Care, offering comprehensive coverage and access to healthcare providers.
- **Centene Corporation (CNC ~$46.4B market cap):** Centene is a leading healthcare enterprise specializing in managed care services. The company focuses on government-sponsored healthcare programs, and Centene has established a significant market presence in the Medicaid and Medicare space. They have established a comprehensive managed care plan for Medicaid beneficiaries, collaborating with state governments to provide healthcare coverage to low-income individuals and families
- **UnitedHealth Group (UNH ~$495.4B market cap):** UnitedHealth Group is a massive healthcare company operating in the US. It has diverse business segments, including UnitedHealthcare and Optum, and offers a comprehensive range of healthcare services. The company, through its Optum segment, offers healthcare services and technology solutions, including pharmacy benefit management, healthcare analytics, and care delivery. UHG also provides Medicare and Medicaid plans for many Americans.

In 2016, Molina was not a well-established player in the healthcare industry. Its market share was under 1% in the overall healthcare industry with larger competitors like UHG and CVS dominating. However, seven years later in 2022 Molina came to be a strong contender and has been successful in taking market share from its competitors. The company was able to do this through a specific and targeted strategy of focusing only on state government-granted contracts and aggressive strategic acquisitions. Molina also invested heavily in expanding its network of healthcare providers and optimizing its care coordination processes, ensuring access to quality healthcare services for its members. In continuously acquiring new companies and with them the rights to a new set of Medicare and Medicare customers, Molina was able to carve out a sizable market share for themselves in the healthcare industry niche of low-income Medicare and Medicaid.

Moat – Cornered Resource

Cornered Resource (weak): Molina's competitive advantage comes in the form of a cornered resource due to a government-granted monopoly. Molina operates primarily in the Medicaid space, making up 87% of their revenue in 2020 and it is estimated that they have an 89% exposure to the Medicaid market. The company is very reliant on the approval of state governments to grant Molina access to operate their healthcare services and collect premiums in each individual state. Molina must renew their contracts with each state they operate in: California and Texas being the two largest throughout the time period. If the state government allows Molina to serve Medicare and Medicaid patients within their state, the company then has exclusive rights to do so for the next three to five years before the contract is up for renewal again. During these three to five years, Molina effectively has a regulated monopoly as they are the only supplier of healthcare to low-income Medicaid patients, yet they do not have pricing power, this is determined on a per-member per-moth basis by the state government which then pays Molina premiums.

Conclusion- What drove shareholder return?

1. **Strategic Acquisitions:** Molina was able to drive shareholder returns of over 450% from 2016 to 2022 through its key strategy of aggressive and strategic acquisitions. The company describes its growth strategy as perusing inorganic growth opportunities that will provide a strategic fit. This acquisition strategy focused on expanding Molina's geographic footprint and diversifying its business lines. By acquiring healthcare plans in new states in the form of companies or the plans themselves, Molina has been able to increase its market reach and gained access to millions of new customer bases and billions more dollars in revenue. The company's strategy of aggressive acquisition also leads to operational synergies and cost efficiencies through the consolidation of admirative functions. Molina's strategic acquisitions, driven by the management's relentless pursuit of market share and access to Medicare and Medicaid patients in new states, have been instrumental in driving shareholder returns over the time period. These acquisitions have facilitated an expansion in the company's customer base, resulting in increased revenue and enhanced shareholder value.

2. **Regulatory Policy:** Most of Molina's revenue comes from premiums on Medicaid paid out to the company by the government on a per-member per-month basis, the number of individuals who qualify for Medicaid is a driving factor behind the company's performance. The political and regulatory environment from 2016 to 2022 has been favorable to Molina, specifically during the pandemic. Medicaid enrollment grew rapidly during the pandemic, growing by 41.5% from February 2020 through December 2022. While policy varies state-to-state, the growth of Medicaid and Medicare has contributed to Molina's success as they were in the right states at the right time (during the pandemic) to capitalize on an increase in Medicaid eligibility. Furthermore, from April 2020 to December 2022, the month-over-month percent change in Medicaid/CHIP enrollment has only increased, with a 29.8% increase in Medicaid enrollment in December 2022. This continued increase has been instrumental in driving shareholder return for Molina. Without an increase in the number of people eligible for Medicaid, their business would have no way of expanding or growing because their total addressable market is only as large as the government makes it.

3. **Cornered Resource:** Molina relies heavily on a cornered resource to perform its business and maintain profit margins. State governments grant three-to-five-year contracts to private providers for the right to perform general healthcare services on Medicare and Medicaid patients. In turn, the state pays these private companies, like Molina, a fixed premium on a per-member per-month basis. The state government completely controls the supply of customers that are vital for Molina. The company also relies on a marketplace segment of the business, which comprises 10% of its revenue on average, in which drugs are bought and sold to patients. The Molina Marketplace is granted by state governments on a one-year contract that must be renewed at expiration. Molina has been very successful in acquiring approval to operate both its marketplace and healthcare practices in many states. In 2016, at the beginning of the period, Molina operated both their marketplace and Medicaid segments in six states. In 2022, at the end of the period, Molina had access to 19 states for both Medicaid, Medicare and the marketplace. This growth in state approval has been imperative for Molina's success as a business as well as its shareholder return. The state government-granted monopoly has created a cornered resource for Molina and allowed the company to expand its customer base, protect its revenue streams, and drive shareholder returns greater than 4x over the past seven years.

Block, Inc (SQ)

Company Overview

Block Inc is an American company that has headquarters in San Francisco. The company operates through two primary segments: Square and Cash App. The Square segment enables businesses to accept card payments, which provides products and services to help its sellers start, run, and grow their businesses. Square is both a software and hardware for small-businesses. The Cash App segment provides an ecosystem of financial products and services to help customers mange their money by allowing the customer spend, transfer P2P, or invest their money through cash app. The company also operates TIDAL, a global platform for musicians and fans to use content, experiences, and features. Block's bitcoin ecosystem includes Spiral and TBD, an independent team focused on contributing to bitcoin's open-source work.

	1/1/2016	12/31/2022	
Stock Price*	$12.16	$62.84	
Market Cap	$4,037.1	$37,582.8	
Enterprise Value	$3,566.4	$36,912.8	
Shares Outstanding	234.5	537.4	1
Net Debt	-$470.7	-$698.5	2
Debt/Equity	0.0%	28.6%	
Dividend Yield	N/A	N/A	
P/E	N/A	N/A	3
EV/Sales	2.8x	2.1x	
EV/EBITDA	N/A	N/A	
FCF/Share	N/A	$0.1	
Gross Margin	29.1%	35.7%	4
EBITDA Margin	N/A	N/A	
Trailing 2yr Rev CAGR	51.5%**	54.9%	
Trailing 7yr Rev CAGR		45.5%	5
Analyst Buy %	50.0%		
Analyst Hold %	50.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

**SQ went public in 2015; three-year CAGR was replaced with two-year CAGR

Management

CEO: Jack Dorsey (2009-Present), Founder and CEO, Former co-founder and CEO of Twitter

CFO: Sarah Friar (2015-2018), Amrita Ahuja (2018-Present), Former CFO of Blizzard Entertainment

COO: N/A

Analysis

1. ~130% dilution in shares outstanding due to massive share issuance to fund various acquisitions, specifically Afterpay for $29 billion
2. 43.4% decrease in net debt due to continued increase in adjusted cash position despite large $1 billion+ debt offerings occurring from FY2020-FY2022
3. Non-existent P/E ratio as a result of the Block not being profitable at FYE2022
4. 7% increase in gross margin due to increasing revenue and a stabilization of costs while maintaining rapid 50+% YoY growth in gross profit
5. Trailing seven-year revenue CAGR significantly higher than industry average illustrating Block's rapid expansion into new markets

Notable Events

BLOCK

Volatility

1. Launch of new payroll product, SQ compared to FAANG stocks by many analysts (Sep. 2018)
2. Increased reliance on Block's products due to impact of COVID-19 pandemic keeping consumers at home (2020-2021)

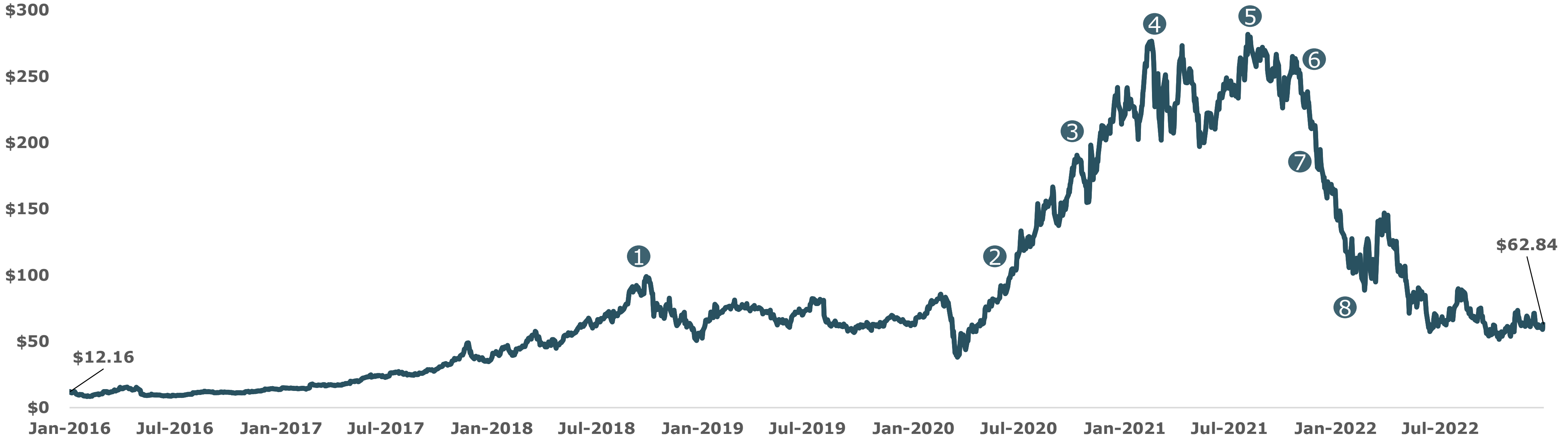
# of 20%+ Drawdowns	8
Max Drawdown	-75%

Mergers and Acquisitions

- Acquisition of Weebly for $365 million in cash and stock (Apr. 2018)
3. Square (now Block) acquisition of Credit Karma Tax for $50 million in cash (Nov. 2020)
4. TIDAL acquired by Block for $297 million in stock and cash (Mar. 2021)
5. Block acquisition of Afterpay for $29 billion in stock (Aug. 2021)
8. Afterpay acquisition process finalized (Jan. 2022)

Other Notable Events

6. EPS miss and diminishing revenue and demand guidance in a post-COVID-19 pandemic world (Nov. 2021)
7. Square investors approve purchase of Afterpay, market considers transaction as a large overpay (Nov. 2021)



Competitive Landscape

Competition

- **PayPal Holdings Inc (PYPL ~$81.2B market cap):** PayPal is a leading financial technology company that operates in the digital payment space. Due to the Block's diverse ecosystem, PayPal is the company's closest competitor. PayPal is a large player in the e-commerce industry, facilitating secure and convent online payments for millions of users worldwide. The platform allows users to link bank accounts and cards. PayPal has expanded its services beyond online payments in recent years, offering solutions like PayPal Checkout, PayPal Credit, and acquiring Venmo, a direct competitor to Cash App, in 2013. The company has followed the boom-and-bust cycle around COVID-19 pandemic-era demand growth and subsequent reduction.
- **Intuit (INTU ~$109.3 market cap):** Intuit is a financial technology company that focuses on developing financial software solutions. The company was founded in 1983 and has become a leader in providing products and services that simplify complex financial processes for individual businesses. Intuit's flagship product, QuickBooks, is a wildly used accounting software that streamlines financial management tasks. Intuit also operates TurboTax and Mint, two fintech software solutions.

At the beginning of the period, Block, then Square, was a small and quickly growing startup that only had one core product: Square. Square is a payment platform aimed at small and medium-sized businesses that allows them to accept credit card payments and use tablets as point-of-sale (POS) systems. Throughout the period, Block was able to out-perform its competitors by rapidly innovating, operating at a net loss for multiple years, and strategically acquiring various businesses to expand its ecosystem of products. Block also completed many strategic acquisitions since 2016. The company's founder, Jack Dorsey, has maintained a very innovative and growth-oriented business model, not constraining the company to its core product of Square. In doing so, Block has expanded its reach into new markets, gaining new customers and in turn more revenue streams allowing the company to out-compete its competitors over the period.

Moat – Counter Positioning, Network Effects

Counter Positioning (strong): Block, formerly Square, had a strong competitive advantage in the company's counter positioning against traditional payment systems and point-of-sale systems. Square, the flagship product of Block and its original business is a payment platform aimed at small and medium businesses that solves the issue of not being able to accept credit card payments. Square was counter-positioned against legacy point-of-sale and payment platforms that did not allow small businesses to accept credit card payments. Additionally, the Cash App segment of Block's business is a strong example of counter-positioning against traditional brick-and-mortar banks. While large banks paid little attention to low-income customers because the cost of acquisition was much too high to generate any meaningful ROI, Cash App has jumped into this space with its software creating a neo-banking system. Consumers on Cash App can track their finances through the app itself, get a debit card, and make purchases without ever stepping foot in a physical bank.

Network Effects (strong): Block has a strong network effect in the company's Cash App segment. Cash App, a mobile payment service that allows users to transfer money to one another using software, has created a strong network effect. The value of the business segment grows as each additional user begins to use the app. Customers on Cash App can only transfer money to another individual using the Cash App platform. Thus, as more people join the app, the value of the software increases. For instance, when someone needs to transfer money to someone else, if one of the parties already has Cash App then the additional party must download and use the app to transfer the money, and as more people join the app more people are forced to join to transfer money P2P.

Conclusion - What drove shareholder return?

1. **Counter Positioning:** The initial success of Square, now Block, can be attributed to the company's unique value proposition. Block's flagship product, Square, is a strong example of counter positioning as the payment system and POS was focused only on small and medium-sized businesses. Square was created when founder and CEO Jack Dorsey's friend was unable to complete a $2,000 sale of his glass faucets and fittings because he could not accept credit cards. Dorsey then founded Square, focusing on a previously underrepresented market in small and medium-sized businesses in their point of sale and payment hardware systems. Legacy payment software and hardware companies were unable to compete because they had only marginally focused on the small and medium-sized business segment before Square's entrance into the market. These larger POS companies focused on enterprise services and solutions for large customers who could write significant checks for SQ's services. Square took the opposite approach, focusing on small businesses and creating affordable hardware, and software to complement the hardware. Cash App also offers an example of counter positioning. Cash App, throughout the period, has transformed into a neo-banking segment of Block's core business, counter-positioned against traditional brick-and-mortar banks. While large banks traditionally had no interest in attempting to acquire low-income customers, because the cost of acquisition to return on investment was too low, Cash App has focused on this segment as they do not need a large customer to generate high ROI. These instances of counter-positioning have been successful in helping Square carve out significant market share and grow from a microcap company to a large-cap in 2022, in turn driving revenue and shareholder return.

2. **Strategic Acquisitions:** Block's 400%+ increase in share price is a result of the company's strategic acquisitions into different markets. Block has acquired 22 companies since its inception, many of which were focused on patent and IP laws as well as improving the flagship Square product. The company has made three vital acquisitions to drive revenue growth and expansion into new markets since 2016: the acquisitions of Weebly, TIDAL, and Afterpay. Weebly unlocked a new side of Block's business by integrating an easy-to-use website builder and web hosting service into its Square offerings, allowing customers to grow their businesses and creating a network between Square's POS and payment system services as well as the customer's website. TIDAL is an unusual acquisition, as it is a music streaming platform that is relatively different from Block's core business services. Finally, Afterpay, a BNPL software, has created a bridge between Square's Cash App business segment and Square, allowing customers to manage their finances in the Cash App application, purchase products on Square terminals, and use Afterpay to pay for goods and services with money from Cash App. These strategic acquisitions and the management team's willingness to acquire new businesses to expand their market reach have driven Block's shareholder return ~4x since FYE2015.

3. **Network Effect:** Block's Cash App has created a strong network effect, driving more users to the platform and creating more value as each additional user joins the app. Cash App operates as a mobile payment service that exclusively allows users to transfer money back and forth through Cash App. As more users join the platform, more users are forced to join to make payments to their collogues, thus generating more revenue for Block and in turn, because the software has high margins, driving shareholder return. Block also has a growing network effect since the company's acquisition of Afterpay, a buy now pay later software. The company has created a weak network effect between its Square and Cash App businesses. Block believes that Afterpay serves as a connection point between the Square and Cash App ecosystems, acting as a shopping destination for consumers and merchants. The integration of the BNPL platform into the Cash App and Square ecosystems has strengthened their connection, expanding access to more sellers and consumers, and driving increased commerce. This integration enables greater search and discovery within Cash App, fostering new and stronger connections between merchants and consumers. Square POS systems only allow for the use of Afterpay as the BNPL service. Between Cash App's strong network effect and the growing network effect created by Block's acquisition of Afterpay, connecting Square and Cash App's ecosystems, the company has been able to grow and generate a 45.5% seven-year revenue CAGR, driving shareholder return over 400% from 2016 to 2022.

UnitedHealth Group (UNH)

UNITEDHEALTH GROUP®

Company Overview

UnitedHealth Group is a diversified health and well-being company that operates in various sectors of the healthcare industry. It is one of the largest healthcare companies in the world, with a multitude of businesses that provide services and products to individuals, employers, and government programs. UnitedHealth operates primarily in two segment: UnitedHealthcare and Optum. UnitedHealthcare offers health insurance coverage to millions of people across the United States, while Optum focuses on healthcare services and technology aimed at improving healthcare delivery and outcomes.

	1/1/2016	12/31/2022	
Stock Price*	$116.46	$530.18	
Market Cap	$110,999.0	$495,373.2	
Enterprise Value	$131,684.0	$538,490.2	
Shares Outstanding	953.1	934.4	1
Net Debt	$19,054.0	$34,542.0	2
Debt/Equity	90.1%	72.3%	2
Dividend Yield	1.7%	1.2%	1
P/E	19.7x	25.0x	3
EV/Sales	0.8x	1.7x	
EV/EBITDA	10.4x	16.9x	
FCF/Share	$8.6	$25.1	4
Gross Margin	21.8%	25.2%	
EBITDA Margin	8.1%	9.8%	
Trailing 3yr Rev CAGR	8.3%	8.8%	
Trailing 7yr Rev CAGR		9.6%	5
Analyst Buy %	84.6%		
Analyst Hold %	15.4%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Stephen Hemsley (2006-2017), David Wichmann (2017-2021), Andrew Witty (2021-Present), Former CEO of Optum Inc.

CFO: John Rex (2016-Present), Former CFO of Optum Inc.

COO: Dan Schumacher (2017-2021), Dirk McMahon (2021-Present), Former COO of Optum Inc.

Analysis

1. Retired 18.5m shares through share repurchase program and paid a consistent dividend throughout the 7-year period to return capital back to shareholders; decreased dividend after increasing debt during COVID-19 pandemic to return to prior capital structure
2. Issued debt throughout period to finance numerous M&A deals; increase D/E ratio during COVID-19 pandemic to increase cash balance; overall decreased D/E ratio through increased profits and retained earnings from more customers and tech advancements in the Optum business
3. Slight P/E multiple expansion; EPS more than tripled throughout the period due to share buybacks and net income increase; UnitedHealth is stable enough to maintain average P/E ratio
4. FCF increase of 191.9%; decrease in cash balance due to large acquisitions
5. Achieved a 9.6% revenue CAGR over the 7-year period; modest growth for a large company due to industry dominance and economies of scale

Notable Events

UNITEDHEALTH GROUP®

Volatility

- ❷ Kamala Harris releases healthcare policy plan proposal "Medicare for All" that fuels private vs. public healthcare debate among presidential candidates (Jul. 2019)
- ❸ COVID-19 pandemic begins; stock dips due to increased testing and treatment; revenues rise again due to depressed demand for healthcare (Mar. 2020)

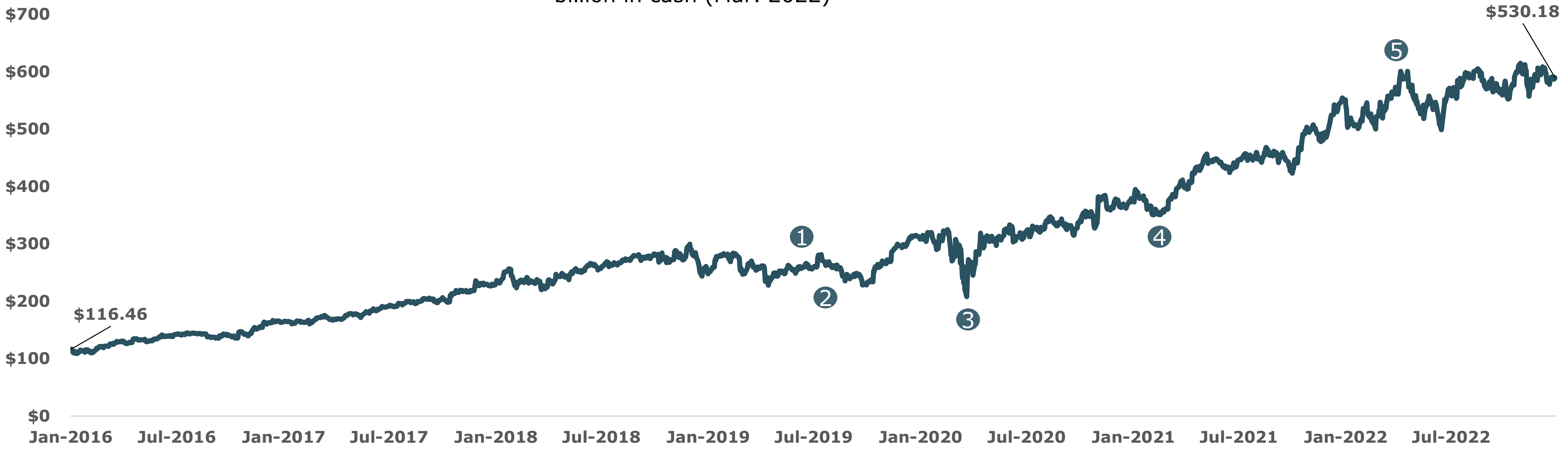
# of 20%+ Drawdowns	3
Max Drawdown	-36%

Mergers and Acquisitions

- ❶ Acquired DaVita Medical Group for $4.3 billion in cash (Jun. 2019)
- ❶ Acquired payment-processing platform Equian for $3.2 billion (Jun. 2019)
- Optum acquired Vivify Health (Oct. 2019)
- ❹ Announced acquisition of Change Healthcare for $8 billion in an all-cash deal before potential changes in political landscape putting healthcare stocks in doubt (Jan. 2021)
- ❺ Announced acquisition of LHC Group for $5.4 billion in cash (Mar. 2022)

Other Notable Events

- UnitedHealth offers advancements to improve care and lower costs in fee-for-service Medicare (May 2018)
- Announces changes in executive leadership (CEO, President, and COO) (Feb. 2021)
- UnitedHealth saw an increase in revenues and stock price following the COVID-19 pandemic due to an increase in demand for telehealth services and deferred care (2020)



Competitive Landscape

UNITEDHEALTH GROUP

Competition

- **Aetna (CVS ~$122.5B market cap):** Aetna, a subsidiary of CVS Health, is also a healthcare company that primarily operates as a health insurance provider. Like UnitedHealth, they offer a variety of both private and government-funded health insurance plans and provide Medicare and Meidcaid plans. While Aetna's costs tend to be lower than UnitedHealth's plans, they have a more limited plan selection in a limited market and have lower Medicare plan Star Ratings on average than UnitedHealth.
- **Cigna (CI ~$101.3B market cap):** Cigna is a major player in the healthcare industry that offers a variety of health insurance plans, including Medicare and Medicaid plans. While Cigna and UnitedHealth are roughly identical in terms of plan quality, UnitedHealth claims a larger network of participating providers and offers Medicare Advantage plans in nearly double the states that Cigna covers.
- **Blue Cross Blue Shield Association (Private):** Blue Cross Blue Shield is a federation of 34 independent and locally operated BSBSA companies across the US. They offer private health insurance coverage to individuals, employers, and government programs, a well as government-funded plans with Medicare and Medicaid. UNH's specific coverage and services vary by regional office; however, they typically offer comprehensive health insurance coverage.

With a 33.5% market share in the healthcare insurance space, UnitedHealth has led the industry in profitability for decades due to its financial power, advancements in technology through Optum, strategic acquisitions, and increasing customer base. Unlike its competitors that operate only within health insurance plans, UnitedHealth's continued expansion has been achieved through both its UnitedHealthcare (insurance) business and Optum, which has seen double-digit growth throughout the seven-year period. Most UnitedHealth's acquisitions have been through Optum and have been successful at synergizing the strengths between UnitedHealthcare and Optum, as well as vertically integrating their growing healthcare services business. Additionally, UnitedHealth's size makes it relatively immune to economic cycles due to the company's wide product line diversity.

Moat – Scale Economies, Network Effect

Scale Economies (strong): By nature of healthcare insurance plans, UnitedHealth benefits from huge economies of scale through their premiums. Through individual, employer, and Medicare/Medicaid plans, UnitedHealth receives a fixed amount for each enrolled member in return for providing healthcare coverage across a wide variety of services. In short, the healthy members are paying for those who seek medical services. Thus, as more members enroll in UnitedHealth's plans, their premiums grow at a faster rate than their medical costs, and they can make higher profits as their customer base increases.

Network Effect (weak): UnitedHealth also benefits from a two-sided network effect regarding their members and physician partners. As of 2022, UnitedHealth partnered with 1.3+ million physicians and care professionals, and 6,500 hospitals nationwide. With a greater number of physician and hospital partnerships, individuals are more inclined to enroll with UnitedHealth as this gives them higher provider accessibility. Additionally, as UnitedHealth accumulates more members, providers are more inclined to partner with UnitedHealth to increase their patient network.

Conclusion- What drove shareholder return?

1. **Vertical Acquisitions:** Over the seven-year period, UnitedHealth entered a spending spree, acquiring a plethora of companies that have been integrated into their Optum business to vertically integrate their insurance, health technology solution, and healthcare services divisions. One of UNH's largest acquisitions, its takeover of LHC, a medical care company that offers services to people in homes, hospices, and other facilities, is a huge step in the company's strategy to decrease hospital spending and push consumers away from hospitals and towards home healthcare. These vertical mergers have allowed UnitedHealth to decrease its medical costs while maintaining fixed premiums. By swallowing numerous smaller companies to cut costs and enter the front-facing healthcare services space, UnitedHealth has expanded its reach and increased revenues.

2. **Technological Advancements:** UnitedHealth's Optum division has made significant technological advancements throughout the 7-year period, and as a result has seen greater revenue growth than its main insurance division, UnitedHealthcare. Optum combines, telehealth, mail-order pharmacies, and payment processing technology to improve healthcare while lowering costs. In recent years, Optum has acquired PatientsLikeMe, a patient social network; Vivify Health, a remote patient monitoring device company; Equian, a payment business; and Change Healthcare, a healthcare data giant. Change, which gives UnitedHealth access to competing insurers' claims data and streamlines the core clinical, administrative, and payment processes for healthcare providers and payers. Optum has seen a 15.2% revenue CAGR from 2016-2022 and made up nearly 40% of UnitedHealth's revenues for FY 2022. Unlike its competitors, UnitedHealth is one of the only insurance giants to build a strong technology arm, which has streamlined many processes to cut costs, increase services and revenues, and ultimately increase shareholder return.

3. **Scale Economies:** UnitedHealth benefits from massive scale economies in the company's premiums business through both private and government-funded insurance plans. UnitedHealth's member enrollment grew at a modest rate on average during the 7-year period (1.6%), totaling nearly 52 million members by the end of 2022, exceeding its other competitors. However, although UNH's member growth rate was on the more conservative side, its premium revenues grew, on average, 10.6% each year. Additionally, UnitedHealth has kept a low medical cost ratio (MCR) relative to its competitors. The Affordable Care Act requires that health insurers in the individual and small group markets maintain an MCR of 80%, and at least 85% in the large group market. UnitedHealth maintained, on average, an MCR of 81.6% through the sheer size of its member base and ability to cut costs through vertical integration. This directly contributed to the company's increase in revenues, which drove shareholder return throughout the period.

4. **Network Effect:** UnitedHealth also employs a two-sided network effect through its members and provider partnerships. They have over 1.3+ million partnerships, which is higher than its competing insurers. Due to UNH's presence across the United States, people are more inclined to choose UnitedHealth as their insurance provider for maximum accessibility. On the other hand, care providers and physicians are more likely to want to partner with UnitedHealth as their member base increases, as this brings in more patients and thus revenue for them. Ultimately, UnitedHealth's ability to establish partnerships nationwide has increased its member enrollment and thus shareholder return.

Bottom 35 Companies

1. Tripadvisor
2. UNDER ARMOUR
3. Sabre
4. GoPro
5. GOODYEAR
6. General Electric
7. ORTHOFIX
8. MOLSON COORS beverage company
9. Foot Locker
10. Invesco
11. KraftHeinz
12. 3D SYSTEMS

13. expedia group
14. NUVASIVE
15. FLUOR
16. Stanley Black & Decker
17. AVANOS
18. MicroStrategy
19. enviri
20. PATTERSON COMPANIES, INC.
21. AZZ
22. DAVE & BUSTER'S
23. gogo
24. Disney

25. Veeco
26. Sensata Technologies
26. OSI SYSTEMS, INC.
28. scansource
29. GRANITE
30. intel
31. blackbaud
32. NCR
33. ACCO BRANDS
34. HeartLand Express
35. yelp

Tripadvisor (TRIP)

Company Overview

Tripadvisor, founded in 2000, is a global travel guidance platform that helps travelers discover where to stay, what to do, and where to eat based on guidance from those who have been there before. The platform has more than 1 billion reviews and opinions of nearly 8 million businesses, making it easy for travelers to find deals on accommodations, book experiences, reserve tables at restaurants, and discover great places nearby. The company operates in 43 markets and 22 languages, and its subsidiaries own and operate a portfolio of travel media brands and businesses, operating under various websites and apps. Over the years, Tripadvisor has evolved to serve travelers, diners, and experience seekers, and continues to innovate in the travel industry.

	1/1/2016	12/31/2022	
Stock Price*	$82.98	$20.20	
Market Cap	$11,964.6	$2,527.7	
Enterprise Value	$11,467.6	$2,435.7	
Shares Outstanding	131.4	127.8	1
Net Debt	-$497.0	-$92.0	2
Debt/Equity	14.2%	107.9%	
Dividend Yield	N/A	N/A	
P/E	63.0x	237.0x	3
EV/Sales	7.7x	1.6x	
EV/EBITDA	35.2x	12.4x	
FCF/Share	$1.9	$2.5	
Gross Margin	96.1%	91.5%	
EBITDA Margin	21.8%	13.2%	
Trailing 3yr Rev CAGR	25.0%	-1.5%	4
Trailing 7yr Rev CAGR		0.0%	5
Analyst Buy %	15.4%		
Analyst Hold %	80.8%		
Analyst Sell %	3.8%		

*Numbers in millions excluding stock price

Management

CEO: Steve Kaufer (2000-2022), Matt Goldberg (2022-Present), Former VP of Global Operations At Trade Desk

CFO: Ernst Teunissen (2015-2022), Mike Noonan (2022-Present), Former CFO of Noom Inc.

COO: Kristen Dalton (2023-Present), Former VP of FP&A of TripAdvisor Inc.

Analysis

1. 2.7% decrease in shares outstanding as Tripadvisor has bought back shares to attempt to boost EPS
2. Significant 81.5% increase in net debt due to long-term debt issuance in 2016
3. Increased 276% despite a large ~75% drawdown due to downwards trend in earnings
4. 3-year revenue CAGR decrease due to declining CPCs, heightened competition, and decrease in travel during COVID-19 pandemic
5. 7-year revenue CAGR stayed flat at 0% over the time period while key metrics like gross margin and EBITDA margin decreased

Back to Bottom 35

Notable Events

Notable Events

1. • **Shift to Cell Phones (May 2019):** TripAdvisor has struggled to adapt its business model and user experience from desktop to mobile platforms. In its 2019 annual report, the company cited lower monetization rates, changing consumer behavior, and intense competition as ongoing challenges. Competitors like Airbnb and even VRBO, who have established mobile apps, outcompeted TRIP in this space and the company found difficulty making the transition.

2. • **Post-COVID-19 Pandemic Travel Boom (Mar. 2021):** The company saw a significant increase in domestic travel searches, with domestic travel representing nearly 80% of searches during the quarter, compared to approximately 50% in pre-pandemic times. TripAdvisor's revenue recovery also broadened, with Q2 revenue reaching 56% of 2019's comparable period, a 23% improvement from Q1 2021. Additionally, TripAdvisor launched new features like "Travel Safe" tools, which enabled hotel and restaurant partners to post important health and safety information, helping to restore consumer confidence in their own health and safety.

3. • **Removal of Fake Reviews (Oct. 2021):** According to Tripadvisor's latest transparency report released on October 27, 2021, the travel company removed or rejected nearly 1 million fake reviews from its platform in 2020. This represents 3.6% of the total 26 million reviews submitted that year. Tripadvisor said this crackdown on fraudulent reviews is part of its ongoing efforts to protect users.

# of 20%+ Drawdowns	2
Max Drawdown	-81%

Competitive Landscape

Competition

- **Expedia Group (EXPE ~$13.7B market cap):** Expedia Group is an online travel services company, providing a broad range of travel shopping and reservation services. Its portfolio includes online travel brands such as Expedia.com, Hotels.com, Orbitz, and Trivago, offering bookings for flights, hotels, car rentals, cruises, and vacation packages. The company's business model is primarily transaction-based, generating revenue through agency fees, merchant revenues, and advertising from its platform services.
- **Booking Holdings (BKNG ~$78.2B market cap):** Booking Holdings Inc. is a leading provider of online travel and related services to consumers and local partners across more than 220 countries and territories worldwide. The company's portfolio includes some of the most recognized brands in the industry, such as Booking.com, Priceline, Agoda, Kayak, Rentalcars.com, and OpenTable. Through these platforms, Booking Holdings offers a broad array of travel services including accommodation reservations, car rentals, flight bookings, restaurant reservations, and various other travel-related services.
- **Airbnb (ABNB ~$54.2B market cap):** Airbnb, Inc. is a global online marketplace that connects people looking to rent their homes with people who are looking for accommodations. The platform offers a wide range of unique travel experiences in more than 220 countries and territories around the world, from single rooms to entire homes, along with Experiences that are handcrafted activities designed and led by local experts.

In the early 2010s, Tripadvisor was the undisputed leader in online hotel reviews and research, dominating organic search results, but by 2022 Expedia, Booking.com, and Airbnb had closed the gap with their own verified reviews. Whereas Tripadvisor once touted a strong online advertising business with hotel pop-under ads, this revenue stream faced growing pressure from Google Travel and its direct booking push. Tripadvisor failed to fully capitalize on the rise of alternative accommodations, missing the boat in short-term rentals as Airbnb experienced massive growth. Pivots into metasearch and experiences weren't enough to stem Tripadvisor's decline as competitors innovated in mobile and advertising. In the end, Tripadvisor lost the competitive edge it once enjoyed as rival booking sites and Google outmaneuvered it.

Perceived Moat (2016) – Network Economies

Rationale: TripAdvisor's vast user-generated content created a network effect, attracting more users and contributors. This massive breadth of travel planning content gave TripAdvisor a competitive advantage in 2016, driving more traffic and loyalty. As each additional user joined the platform, the platform became more valuable as the company was able to generate more advertisement revenue, its primary revenue stream, and look more attractive to hotels to advertise on the website.

Reason for Erosion of Moat: As Google and travel booking sites developed their own verified guest reviews, they undercut the uniqueness of TripAdvisor's user-generated content. With comparable reviews available elsewhere, travelers began relying less on TripAdvisor's network wisdom. This deteriorating network effect meant new users and contributors were less compelled to engage with TripAdvisor, slowly eroding the competitive moat it had enjoyed.

Conclusion - What drove shareholder underperformance?

1. **Increased Competition:** Increased competition significantly contributed to TripAdvisor's shareholder underperformance. Major players like Google, Booking, and Airbnb, who had significantly greater financial, technical, marketing, and other resources, emerged as formidable competitors. These competitors were able to leverage other aspects of their businesses to compete more effectively against TripAdvisor. For instance, Google entered various aspects of the online travel market like hotel search and reviews, rapidly growing its market share with its dominance in search and vast ad network. Meanwhile, Airbnb expanded its alternative accommodation listings exponentially, and Expedia aggregated enormous hotel room inventory. This heightened competition led to higher traffic acquisition costs and reduced margins for TripAdvisor, resulting in a loss of market share and reduced customer traffic to its websites. With users finding comparable travel information and booking capabilities on rival sites, TripAdvisor struggled to differentiate itself. As a result, TripAdvisor's revenue growth stalled and profitability suffered, leading to poor returns for its shareholders compared to these digital travel competitors during the 2016-2022 period.

2. **Dependence on Ad Revenue:** Tripadvisor's dependence on advertising revenue was a significant factor contributing to its poor stock performance between 2016-2022. A large portion of Tripadvisor's revenue came from hotel pop-under ads in its early days. But as Google entered the travel space, it drew away a major share of online travel advertising spending. With Google capturing much of the digital ad market, and competitors like Booking.com and Expedia also reducing their ad spend on Tripadvisor, a major revenue stream was constrained. Tripadvisor attempted to pivot into areas like metasearch and experiences but was unable to fully offset the hits from declining ad revenue. With online advertising such an integral part of its business model, Tripadvisor struggled financially as this revenue shrunk. Its share price plummeted as a result. While diversification efforts continued, Tripadvisor was unable to find alternative money-makers to pick up the slack from the dwindling ad business, which was a primary factor in its poor shareholder returns over 2016-2022.

3. **Lack of Innovation:** TripAdvisor's failure to innovate effectively also played a significant role in its shareholder underperformance. As the travel industry and consumer preferences evolved rapidly, TripAdvisor struggled to keep pace with the technological developments and emerging trends. The emergence of alternative devices, such as cell phones and tablets, posed significant challenges for TripAdvisor. Despite efforts to adapt, the company was unable to develop technologies and systems that operated seamlessly across multiple devices in an appealing way for users. This inability to innovate and provide products and features that matched consumer demands hindered TripAdvisor's competitiveness. As a result, the company's business and financial performance suffered, leading to poor returns for shareholders.

Under Armour (UAA)

UNDER ARMOUR

Company Overview

Under Armour (UA), founded in 1996 by Kevin Plank, is a prominent American sports apparel and accessories company specializing in athletic performance apparel, footwear, and accessories. The company's focus on innovative products that enhance athletic performance has allowed it to compete with industry giants like Nike and Adidas. With a strong presence in retail stores, e-commerce platforms, and strategic partnerships, Under Armour has established itself as a leading brand in the sports apparel industry. Their product offerings include moisture-wicking and compression garments, as well as athletic footwear such as basketball shoes, football cleats, and running shoes.

	1/1/2016	12/31/2022	
Stock Price*	$41.15	$10.16	
Market Cap	$17,191.9	$4,289.3	
Enterprise Value	$17,728.1	$4,958.9	
Shares Outstanding**	431.9	448.8	1
Net Debt	$536.2	$669.6	2
Debt/Equity	39.9%	82.9%	
Dividend Yield	N/A	N/A	3
P/E	76.5x	15.6x	4
EV/Sales	4.5x	0.9x	
EV/EBITDA	34.X	10.2x	
FCF/Share	-$0.7	-$0.8	
Gross Margin	48.0%	44.2%	
EBITDA Margin	12.9%	8.4%	
Trailing 3yr Rev CAGR	29.3%	3.9%	5
Trailing 7yr Rev CAGR		5.9%	
Analyst Buy %	54.3%		
Analyst Hold %	45.7%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price
**Class A, B, and C combined shares

Management

CEO: Kevin Plank (1996-2020), founder, Patrick Frisk (2020-2022), Stephanie Linnartz (2022-Present), Former president of Marriott International

CFO: Brad Dickerson (2008-2017), David Bergman (2017-Present), Former senior VP of corporate finance

COO: Patrick Frisk (2016-2020), Colin Browne (2020-Present), Former chief supply chain officer

Analysis

1. Under Armour spun off Class C shares under new ticker UA in 2016 to create share classes with different voting rights
2. ~102% increase in debt and 49% increase in operating lease liabilities drove net debt up ~25%
3. One-time dividend of $59 million paid in June 2016 to shareholders of class C stock in relation to litigation related to the creation of class C stock
4. UAA was valued as a high-growth company, boasting a 76.5x P/E ratio in 2016; by 2022 growth prospects had diminished and the company’s multiple compressed by 79.6%
5. 86.7% decrease in trailing three-year revenue CAGR as UAA lost significant market share, customers, and products became out-of-fashion in the competitive consumer apparel industry

Notable Events

UNDER ARMOUR

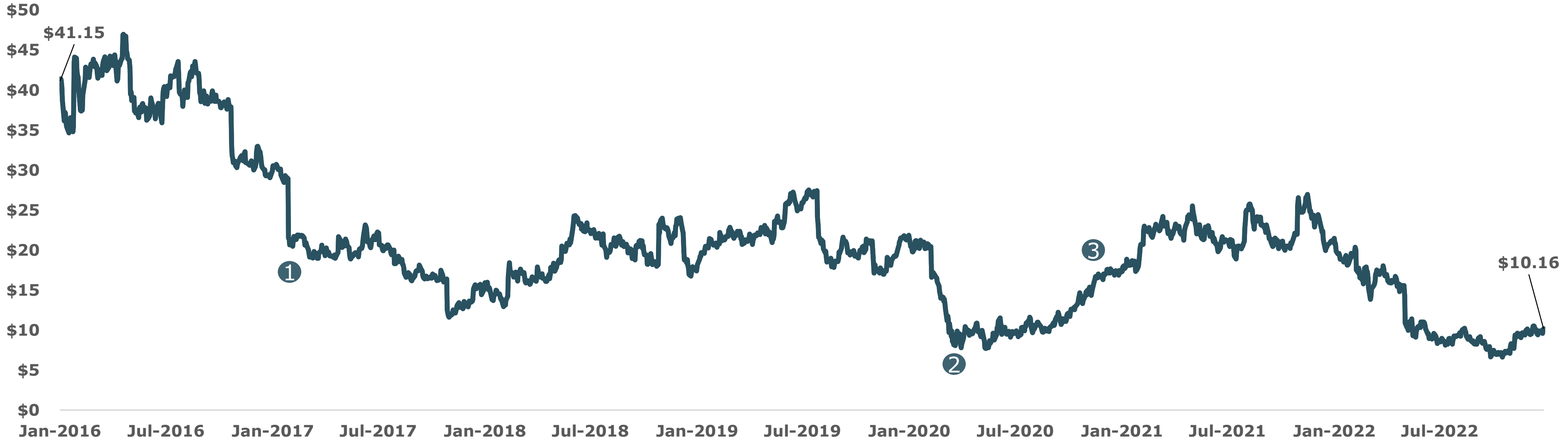
Notable Events

❶ • **Erosion of Market Share (Feb. 2017):** Under Armour relied on its North American market for over 80% of all sales in 2017. The company had issued a 20% revenue growth target; it met expectations for 26 straight quarters until January 2017 when UAA's revenue growth slowed to 5.7% abruptly. This slowdown in revenue growth was indicative a loss in market share, as UA's once popular Curry brand lost out to lower-priced alternatives made by Nike or Adidas.

❷ • **Deal Failures (Mar. 2020):** UA's image was tarnished in 2018 when a deal to become the MLB's on-field jersey sponsor fell through. UA won these rights in 2016 yet the company's financial issues, declining share price, and underwhelming revenue growth forced it to back-out of the deal. During the pandemic, UA began asking athletes to renegotiate their contracts to cut-costs and ensure the business did not become insolvent, tarnishing the company's brand name.

❸ • **Inability to Pivot (Nov. 2020):** In 2015, UA acquired MyFitnessPal in a significant step to pivot the company into a tech company. This acquisition and management's discussion of the future business drove the share price and P/E multiple to represent a tech company. However, while the rest of the fitness industry shifted focus towards athleisure clothing, UA's software tech segment saw issues like high customer acquisition costs and lackluster revenue numbers, and the company finally sold off MyFitnessPal in November of 2020 for $130 million less than it paid just five years prior.

# of 20%+ Drawdowns	2
Max Drawdown	-86%



Competitive Landscape

UNDER ARMOUR

Competition

- **Nike (NIKE ~$183.1B market cap):** Nike is a global leader in sports apparel and footwear, known for its iconic products and strong brand recognition. Founded in 1964, the company operates on a business model focused on innovation, design excellence, and effective marketing strategies. Nike's success lies in its ability to cater to a wide range of sports and fitness activities, offering athletic footwear, apparel, equipment, and accessories.
- **Lululemon Athletica (LULU ~$40.9B market cap):** Lululemon Athletica is a leading athletic apparel brand that specializes in yoga-inspired “athleisure”. Founded in 1998, the company has experienced significant growth and garnered a loyal customer base. Lululemon's business model focuses on designing high-quality, performance-driven products that resonate with health-conscious consumers.
- **Adidas (ADS.DE ~$27.1B market cap):** Adidas is a global leader in the sports apparel and footwear industry. Founded in 1949, the company has built a strong brand reputation and a diverse product portfolio. Adidas operates on a business model that emphasizes innovation, design, and marketing, allowing it to stay at the forefront of athletic fashion trends. The company focuses on performance-driven products and strategic partnerships with renowned athletes and sports teams

Under Armour, at the beginning of the period, was a successful company touted as the “next Nike” in the athletic wear industry. The company’s initial success came from a strong brand image due to initial success in UA’s apparel segment. The company had developed an innovative sweat wicking technology that became very popular among athletes as the go-to product. Plank, the founder and CEO until 2020, decided not to patent this technology as he was confident no one could create a superior product. Unsurprisingly, companies like Nike and Lululemon developed the same technology and began to eat away at UA’s market share. UA doubled-down, focusing only on its shoe line and athletic wear. During this time period, consumer preferences shifted towards “athleisure” with companies like Lululemon gaining popularity, and all UA’s competitors followed this trend, leaving the company behind. Through a series of earnings misses and contract failures, Under Armour’s brand image was depleted and the share price drew down over 70%.

Perceived Moat (2016) – Branding

Rationale: In 2016 Under Armour was a very hot brand, known for its high-quality sporting apparel. Revenue was growing at ~30%, the company was expanding into foreign markets, and customers relied on Under Armour for its superior sweat wicking apparel quality. The company was touted as the “next Nike” due to its successful founder and CEO focusing on products that appeal to athletes, and not on products that focus on generating the most revenue. The company also signed a massive deal with popular athlete Steph Curry in 2015, creating a shoe brand around his name and image that generated $160 million in revenue in 2016 alone. In 2016, Curry’s partnership with Under Armour was estimated to potentially be worth $14 billion, according to a Morgan Stanley analyst.

Reason for Erosion of Moat: Under Armour’s once strong brand image depleted throughout the period in tandem with the company’s share price. UA began facing intensive competition as competitors developed their alternatives to Under Armour’s once proprietary sweat wicking technology. The company also experienced product missteps, such as the underperformance of the Curry 3 shoe and the increased price point of the Curry sneaker line, weakening demand for these products. Additionally, UA made a short-lived attempt to expand into the tech sector through its connected fitness segment. This proved to be a costly mistake as the brand that was once seen as a fitness-clothes pure-play attempted to expand into unknown sectors, and the brand lost much of its reputation.

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Conclusion - What drove shareholder underperformance?

UNDER ARMOUR

1. **Shifting Consumer Preferences:** Under Armour was slow to adapt as consumer preferences shifted from performance to athleisure gear throughout the time period. Brands like Nike, Adidas, and Lululemon capitalized on the athleisure trend with casual athletic clothing that could be worn all day, not just for sports. Stylish yoga pants, joggers, hoodies and sneakers became wildly popular. Under Armour's core products like compression tops and shoes for hardcore training did not have the same lifestyle appeal. While Nike and Adidas expanded casually-styled clothing lines and partnered with influencers/celebrities, Under Armour stuck to performance marketing of star athletes. Under Armour also relied heavily on its men's business while competitors targeted women's athleisure earlier on. By the time Under Armour realized it needed to change course, Nike and others had already captured significant mind and market share in the athleisure space. This major shift in consumer preferences was a key reason Under Armour's sales slowed and its stock price suffered compared to competitors that adapted faster to capitalize on athleisure demand. This lackluster sales contributed to Under Armour’s 86% decrease in its trailing three-year revenue CAGR from 2016 to 2022, contributing to the large ~75% drawdown in share price.

2. **Depreciation of Brand Value:** Under Armour's brand image and perception deteriorated significantly from 2016-2022, which negatively impacted its stock performance. During its high growth years, Under Armour had built a brand image based on performance, innovation and an underdog mentality. However, as the brand expanded into lifestyle clothing and more mainstream distribution channels, it lost some of its core identity and reputation. At the same time, consumers started viewing Under Armour as more of a fashion brand but perceived its styling as not as cool, hip or aspirational as Nike and Adidas in the athleisure space. Under Armour also suffered reputation blows around corporate culture issues and executive turnover, which further damaged its brand image. As Under Armour's brand equity declined relative to competitors, it became less able to command premium pricing, overall demand softened, and financial results stalled. For instance, Under Armour reported 22% revenue growth in 2016 reaching $4.8 billion, but growth slowed to roughly -4% by 2020 and 2021 with revenues around $5 billion. Compare this to Nike's steady high single digit growth throughout the 2016-2022 period, with revenues reaching $44.5 billion in 2022. The weakened brand image and stalled revenue growth made the story around Under Armour less compelling to investors, contributing to its stock underperformance during those years compared to stronger consumer brand stocks. Rebuilding brand equity remains an imperative for Under Armour’s new management team.

3. **Contract Failures & Controversy:** A final reason to explain Under Armour’s -75.3% shareholder return from 2016 to 2022 is the company’s large-scale and widely-reported contract failures and controversy. In 2016, near the height of Under Armour’s success, the company secured a deal for Major League Baseball (MLB)’s on-field apparel rights. This deal was monumental for Under Armor and signified the success of the company and its valuable brand image. However, as UA’s revenue growth began to slow and the company’s tech segment failed to show future value, Under Armour was forced to abandoned the MLB deal in 2018, and the company’s biggest rival, Nike, got the deal instead. This example is indicative of Under Armor’s management team failing to derive shareholder value. The company also faced allegations of its clothing being abnormally flammable in 2018 after a video went viral on Facebook and other social medias. This marked a large blow for UA’s reputation, but most importantly for its revenue. The following quarter, revenue growth decreased, and the company has struggled to recover since.

Sabre Corporation (SABR)

Company Overview

Sabre Corporation is a software and technology company that powers the global travel industry, founded in December 2006. The company partners with airlines, hoteliers, agencies, and other travel partners to retail, distribute, and fulfill travel. Sabre offers travel suppliers an extensive suite of software solutions, ranging from airline and hotel reservations systems to high-value marketing and operations solutions.

	1/1/2016	12/31/2022	
Stock Price*	$27.44	$7.04	1
Market Cap	$7,615.9	$2,029.3	
Enterprise Value	$10,655.9	$6,400.7	
Shares Outstanding	277.6	328.4	
Net Debt	$3,038.5	$4,030.9	
Debt/Equity	693.9%	N/A	
Dividend Yield	1.3%	N/A	2
P/E	35.0x	N/A	3
EV/Sales	3.6x	2.5x	
EV/EBITDA	13.1x	N/A	
FCF/Share	$0.9	-$1.1	4
Gross Margin	33.5%	57.3%	
EBITDA Margin	27.4%	N/A	
Trailing 3yr Rev CAGR	-0.2%	-13.9%	
Trailing 7yr Rev CAGR		-4.1%	
Analyst Buy %	91.7%		
Analyst Hold %	8.3%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Tom Klein (2013-2016), Sean Menke (2016-2023), Kurt Ekert (2023-Present), Former CEO of Carlson Wagonlit Travel Inc.

CFO: Rick Simonson (2013-2018), Doug Barnett (2018-2022), Mike Randolfi (2022-Present), Former CFO of Adtalem Global Education

COO: N/A

Analysis

1. Stock price declined 74% as Sabre was negatively impacted by COVID-19 Pandemic and clung to legacy airline IT systems while competitors capitalized on modern architecture, causing loss of relevance
2. Suspended its dividends and share repurchase program after March 30, 2020, due to the financial impact of the COVID-19 pandemic
3. Sabre Corp's earnings turned negative primarily due to a significant reduction in revenue caused by the COVID-19 pandemic's impact on the travel industry, with net bookings becoming negative as cancellations exceeded new bookings, despite cost-saving measures
4. FCF/Share dropped due to margin compression from poor execution on new technology platforms like the botched SabreSonic rollout and pandemic performance

Notable Events

Sabre

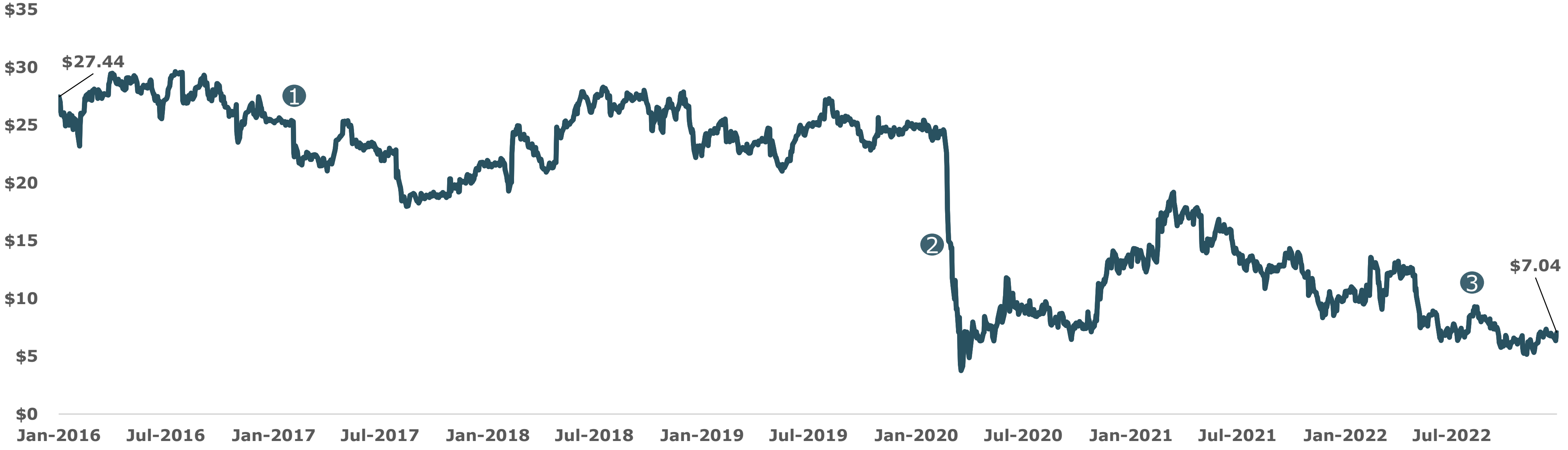
Notable Events

❶ • **Decrease in Q2 2017 Net Income (Aug. 2017):** Sabre Corporation's Q2 2017 financial performance showed a revenue increase of 6.6% to $900.7 million, but a net loss of $6.5 million, largely due to an impairment related to the Airline Solutions Air Berlin contract and costs from a business alignment program. The company's profitability outlook for 2017 was lower than expected, driven by operational challenges including the suspension of the SabreSonic reservation system implementation for Air Berlin, increased security and technology costs, and accounting adjustments due to Alitalia's bankruptcy proceedings.

❷ • **COVID-19 Pandemic (Feb. 2020):** The pandemic led to unprecedented reductions in travel bookings, significantly impacting Sabre Corp's business, with gross bookings declining significantly in the first quarter of 2020. Sabre continued to experience significant adverse impacts from the pandemic into the first half of 2021, with expectations of these effects persisting for the duration of the pandemic and the subsequent recovery period.

❸ • **Ongoing Pandemic Problems (Aug. 2022):** Sabre Corp's recovery from the pandemic continues to face significant challenges, as reflected in its August metrics and a nearly 10% drop in stock value. Key indicators such as gross air bookings and net air bookings were only around 55% and 56% of their August 2019 levels, respectively, while the number of passengers boarded was approximately 86% of pre-pandemic levels.

# of 20%+ Drawdowns	2
Max Drawdown	-80.7%



Competitive Landscape

Competition

- **Booking Holdings (BKNG ~$78.2B market cap):** Booking Holdings Inc. is a leading provider of online travel and related services to consumers and local partners across more than 220 countries and territories worldwide. The company's portfolio includes some of the most recognized brands in the industry, such as Booking.com, Priceline, Agoda, Kayak, Rentalcars.com, and OpenTable. Through these platforms, Booking Holdings offers a broad array of travel services including accommodation reservations, car rentals, flight bookings, restaurant reservations, and various other travel-related services.
- **Travelport (Private):** Travelport is a leading technology company serving the global travel industry with pioneering B2B platform providing distribution, technology, payment, and other solutions. Its business model is centered around connecting travel providers, such as airlines and hotels, with travel agencies worldwide, enabling them to search, share, buy and sell travel.
- **Traxo (Private):** Traxo is a comprehensive data aggregation and itinerary management company serving the travel industry. Its business model revolves around capturing and organizing travel data from various sources, providing corporations with a unified view of their travel activity. Traxo's services enhance travel management efficiency, compliance, duty of care responsibilities, and savings for businesses worldwide.

Before the COVID-19 pandemic, Sabre Corp demonstrated strong performance from 2016 to 2019. In 2019, the company's revenue growth was in the mid to high single digits, with a net income growth of around 30%. However, the pandemic in 2020 led to a drastic decline in Sabre's financial performance, with the full-year revenue dropping by approximately 67% compared to 2019. By the first quarter of 2022, Sabre's revenue had recovered to $585 million, representing a growth of approximately 78% compared to the full-year revenue of 2020. Despite this recovery, the company's revenue in 2022 is still significantly lower than its pre-pandemic levels.

Perceived Moat (2016) – Switching Costs

Rationale: Sabre Corporation's competitive advantage is underpinned by substantial switching costs, a key strategic power. The company's solutions are deeply integrated into the operational infrastructure of its clients, spanning airlines, hotels, and travel agencies. Transitioning to an alternative provider would necessitate considerable financial outlay and operational disruption, potentially impacting revenue streams during the transition period. Moreover, Sabre's long-term contractual agreements with its clients further reinforce these switching costs.

Reason for Erosion of Moat: Sabre Corp's moat has eroded due to a combination of factors. The company struggled to retain key airline partners, such as Southwest Airlines, which reduced the switching costs for their customers. Sabre Corp also faced delays in the rollout of its SabreSonic system, which could have impacted customer confidence and loyalty. Furthermore, the company experienced significant outages, highlighting reliability issues with its legacy IT systems. These outages caused significant problems for its customers, potentially prompting them to consider alternatives and thus reducing the switching costs.

Back to Bottom 35

Conclusion - What drove shareholder underperformance?

1. **Overdependence on Legacy Airline Distribution Model**: Sabre's business model has been heavily reliant on North American airlines, which has limited its global diversification compared to competitors like Amadeus. This overdependence on a specific geographic market and a legacy distribution model has potentially restricted Sabre's growth opportunities and made it more vulnerable to market changes in North America. Furthermore, this regional concentration might have hindered Sabre from fully capitalizing on the growth opportunities in emerging markets, where travel and tourism sectors have been expanding rapidly. In contrast, competitors with a more globally diversified customer base are better positioned to mitigate regional market risks and capture global growth opportunities.

2. **Slower Adoption of New Distribution Technologies**: Sabre has been slower to adapt to new technological and marketplace developments, such as the International Air Transport Association's (IATA) new distribution capability (NDC). The NDC is a key industry standard aimed at modernizing airline distribution and enabling improved retailing capabilities. Sabre's slower adoption of such technologies could have put it at a competitive disadvantage, as these technologies are becoming increasingly important in the travel industry. Competitors who are quicker to adopt and implement these new technologies are likely to be better positioned to meet the evolving needs of airlines and travelers, potentially gaining market share at Sabre's expense.

3. **Failures in Technology Delivery and Reliability**: Sabre has experienced significant outages in the past, which affected both its Travel Network business and its Airline Solutions business and caused significant problems for its customers. These outages highlight reliability issues with Sabre's legacy IT systems. In an industry where reliability and uptime are critical, these failures can damage Sabre's reputation, lead to customer loss, and result in financial penalties. Moreover, these reliability issues could make potential customers hesitant to adopt Sabre's solutions, impacting its ability to win new business. Competitors with more reliable systems could use this as a selling point to win customers from Sabre.

4. **COVID-19 Pandemic**: The COVID-19 pandemic has had a significant negative impact on Sabre Corp. The global health crisis and the subsequent travel restrictions imposed by governments worldwide have led to an unprecedented decline in transaction volumes in the global travel industry, severely affecting Sabre's business. The company's financial results for 2020 were significantly impacted, with a material decline in total revenues, net income, cash flow from operations, and Adjusted EBITDA compared to 2019. Sabre had to implement several cost-saving measures, including a temporary reduction in base compensation pay, suspension of its 401(k)-match program, offering voluntary unpaid time off, severance, and early retirement programs, and reducing third-party contracting, vendor costs, and other discretionary spending.

GoPro (GPRO)

Company Overview

GoPro, founded in 2002, is an American technology company specializing in cutting-edge action cameras and related accessories. Renowned for their durability and high-definition capabilities, GoPro cameras have revolutionized the way people capture and share their adventures, particularly in extreme sports and outdoor activities. GoPro's business model encompasses hardware sales, software and services, content licensing, and brand partnerships. GoPro came to popularity around 2006 with its innovative HERO cameras, the first waterproof action cameras. Overtime, GoPro’s once innovative cameras have become antiquated and the company’s revenue growth has slowed.

	1/1/2016	12/31/2022	
Stock Price*	$18.69	$4.98	
Market Cap	$2,570.3	$776.5	
Enterprise Value	$2,096.3	$593.2	
Shares Outstanding	101.7	129.7	1
Net Debt	-$474.1	-$183.3	2
Debt/Equity	0.0%	30.1%	
Dividend Yield	N/A	N/A	
P/E	81.3x	22.1x	3
EV/Sales	1.3x	0.5x	
EV/EBITDA	25.0x	10.8x	
FCF/Share	$0.8	$0.1	
Gross Margin	29.4%	32.5%	
EBITDA Margin	5.2%	5.0%	
Trailing 3yr Rev CAGR	45.5%	-2.9%	4
Trailing 7yr Rev CAGR		-5.5%	5
Analyst Buy %	50.0%		
Analyst Hold %	40.0%		
Analyst Sell %	10.0%		

*Numbers in millions excluding stock price

Management

CEO: Nicholas Woodman (2002-Present), Founder and CEO of GoPro

CFO: Brian McGee (2016-Present), Former VP of finance at the company

COO: CJ Prober (2017-2018), Brian McGee (2020-Present)

Analysis

1. 27.5% increase in shares outstanding, GoPro only bought back shares once throughout the period in 2022
2. $125 million debt repayment in 2022 and ~20% decrease in operating lease liabilities resulted in net debt decreasing by 61.3%
3. 73% compression of P/E multiple; GoPro was considered a high-growth stock at the beginning of the period, and due to decreasing revenue, P/E ratio has become more modest by 2022
4. Trailing 3-year revenue CAGR became negative as the company’s market was outcompeted, and its once innovative and revolutionary product became antiquated
5. Despite 45.5% 3-year revenue CAGR in 2016, the largescale decline in revenue growth has driven the company into having a negative revenue CAGR throughout the period

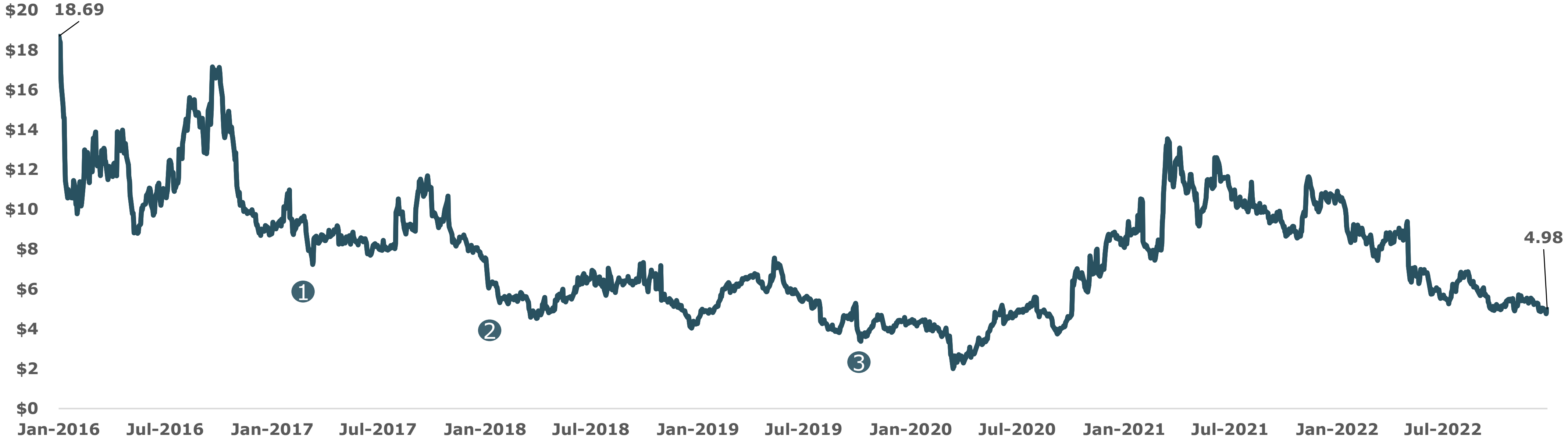
Notable Events

1. • **Market Saturation (Mar. 2017):** GoPro was the first pure-play action camera to enter the market. Over time, this market became more saturated, and GoPro began to face intense competition. Competitors began offering newer products and lower prices, and GoPro did not innovate to continue their early market dominance. GoPro generally lacked understanding of how the market developed and was very slow to innovate so save the company's profits.

2. • **Product Recalls and Quality Issues (Jan. 2018):** One significant event that led to a decline in GoPro's share price and failure to meet expectations was a series of product recalls and quality issues. In October 2016, the company released the Karma drone. Shortly after, GoPro began to recall the drone due to battery issues. The drone was discontinued in January 2018 while additional reports of malfunctioning cameras and issues with software updates persisted.

3. • **Failure to Expand (Oct. 2019):** GoPro struggled to enter new markets and had many failed product launches diminishing investor confidence of the company's growth potential. The company's attempts to enter VR and drones did not yield anticipated results as it offered inferior products that were late to innovate. DJI, a competitor, launched its best-selling DJI Mini in October of 2019, cementing its success in the drone industry and knocking GoPro out of the market.

# of 20%+ Drawdowns	2
Max Drawdown	-89%



Competitive Landscape

Competition

- **DJI (Private):** DJI, founded in 2006, is a global leader in the unmanned aerial vehicle (UAV) and drone technology industry. Headquartered in China, DJI has established itself as the go-to brand for consumer and professional drones. The company's products range from compact consumer drones to high-end professional-grade aerial platforms, offering advanced features and capabilities. DJI's drones are known for their reliability, innovative design, and cutting-edge technologies, including obstacle avoidance, advanced camera systems, and intelligent flight modes.
- **Garmin (GRMN ~$17.7B market cap):** Garmin, a technology firm established in 1989, has carved out a strong position in the market through its focus on GPS navigation and wearable technology. The company boasts a diverse product line encompassing cutting-edge GPS navigation systems across industries and robust wearable devices such as fitness trackers and smartwatches.
- **Apple (APPL ~$2,066.9B market cap):** Apple, a technology behemoth founded in 1976, is renowned for its cutting-edge products and industry-leading innovations. At the heart of Apple's success lies its iPhone segment, which revolutionized the smartphone industry. In 2016, Apple unveiled the iPhone 7, its first waterproof phone, offering enhanced durability and enabling users to capture memories even in wet conditions. This was partially in response to the popularity of GoPro and illustrates Apple’s innovative qualities.

GoPro, in 2016, was still a hot product that had significant traction as a technology to capture video of events previously unattainable by a traditional camera. GoPro’s innovative durable and waterproof video camera proved successful, driving revenue growth of over 80% in 2013. As time went on, however, GoPro attempted to expand its product offering yet had little success. The launch of Karma, GoPro’s drone, failed to impress investors after a recall was announced and the drone was discontinued just two years after its release. GoPro had a first-mover advantage in the action film camera space, the company became comfortable with little to no competition. As the period went on, smartphones, like Apple’s iPhone, became more advanced and waterproof, creating a large competitor for the company. GoPro’s once unique product was no longer as innovative as it was in the early 2000s, and as companies like Garmin and DJI launched their own action cameras, GoPro’s pricy products and lackluster brand reputation were unable to compete.

Perceived Moat (2016) – Counter Positioning

Rationale: In 2016, GoPro had a first-mover advantage in a segment of action photography and video. The company created this segment for themselves and was counter-positioned against traditional fragile and expensive cameras that were unable to capture up-close action shots of many experiences. GoPro was synonymous with action cameras. The company offered customers an innovative piece of technology that was disruptive to traditional camera companies' business models and had largescale success with the stock price rising as high as $98 in the days and weeks after its IPO.

Reason for Erosion of Moat: GoPro’s counter positioning was only valuable for the short time frame by which it achieved an untapped market. The company, despite having a first-mover advantage in the action camera market, was not able to create any withstanding moat beyond this initial success. Competitors soon developed alternatives that were higher quality and less expensive, and GoPro could no longer compete. In an industry in which the company once dominated, GoPro was completely out-competed and shot itself in the foot through failed product launches, eroding the company’s brand value.

Conclusion - What drove shareholder underperformance?

1. **Failed Expansion Attempts:** GoPro's original HERO cameras were a reliable way to film action shots in climates that regular expensive cameras could not operate in. The company garnered a strong brand reputation, and the word GoPro was quickly associated with any action camera. This brand recognition quickly diminished after the attempted launch of the Karma drone. Shortly after launching the drone, reports, and videos of the drone dying mid-flight and plummeting to the ground circulated, destroying the reputation for reliable products. Only a few thousand drones were shipped before GoPro began to recall these drones and eventually discontinued the Karma in 2018. GoPro also had issues with its core product offering after the launch of the HERO5 Black. Just weeks after the launch of what customers believed to be GoPro's best camera yet, in October 2016, the company acknowledged "production issues", the camera was leaking underwater. This failed launch coupled with Karma's failure earlier that year demolished the company's perceived brand recognition and led customers to peruse alternatives from competitors like Garmin and DJI.

2. **Lack of Innovation:** GoPro was unprepared when the company became immediately successful, with revenue growing at a 45.5% CAGR from 2012 to 2015 and sales skyrocketing YoY. The company was blinded by this success and took its sales figures for granted, not paying attention to what the future of the company was and what its long-term vision could be. GoPro, having an 81.3x price-to-earnings ratio in 2016, was valued as a high-growth technology company. These companies typically all share one key tenant: rapid innovation. GoPro, led by its founder Nicholas Woodman, remained focused on its core product offering, its small and durable action cameras. Apart from an attempted drone development in 2016 that backfired after competitors launched superior products, GoPro's only source of innovation came from incremental progress in camera quality and size, both of which were not substantial enough to merit any competitive advantage or revenue growth. GoPro also did not seem to understand its customer base. While the company had initial success with its revolutionary action cameras, each new iteration of the GoPro HERO cameras began to cost more and more until the new cameras came at a $400+ price point. The average GoPro customer is not the same as the average luxury camera, like a Nixon or Sony. GoPro's customers were ordinary people hoping to purchase a durable and waterproof camera to film their experiences. The company's customers refused to pay a price point similar to a cell phone for far less functionality with minimal advantages. This lack of customer understanding coupled with no long-term vision for product innovation led to a ~73% drawdown in share price since 2016.

3. **Increased Competition:** A final reason for GoPro's shareholder underperformance is the increase in competition in the action camera and drone sector. While GoPro initially benefited from the company's innovative product offerings, being the first company to design and manufacture small and durable cameras, competitors quickly began developing alternatives at cheaper price points and higher quality. While GoPro continued to execute its tried-and-tested formula in action cameras, companies like DJI and Garmin were quickly developing action cameras, gimbals, and drones of their own. GoPro seemed to believe that its current dominance in the action camera market would not fall victim to competition in the long run, yet after the company's failed Karma drone launch, this proved not the case. By 2018, DJI had completely taken over the drone sector with its Phantom 1, a higher-quality and more reliable alternative to GoPro's Karma, and soon after GoPro shut down its drone division and laid-off numerous employees. Additionally, cell phone companies like Apple and Samsung developed waterproof phones and higher quality cameras at a price ~100% more than the GoPro Hero 4 at the time for far more functionality. Consumers no longer viewed GoPro's once revolutionary cameras as the essential product for capturing action video and photo shots, and in turn, the company's revenue began to fall. A substantial part of GoPro's demise in shareholder value was the company's lack of understanding of business strategy and the importance of fending off competition. Woodman and GoPro's management did not realize that their sector dominance could be competed away until it was too late, as the share price fell ~45% from 2016 to 2018.

Goodyear Tire and Rubber Company (GT)

Company Overview

Goodyear is a leading tire manufacturing company that was founded in 1898. The company offers a wide range of tire products and services for various types of vehicles, including consumer vehicles, commercial trucks, and electric vehicles. GT operates a connected business model, focusing on creating value for customers and differentiating its products and services in the marketplace. In June 2021, GT expanded its product portfolio and enhanced its value proposition with the acquisition of Cooper Tire, a strategic move that has positioned the company for strong organic sales and earnings growth over the long term.

	1/1/2016	12/31/2022	
Stock Price*	$32.01	$11.18	
Market Cap	$8,607.8	$2,871.0	
Enterprise Value	$13,061.8	$10,720.0	
Shares Outstanding	268.9	282.9	
Net Debt	$4,232.0	$7,683.0	
Debt/Equity	137.8%	163.0%	1
Dividend Yield	0.9%	N/A	
P/E	9.6x	8.0x	
EV/Sales	0.8x	0.5x	
EV/EBITDA	5.8x	5.7x	
FCF/Share	$2.6	-$1.9	2
Gross Margin	24.4%	16.1%	3
EBITDA Margin	13.7%	9.1%	
Trailing 3yr Rev CAGR	-7.8%	12.2%	4
Trailing 7yr Rev CAGR		3.4%	
Analyst Buy %	55.6%		
Analyst Hold %	22.2%		
Analyst Sell %	22.2%		

*Numbers in millions excluding stock price

Management

CEO: Rich Kramer (2010-Present), Previous Partner at PricewaterhouseCoopers

CFO: Laura Thompson (2013-2018), Darren Wells (2018-2022), Christina Zamarro (2022-Present), Former VP of Finance at Goodyear

COO: N/A

Analysis

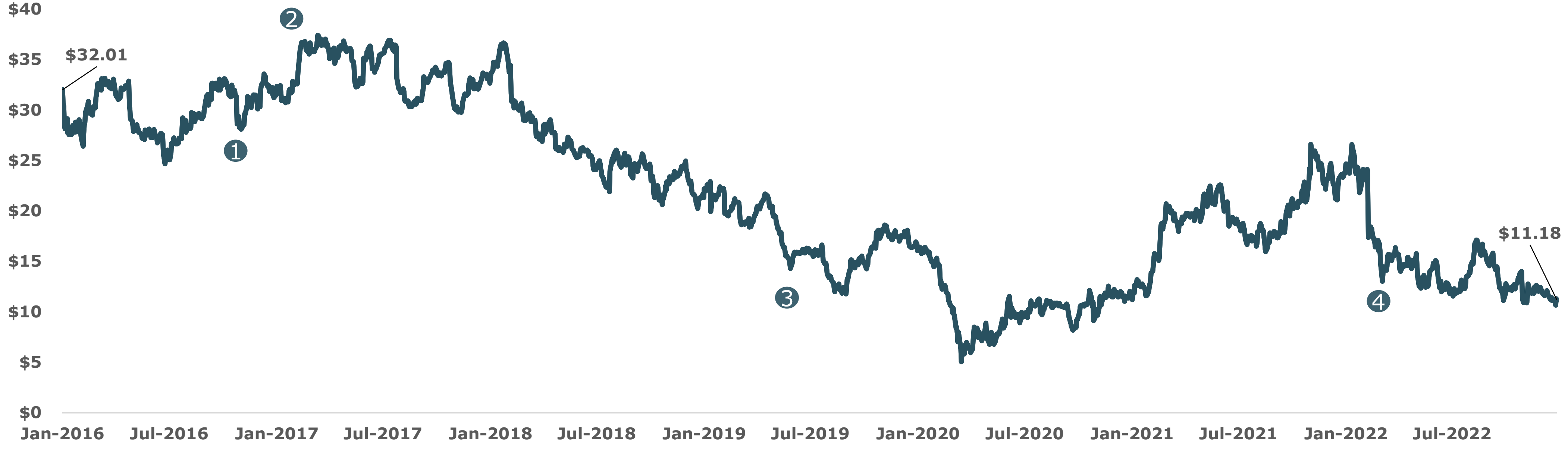
1. D/E increased 25% and net debt increased 81.5% due to restructuring actions, acquisition of Cooper Tire, and raw material price increases
2. Goodyear’s FCF/Share became negative due to significant capex plans contributing to high-value-added capacity and technology for RVs, higher operational costs due to inflation and raw material costs, and decreases in earnings attributed to lower margins
3. Gross margin decreased 830bps due to increases in raw materials prices, energy costs, inflation, and Goodyear’s inability to increase prices
4. Goodyear’s revenues jumped in 2021 and 2022 because of their acquisition of Cooper Tires; before the acquisition they struggled to increase revenue organically

Notable Events

Notable Events

- ❶ **Closure of Philipsburg Factory (Oct. 2016):** Goodyear closed a tire manufacturing facility in Germany, resulting in 890 job reductions and reduced capacity.
- ❷ **Q4 2016 Earnings Call (Feb. 2017):** 323% increase in EPS attributed to growth in core segment operating income (SOI). SOI grew to a record $2 billion, while Goodyear also implemented many cost-saving actions which came out to a net cost savings of $190 million on a full-year basis. Additionally, lower raw material costs and improved product mix offset inflation and other headwinds.
- ❸ **Decreased Financial Performance (2018-2019):** Goodyear's revenue decreased 5% from 2018 to 2019, primarily due to lower tire shipments, and increased raw material costs, unfavorable foreign currency translation. The company's net loss in 2019 was $311 million, compared to a net income of $693 million in 2018.
- ❹ **Q4 2021 Earnings Call (Mar. 2022):** Despite management's predictions for $690 million in FCF in 2022 resulting from the synergies from their Cooper Tires acquisition in February 2021, Goodyear's CEO announced that their new forecast dropped to breakeven FCF in 2022. This was due to a working capital requirement of $300 million and capital spending of $1.4 billion compared to $981 million in 2022.

# of 20%+ Drawdowns	3
Max Drawdown	-85%



Competitive Landscape

Competition

- **Michelin (ML.PA ~$20.7B market cap):** Michelin is a global leader in the tire industry, known for its extensive range of tire products for various vehicle types. The company operates around the world, with a significant portion of its business focused on the replacement market. Michelin is recognized for its strong brand, technical resources, and commitment to innovation, which allows it to keep up with advancements in technology and changes in consumer behavior.
- **Bridgestone (5108.T ~$24.8B market cap):** Founded in 1931 in Japan, Bridgestone has grown into one of the world's largest tire manufacturers, with a strong presence in over 150 countries. The company offers a wide range of tires for various applications, including passenger cars, trucks, motorcycles, agricultural and construction equipment. Apart from tires, Bridgestone is also involved in manufacturing diversified products like automotive parts, industrial rubber products, and sporting goods.
- **Continental AG (CON.DE ~$20.7B market cap):** Continental AG, commonly referred to as Continental, is a prominent German automotive manufacturing company. As a global technology leader, Continental specializes in producing a wide range of automotive components and systems, including tires, braking systems, powertrain and chassis components, and vehicle electronics. The company's expertise extends beyond traditional automotive solutions, encompassing intelligent transportation systems and digital solutions for enhanced connectivity and mobility.

In the beginning of the period, Goodyear was a leader in the tire industry with a strong brand recognition and a robust strategy for growth. The company was focused on operational excellence initiatives, improving its supply chain, and investing in its manufacturing capabilities to meet the increasing demand for its premium products. However, it faced challenges such as increased complexity in tire production and capacity constraints. Towards the end of the period, Goodyear faced additional challenges such as global supply chain disruptions, higher costs for certain raw materials, and higher transportation and energy costs. Despite these challenges, the company's tire unit shipments increased by 21.5% in the second quarter of 2022 compared to 2021, reflecting the addition of the operating results of Cooper Tire and continued recovery from the impacts of the COVID-19 pandemic.

Perceived Moat (2016) – Branding

Rationale: Being one of the largest tire manufacturers in the industry, Goodyear has a strong and recognized brand in the tire industry, which has been built over 100+ years. This brand strength pulls customers into Goodyear and its subsidiaries. Goodyear's strong and recognized brand was a significant competitive advantage, as it not only attracts customers but also instills trust and loyalty, which are crucial for maintaining and growing market share in the highly competitive tire industry.

Failure to Capture Value of Moat: Goodyear did not necessarily lose their branding moat- they are still regarded as one of the largest tire manufacturers in the world and hold a sense of trust in their brand. However, we do not think that Goodyear was able to develop another moat or capture the value of their branding moat during the time period. This was shown through Goodyear’s lack of ability to manage rising raw materials costs and inflation effects. Their customers were not willing to pay a premium for their products due to their weak brand, and Goodyear suffered revenue decreases.

Conclusion - What drove shareholder underperformance?

1. **Operational Inefficiencies:** Goodyear's operational challenges significantly impacted their earnings from 2016 to 2022. The company struggled with cost savings and operational excellence initiatives, which affected their ability to reduce total delivered costs, optimize working capital levels, and deliver best-in-industry customer service. In 2017, with the recent increases in raw material costs, Goodyear saw a 72.6% decrease in net income which continued throughout the time period. In 2022, Goodyear incurred approximately $262 million in additional costs related to inflation and other cost pressures, primarily higher transportation and energy costs. Despite these challenges, the company's results for the second quarter of 2022 included a 21.5% increase in tire unit shipments compared to 2021, reflecting the addition of the operating results of Cooper Tire and continued recovery from the impacts of the COVID-19 pandemic. However, they also accumulated a much higher debt balance due to this acquisition. These operational challenges and the company's responses to them had a significant impact on Goodyear's earnings during the period from 2016 to 2022.

2. **Competitive Pressures and Market Shifts:** The company experienced competitive pressures and market shifts, particularly in the consumer replacement tire business. In 2016, Goodyear was committed to growing their total segment operating income 10% to 15% in their remaining businesses and to that same initial level of $2.1 billion to $2.2 billion. However, the company faced challenges due to the macroeconomic crisis in Venezuela, which affected the price of oil. In 2017, Goodyear saw downward pressure on their 2017 outlook in the $1.6 billion to $1.65 billion range due to competitive pressures in smaller rim sizes. Additionally, the COVID-19 pandemic caused many of Goodyear’s manufacturing facilities to shut down, and with cities on lockdown the need for tires and car services decreased. They also experienced supply chain disruptions, which further worsened their operational inefficiencies. These competitive pressures and market shifts, and the company's responses to them, had a significant impact on Goodyear's earnings during the period from 2016 to 2022.

3. **Management’s Failure to Successfully Execute:** Goodyear's management faced significant challenges in executing their strategic initiatives and investments from 2016 to 2022, which had a substantial impact on the company's earnings. In 2017, the company's management had to deal with the recent increases in raw material costs. However, they were unsuccessful in raising prices and their EBIT margin fell to 4.4% in 2022 from 10.4% in 2016. They also were not able to meet their 2017 sales target until 2019, failed to implement their cost saving initiative, and failed to address distribution and operating challenges which was reflected in their financials. Goodyear’s management announced numerous goals and strategic initiatives, however, they were unable to meet many of these goals and investors lost trust in the company’s management’s reports. This decreased investor sentiment and contributed to their underperformance.

General Electric (GE)

Company Overview

General Electric Company, commonly known as GE, was founded in 1892. The company is a global high-tech industrial company with leading positions in the aviation, power, renewable energy, and healthcare sectors. GE's core products and services include aircraft engines, power generation products, renewable energy solutions, and healthcare technology, among others. The company's business model involves providing a range of services to its clients, leveraging technology to enhance the customer experience, and expanding its addressable market through the delivery of its technology as microservices. GE is also committed to helping customers and governments meet increasing energy demand while reducing greenhouse gas emissions.

	1/1/2016	12/31/2022	
Stock Price*	$184.30	$72.86	
Market Cap	$289,837.1	$91,554.7	
Enterprise Value	$387,262.1	$81,469.7	
Shares Outstanding	1,179.7	1,092.7	
Net Debt	$92,583.0	-$11,307.0	
Debt/Equity	191.6%	92.4%	1
Dividend Yield	3.0%	0.4%	2
P/E	23.3x	28.2x	
EV/Sales	3.4x	1.1x	
EV/EBITDA	29.2x	18.2x	
FCF/Share	$10.1	$4.3	3
Gross Margin	23.1%	25.5%	4
EBITDA Margin	11.5%	6.2%	
Trailing 3yr Rev CAGR	-7.2%	-7.0%	5
Trailing 7yr Rev CAGR		-5.9%	5
Analyst Buy %	60.9%		
Analyst Hold %	39.1%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Jeff Immelt (2001-2017), John Flannery (2017-2018), Larry Culp Jr (2018-Present), Former CEO of GE Aviation

CFO: Jeff Bornstein (2013-2017), Jamie Miller (2017-2020), Carolina Happe (2020-Present), Former CFO at AP Moller-Maersk A/S

COO: N/A

Analysis

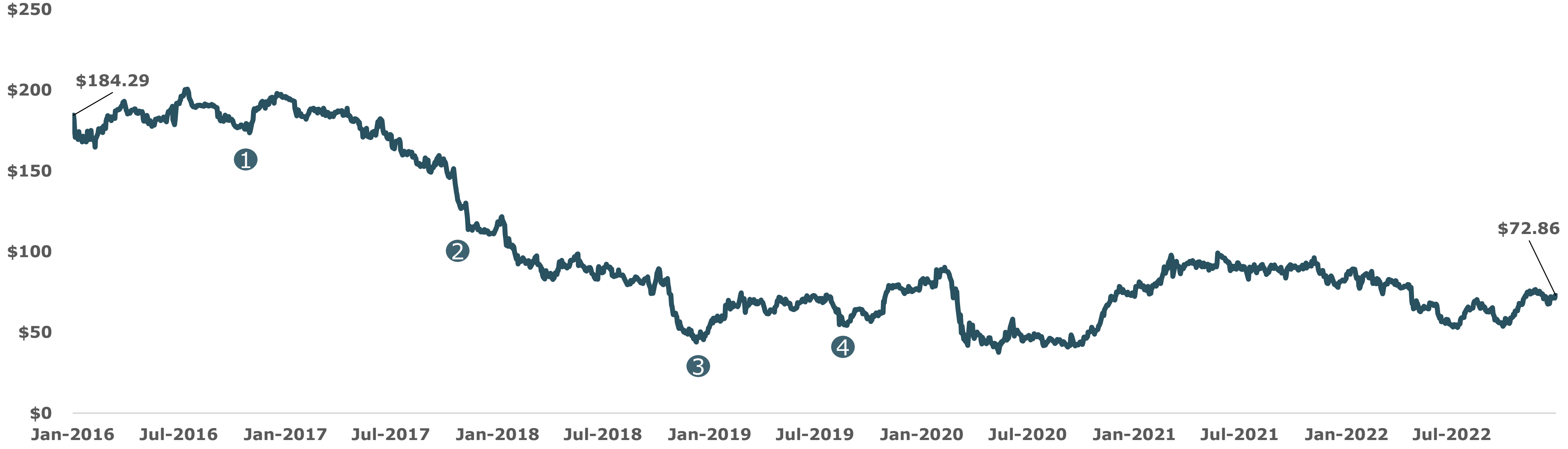
1. Debt/equity ratio improved from 191.6% to 92.4% as debt was paid off as part of a strategic deleveraging strategy; mainly generated cash through divestitures
2. Dividend yield fell from 3.0% to 0.4% with two dividend cuts lowering payouts to shareholders; GE faced cash flow problems due to decreased revenues
3. FCF/Share decreased 57.4% due to large debt payments, revenue decreases, restructuring costs, and divestitures
4. Gross margins improved 240bps while EBITDA margins declined 530bps; GE improved pricing and product mix but faced one-time cost pressures, operational inefficiencies, and asset impairment charges
5. Negative revenue CAGRs because of divestitures removing significant revenues from GE’s portfolio

Notable Events

Notable Events

- ❶ **Baker Hughes Merger (Oct. 2016):** GE Oil and Gas announced its plan to merge with Baker Hughes. However, over the next 3 years, GE would sell off its equity stake in the company due to a failure to achieve meaningful synergies. This periodic sell-off put incremental pressure on GE's share price from 2016-2019.
- ❷ **Investor Update (Nov. 2017):** GE held an investor update where it revealed a dividend cut, a $6.2 billion cost in its power unit, lowered financial guidance, and the need for further major changes. This lowered investor confidence in the company's management and future business outlook.
- ❸ **Analyst Meeting (Dec. 2018):** GE analyst meeting revealed a $1 billion power unit profit shortfall, an additional dividend cut, no concrete guidance, and commentary on needing to fix internal culture and accountability issues, eroding investor faith in the outlook.
- ❹ **Markopolos Fraud Report (Aug. 2019):** Fraud investigator Harry Markopolos published an explosive 175-page report accusing GE of $38 billion in accounting fraud and concealment of losses; while GE vigorously denied the allegations as false, the report caused GE's stock to plunge 11% in one day, wiping over $10 billion in market value and fueling investor concerns around management credibility.

# of 20%+ Drawdowns	1
Max Drawdown	-79%



Competitive Landscape

Competition

- **Rolls-Royce Holdings (RR.L ~$7.8B market cap):** Rolls-Royce Holdings is a British multinational engineering company specializing in aerospace, defense, and power systems. Founded in 1906, the company is renowned for its luxury automobile division, which operates separately from its core engineering activities. Rolls-Royce is a prominent player in the aviation industry, the second largest manufacturer of aircraft engines for commercial and military use after GE. The company also provides solutions for power generation and propulsion systems across various sectors, maintaining a significant presence in the global market.
- **Siemens (SIE.DE ~$134.6B market cap):** Siemens AG is a German conglomerate and one of the largest engineering companies in the world. Founded in 1847, the company operates in various sectors, including energy, healthcare, transportation, and industrial automation. Siemens is a key player in developing advanced technologies such as renewable energy solutions, digitalization, and industrial IoT. Its energy division manufactures turbines and power plants, while its healthcare segment produces medical equipment and solutions for diagnostics and therapy.
- **Mitsubishi Heavy Industries (8058.T ~$6.4B market cap):** Mitsubishi Heavy Industries (MHI) is a prominent Japanese engineering company with a history dating back to 1884. The company operates in various sectors, including aerospace, defense, energy, machinery, and transportation systems. MHI is well-known for its aircraft manufacturing and has been involved in producing commercial and defense aircraft for both domestic and international markets.

In the beginning of the period around 2016, GE was considered one of the leading diversified industrials firms in major segments like power, aviation, and healthcare, though it faced aggressive competition globally that necessitated continuing R&D and innovation. However, by 2022, GE's competitive position had deteriorated due to various factors like the power market downturn, increased digitization, and shifts in customer demands across industries. While GE made some progress in areas like debt reduction and operational improvements, its Power business specifically faced major challenges that affected financial performance and required restructuring efforts. Ultimately, GE went from a top industrial leader in the early part of 2016-2022 to a severe underperformer against more nimble peers later in the period as the company failed to adapt to industry shifts and suffered from leadership instability and poorly timed acquisitions.

Perceived Moat (2016) – Branding, Switching Costs

Rationale: Switching Costs - GE's large installed base of industrial equipment and multi-year service contracts, especially in aviation and power, created very high switching costs for customers. Transitioning to a new supplier would force customers to absorb enormous upfront costs and business disruption. GE's field technicians and monitoring infrastructure were deeply embedded, making switching logistically difficult. The long-term service agreements also locked customers into GE's high renewal rates.

Branding - GE's brand was legendary after over a century of industry leadership. The reputation for quality, innovation, and prestige was a powerful moat making customers trust and stick with GE products and services.

Reason for Erosion of Moat: General Electric experienced a significant erosion of its competitive moats. Execution issues and the emergence of lower-cost competitors made it easier for customers to consider alternatives, reducing the impact of switching costs. Meanwhile, negative publicity, management instability, quality problems, and an outdated corporate culture all contributed to the decline in brand equity.

Conclusion - What drove shareholder underperformance?

1. **Operational Inefficiencies:** GE demonstrated a lack of agility in responding to shifting global energy trends and market dynamics. The company was slow to move away from lagging businesses like fossil fuel power toward faster growing segments. GE also failed to restructure and right-size operations quickly enough amidst market shifts. Entrenched bureaucracy and reluctance to change weighed GE down compared to more nimble competitors. Resistance to emerging trends such as digitization also caused GE to fall behind peers.

2. **Troubling End Markets:** GE Power, which sells energy generation equipment like turbines, was GE's largest and most profitable division representing 30% of revenues. However, a severe downturn in the power market driven by overcapacity, falling electricity demand, and growth in renewables caused orders and profits in the segment to plummet and only make up 22% of revenues in 2022. GE was left with excess inventory and manufacturing capacity as fossil fuel power demand deteriorated. Execution issues on new power projects also led to losses and charges. This dramatic contraction in GE Power robbed the company of its biggest earnings driver. Management was slow to restructure Power and adjust capacity for the new demand realities. In the oil and gas sector, the company faced a downturn due to reduced capital expenditure by customers in response to lower oil prices, leading to a contraction in orders and revenues. In the transportation sector, GE experienced a decline due to reduced demand for locomotives and freight services, largely driven by a decrease in coal transportation. These troubling end markets presented significant operational and financial challenges for GE, impacting its performance and profitability.

3. **Leadership Instability:** Frequent leadership changes, including three CEOs in five years, created inconsistent strategic direction and disruption within GE. Additionally, other key executives, such as Jan R. Hauser, GE's Vice President, Controller and Chief Accounting Officer, and John G. Rice, Vice Chairman, President & CEO, Global Growth Organization, also announced their retirements, further contributing to the leadership instability. The C-suite and boardroom turmoil reflected a lack of stable oversight and stewardship during a challenging period. The constant resetting of priorities stalled meaningful initiatives while layering on more complexity. This turbulence left GE drifting without a steady hand to guide difficult restructuring and cultural change.

4. **Poor Acquisitions:** GE pursued poorly timed acquisitions like Alstom, Baker Hughes, and the divestiture of Qingdao Haier that failed to deliver expected synergies and left GE financially overextended. The $10.1 billion Alstom deal in 2015 in particular added more fossil fuel exposure right before that market declined. These deals were funded by debt and drained cash. GE's acquisition of Baker Hughes in 2016, which aimed to create a new company in the oil and gas sector, also had significant repercussions. The deal was executed using a partnership structure, with GE holding a 62.5% interest and existing Baker Hughes shareholders holding a 37.5% interest. However, the integration of Baker Hughes presented significant challenges. The deal was expected to generate total run-rate synergies of $1.6 billion by 2020, but it added to the financial strain on the company. By 2020, GE announced plans to exit its equity ownership position in Baker Hughes, indicating that the acquisition did not deliver the expected returns. Additionally, GE's decision to sell its Appliances business to Qingdao Haier Co., Ltd. (Haier) for $5.6 billion in 2016 resulted in a significant change in its business portfolio. These decisions, among others, contributed to GE's financial instability and underperformance. They distracted management and saddled GE with more challenges when it was already struggling. GE overpaid for deals at market peaks and lacked rigor in integrating acquisitions. The deals failed to substantively build out new capabilities or reshape the business.

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Orthofix Medical (OFIX)

Company Overview

Founded in 1980, Orthofix Medical Inc. is a global medical device company that focuses on providing innovative solutions to address complex clinical challenges in the fields of spine and extremities. The company's business model revolves around the development, acquisition, and commercialization of products and procedure solutions to meet unmet needs in the marketplace. It operates through a network of strategic relationships and partnerships.

	1/1/2016	12/31/2022	
Stock Price*	$38.50	$20.53	
Market Cap	$727.3	$410.8	
Enterprise Value	$663.6	$387.0	
Shares Outstanding	18.9	20.0	1
Net Debt	-$63.7	-$23.8	2
Debt/Equity	0.0%	8.0%	3
Dividend Yield	N/A	N/A	
P/E	114.9x	N/A	
EV/Sales	1.7x	0.8x	
EV/EBITDA	22.0x	24.6x	
FCF/Share	$0.9	-$1.6	4
Gross Margin	79.5%	73.0%	
EBITDA Margin	7.6%	3.4%	5
Trailing 3yr Rev CAGR	-3.4%	0.1%	
Trailing 7yr Rev CAGR		2.2%	
Analyst Buy %	75.0%		
Analyst Hold %	25.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Brad Mason (2013-2019), Jon Serbousek (2019-2023), Keith Valentine (2023-Present), Former CEO of SeaSpine Holdings

CFO: Doug Rice (2015-2023), John Bosthancic (2023-Present), Former CFO of SeaSpine Holdings

COO: N/A

Analysis

1. 5.8% increase in shares outstanding indicating dilution from stock issuance
2. Large increase in net debt of 62.5% as the company borrowed $100 million due to the COVID-19 pandemic; carried no debt in 2016
3. Debt to equity ratio increased as the company recorded an impairment on the eNura debt security in 2017
4. FCF/Share flipped from positive to negative due to the company's slight share dilution in tandem with higher capex spending, acquisitions, and lowering margins
5. EBITDA margin contraction of 420bps illustrating weakening profitability, increased costs, and strategic investments in areas such as sales and marketing, R&D, and infrastructure, which outpaced the company's growth during this period

Notable Events

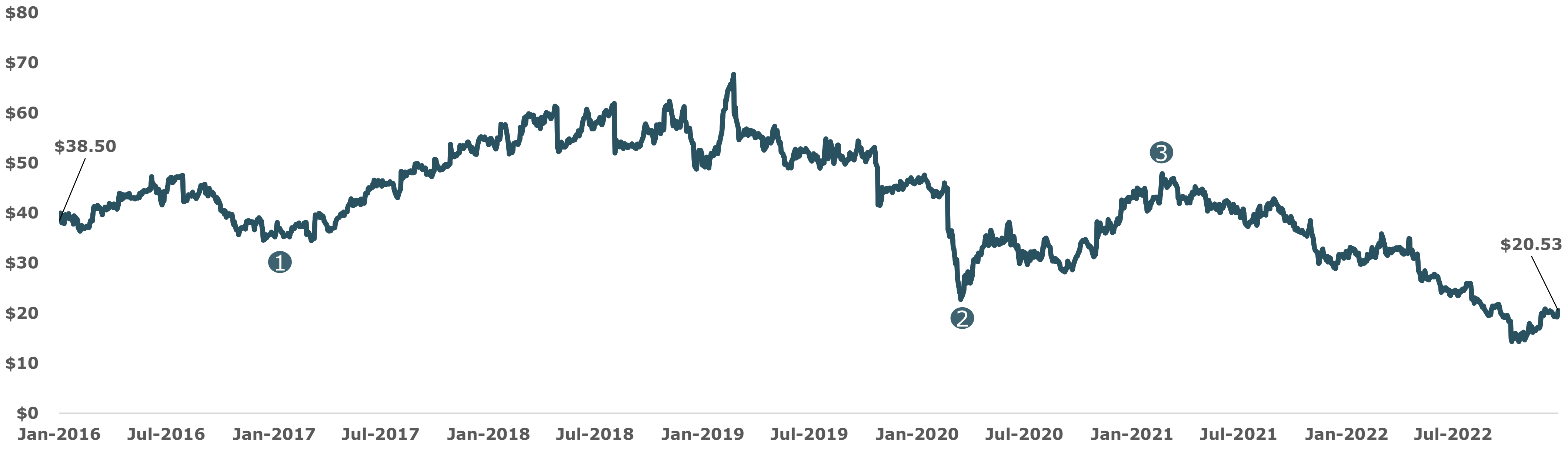
Notable Events

1. • **Accounting Failures and FCPA Violations (Jan. 2017):** In 2017, the SEC charged medical device company Orthofix with accounting failures from 2011 to 2013 and FCPA violations in Brazil. Orthofix agreed to pay over $14 million in penalties. Four executives also paid penalties related to the accounting issues, which involved improper revenue recognition practices. Separately, Orthofix violated the FCPA when its Brazilian subsidiary used high discounts and improper payments to induce doctors at government hospitals to use Orthofix products.

2. • **Pandemic Shutdown (Mar. 2020):** The COVID-19 pandemic from 2020 to 2022 negatively impacted Orthofix's business and stock price. Widespread restrictions on elective surgeries and procedures due to the COVID-19 pandemic led to reduced demand for Orthofix's products. Travel limitations and business closures also affected Orthofix's operations and financial performance during this period. The company struggled to rebound and only reached its pre-pandemic high once in 2021.

3. • **Product Launches and Sales Growth (Mar. 2021):** Orthofix benefited from new product sales growth in 2021, generating approximately $9 million in combined revenue from the launch of its M6-C artificial cervical disc and FITBONE limb lengthening system in the US market during the second quarter. The successful addition of these new products drove an increase in Orthofix's sales.

# of 20%+ Drawdowns	2
Max Drawdown	-78%



Competitive Landscape

Competition

- **Nuvasive (NUVA ~$2.2B market cap):** Nuvasive is a medical device company specializing in the design, development, and marketing of products for the surgical treatment of spine disorders. Its portfolio includes a wide range of minimally disruptive surgical products and procedurally integrated solutions for the spine, including software systems for surgical planning and monitoring. The company generates revenue through the sale of these innovative spinal solutions to healthcare providers and institutions worldwide.
- **Stryker Corporation (SYK ~$92.5B market cap):** Stryker Corporation is a globally recognized medical technology company that offers innovative products and services in Orthopedics, Medical and Surgical, and Neurotechnology and Spine segments. Its product portfolio includes implants used in joint replacement and trauma surgeries, surgical equipment, neurovascular and spinal devices, and endoscopic systems. The company's business model revolves around the design, manufacture, and sale of these medical devices, primarily to healthcare providers and institutions.
- **Globus Medical (GMED ~$7.4B market cap):** Globus Medical is a leading medical device company that develops and commercializes healthcare solutions for the treatment of musculoskeletal disorders. Its product portfolio includes innovative devices and technologies for fusion, minimally invasive surgery, motion preservation, and orthopedics. The company's business model is centered around the design, manufacture, and sale of these medical devices to healthcare professionals and institutions.

In 2016, Orthofix focused on optimizing sales, new product launches, R&D investments, and share repurchases to enhance competitiveness. By 2022, despite this focus, Orthofix faced challenges from COVID-19 pandemic reducing demand and disrupting operations. Larger competitors like Stryker and Globus were better positioned to navigate industry challenges given their size and resources. While still competing, Orthofix underperformed rivals during this period due to industry and company issues. Orthofix's growth strategy of acquisitions did not yield expected results due to integration and execution challenges. Orthofix's focus on certain orthopedic segments provided differentiation but limited market reach versus broader competitors.

Perceived Moat (2016) – N/A

Conclusion - What drove shareholder underperformance?

1. **Accounting Restatements:** Orthofix underwent an extensive accounting review and restatement process stemming from accounting irregularities and errors. This resulted in the company having to restate and revise multiple years of previously issued financial statements. The accounting issues and restatements had significant financial implications for Orthofix. The company incurred substantial additional legal, accounting, audit, and other professional service fees over multiple years in connection with the accounting investigations and restatement work. In addition, Orthofix faced legal costs related to an SEC investigation, shareholder class action lawsuit, and an internal review of compliance issues at its Brazil subsidiary. The accounting restatements and revisions were likely viewed negatively by investors and brought intensified scrutiny from regulatory bodies. As a result, the restatement process could have eroded investor confidence in Orthofix's financial reporting and management. This loss of trust and added uncertainty would likely have contributed to a decline in the company's share price over this period. The restatements also carried the risk of potential regulatory fines, penalties and settlements, which could further damage Orthofix's financial performance.

2. **Changes Related to US Government Resolutions:** In 2016, Orthofix incurred substantial charges totaling $14.4 million related to resolutions reached with the U.S. government. The specific nature and causes of the charges were not disclosed, however charges of this magnitude often result from regulatory non-compliance, legal violations, fines, settlements or other disputes with governmental authorities. These charges can significantly impact a company's financial performance and shareholder value in several ways. First, a charge of $14.4 million directly reduces net income in the period, lowering profits and earnings per share. Second, the charge highlights potential regulatory, compliance, or legal risks and uncertainties facing the company, which can erode investor confidence. Third, the charge may indicate remediation costs, higher compliance spending, and other effects on operations going forward. Fourth, substantial government charges often generate negative publicity and reputational damage for the company. The combination of direct costs, uncertainty, and reputational effects likely contributed to underperformance of Orthofix's shares during this period.

3. **Net Losses from Divestitures:** Orthofix reported net losses stemming from discontinued operations in multiple years during this period. Discontinued operations refer to formerly owned businesses, assets, product lines or subsidiaries that a company has divested through sale or closure. These losses directly reduce net income attributable to the parent company, lowering overall profitability. Furthermore, divesting parts of the business can signal that certain acquisitions, product lines or growth initiatives have failed, thus eroding confidence in management's strategic direction. Additionally, selling off or closing poorly performing units can reduce overall revenue growth and cash flows going forward. This combination of financial and perceptual effects likely contributed to negative share price performance during the periods when Orthofix recorded sizable losses from discontinued operations.

4. **Market and Competitive Challenges:** Orthofix operates in a highly competitive medical device market with constant technological changes and pricing pressures. Rival companies frequently introduce innovative products that threaten to displace Orthofix's technologies. Orthofix faces challenges keeping pace with larger competitors' R&D budgets. Regulatory requirements are also shifting, requiring Orthofix to continually demonstrate product value and obtain reimbursement approval to drive adoption by health providers and payors. If competitors are more successful navigating clinical adoption and regulatory processes, Orthofix risks losing market share. These ongoing competitive and operational challenges in a rapidly evolving industry likely contributed to Orthofix's financial underperformance and weak share price during 2016-2022. The company must consistently develop improved products and overcome commercialization hurdles to remain competitive.

Molson Coors Beverage (TAP)

Company Overview

Founded in 2005 after the merger of Molson Brewing (est. 1786) and Coors (est. 1873), TAP, also known as Molson Coors Beverage Company, is a multinational brewing company that offers a diverse portfolio of beer and other beverages. The company's business model is centered around "premiumizing" its product portfolio, expanding beyond the beer aisle, and investing in its capabilities to produce higher margin premium products. TAP's product offerings include popular beer brands like Coors Light and Miller Lite, as well as non-alcoholic beverages and emerging products like hard seltzers and ready-to-drink cocktails. The company also has a strong focus on innovation and has made significant investments in e-commerce capabilities and production capacity.

	1/1/2016	12/31/2022	
Stock Price*	$92.29	$59.90	
Market Cap	$17,045.7	$11,395.9	1
Enterprise Value	$19,572.3	$17,727.8	
Shares Outstanding	162.9	200.2	
Net Debt	$2,506.5	$6,106.3	2
Debt/Equity	41.6%	51.9%	
Dividend Yield	1.8%	3.0%	
P/E	24.2x	11.0x	
EV/Sales	5.5x	1.7x	
EV/EBITDA	23.4x	21.0x	
FCF/Share	$2.4	$3.9	
Gross Margin	35.7%	35.1%	
EBITDA Margin	23.4%	7.9%	3
Trailing 3yr Rev CAGR	-3.1%	0.4%	
Trailing 7yr Rev CAGR		16.9%	
Analyst Buy %	21.7%		
Analyst Hold %	65.2%		
Analyst Sell %	13.0%		

*Numbers in millions excluding stock price

Management

CEO: Mark Hunter (2012-2019), Gavin Hattersley (2019-Present), Former CFO of Sabmiller

CFO: Mauricio Pinto (2016-2016), Tracey I Joubert (2016-Present), Former VP of Finance at Molson Coors

COO: N/A

Analysis

1. Market cap decreased ~49%, primarily due to decrease in sales due to shifting consumer preferences and increased competition in the beverage industry
2. Net debt increased ~143%, notably arising from the acquisition of the Miller brand in 2016
3. EBITDA margin decreased 1,550bps due to cost inflation and increased spending in SG&A

Notable Events

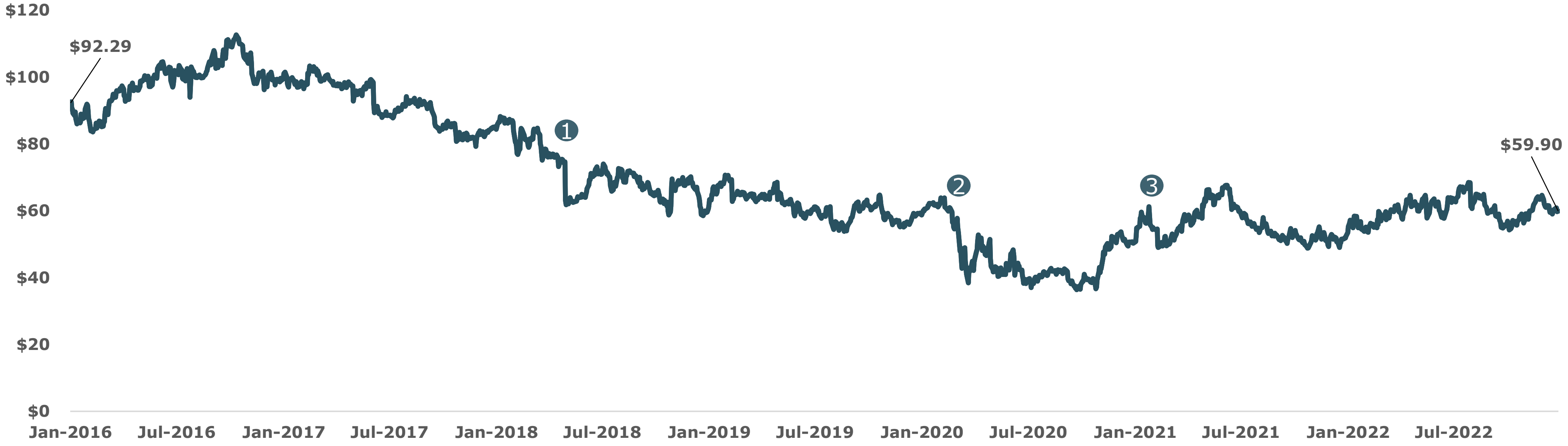
Notable Events:

1. • **Q2 2018 Financial Performance (Jul. 2018):** Molson Coors Brewing Co.'s shares dropped 17% due to multiple challenges in the beer industry. The Trump administration's 10% tariff on aluminum imports increased costs for beer cans, leading to shrinking margins and likely lower profits. Additionally, big beer brands began to lose their appeal with consumers, with Molson Coors' first-quarter volume down by 3.1%. The rise of small breweries and the impact of tariffs made recovery difficult for Molson Coors.

2. • **COVID-19 Pandemic (Mar. 2020):** The COVID-19 pandemic led to government restrictions and closures of bars and restaurants, significantly impacting Molson Coors' on-premise sales. While the company saw a surge in off-premise sales due to pantry loading in March 2020, this trend did not continue, and off-premise sales were not sufficient to offset the loss of on-premise volume.

3. • **Q1 2021 Cybersecurity Incident (Mar. 2021):** Molson Coors's operations were significantly disrupted due to a major cybersecurity incident. The company's systems experienced an outage that led to delays and disruptions across various aspects of the business, including brewery operations, production, and shipments.

# of 20%+ Drawdowns	1
Max Drawdown	-65%



Competitive Landscape

Competition

- **Anheuser-Bush InBev (BUD ~$119.5B market cap):** Anheuser-Busch InBev is one of the world's largest brewing companies, producing and selling a diversified portfolio of well-known beer and non-alcoholic brands globally. Its product portfolio includes global brands like Budweiser, Stella Artois, and Corona, among others. The company's business model revolves around producing beverages at scale, distributing them through various channels, and generating revenue primarily through sales to retailers, wholesalers, and consumers.
- **Constellation Brands (STZ ~$42.8B market cap):** Constellation Brands, Inc. is a leading international producer and marketer of beer, wine, and spirits. Its portfolio includes renowned brands such as Corona, Modelo Especial, Robert Mondavi, and SVEDKA Vodka, among others. The company's business model is centered on the production, marketing, and distribution of these products, with revenue primarily generated through sales to wholesalers and distributors worldwide.
- **Heineken NV (HEIA.AS ~$56.3B market cap):** Heineken N.V. is a globally recognized brewing company, known for producing and distributing a wide variety of beer and cider brands in more than 190 countries. Its portfolio includes the Heineken brand along with others like Amstel, Desperados, and Strongbow. The company's business model is based on brewing beverages, marketing them worldwide, and generating revenue through sales to distributors, retailers, and consumers.

Molson Coors Beverage Company (TAP) faced challenges in outperforming competitors like STZ due to several factors. First, TAP operated in mature markets where growth opportunities were more limited compared to competitors with diversified portfolios. Second, TAP's success largely depended on a few products in these mature markets; shifts in consumer preferences or declines in product consumption could have adversely affected the company's performance.

Perceived Moat (2016) – Scale Economies

Rationale: Molson Coors demonstrated scale economies through strategic actions and operational efficiencies. The company's decision to streamline its product portfolio by discontinuing a significant number of SKUs has enhanced supply chain flexibility and reduced average costs per unit. Furthermore, significant investments in the supply chain and expansion into new markets, such as India, have enabled Molson Coors to spread its fixed costs over a larger volume of output, thereby reducing its average cost per unit

Reason for Erosion of Moat: Between 2016 and 2022, Molson Coors’s scale economies were impacted by several factors. Inflationary pressures increased, challenging the company's ability to maintain cost efficiencies despite mitigation strategies such as pricing adjustments and cost savings programs. Changes in consumer behavior, particularly a softening in U.S. beer industry volumes, further eroded economies of scale. Additionally, competitive pressures, supply chain disruptions, and the termination of major business contracts, such as the U.K. contract-brewing arrangement with Heineken, contributed to the weakening of the company's scale economies.

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Conclusion - What drove shareholder underperformance?

1. **Inflationary Pressure:** Inflationary pressures presented a significant challenge for Molson Coors between 2016 and 2022. Despite the company's strategic efforts to mitigate these pressures through pricing adjustments, premiumization strategies, hedging, and cost savings programs, inflation remained a persistent issue. This inflationary environment potentially eroded profit margins and impacted the company's financial performance, leading to shareholder underperformance. The ability of Molson Coors to effectively manage these inflationary pressures was a critical factor in assessing its future performance and potential return on investment. The persistence of these pressures underscored the importance of robust financial management strategies in maintaining profitability.

2. **Increased Competition:** The competitive landscape in the beverage industry significantly impacted Molson Coors’s performance during this period. The company faced challenges at economy price points, with instances of discounting observed in Nielsen data. This discounting potentially eroded the company's scale economies, impacting profitability and undermining shareholder value. Understanding the dynamics of the competitive landscape and the company's pricing strategies was essential in evaluating its market position. The inability of Molson Coors to maintain its pricing power amidst intense competition could have further impacted shareholder returns, highlighting the importance of competitive strategy in the company's performance

3. **Supply Chain Disruptions and Operational Challenges:** Molson Coors encountered several supply chain disruptions and operational challenges between 2016 and 2022. Notably, the company grappled with the residual impact of the Montreal brewery strike, which affected its volume headwinds. Additionally, the termination of major business contracts, such as the U.K. contract-brewing arrangement with Heineken, necessitated the closure of the Alton brewery. These disruptions could have impacted the company's operational efficiency and profitability, leading to shareholder underperformance. The ability of Molson Coors to manage its supply chain and operational risks effectively was a critical factor in assessing the company's resilience and future performance potential.

4. **COVID-19 Pandemic:** The COVID-19 pandemic significantly disrupted Molson Coors, leading to a substantial decrease in on-premise sales as bars and restaurants were forced to close or limit their operations. This was particularly challenging as the on-premise channel, which is typically more profitable, effectively ceased entirely for a period. In addition, the company faced supply chain disruptions, notably due to a labor strike at its Montreal brewery, which significantly impacted its volume headwinds. The pandemic also led to increased costs, including cost inflation on materials, transportation, and energy costs, and higher marketing, general, and administrative expenses.

Foot Locker (FL)

Company Overview

Foot Locker, Inc. is a leading global retailer of athletic inspired shoes and apparel. The company's core products include a wide variety of footwear, apparel, and accessories from leading athletic brands. Foot Locker operates through a variety of store formats, including the eponymous Foot Locker stores, Kids Foot Locker, Lady Foot Locker, Champs Sports, Footaction, Runners Point, Sidestep, and SIX:02. The company's business model is centered around providing a high-quality, omnichannel shopping experience, with a focus on customer engagement, exclusive product offerings, and strong relationships with vendor partners.

	1/1/2016	12/31/2022	
Stock Price*	$65.3	$37.8	
Market Cap	$8,964.6	$3,526.6	
Enterprise Value	$8,217.6	$6,387.6	
Shares Outstanding	137.3	93.3	1
Net Debt	-$747.0	$2,854.0	2
Debt/Equity	5.1%	98.3%	
Dividend Yield	1.5%	5.0%	
P/E	15.8x	6.8x	3
EV/Sales	1.1x	0.7x	
EV/EBITDA	8.6x	7.5x	
FCF/Share	$3.3	-$1.68	4
Gross Margin	33.8%	32.0%	
EBITDA Margin	13.1%	9.7%	
Trailing 3yr Rev CAGR	2.8%	5.1%	
Trailing 7yr Rev CAGR		2.4%	
Analyst Buy %	64.0%		
Analyst Hold %	32.0%		
Analyst Sell %	4.0%		

*Numbers in millions excluding stock price

Management

CEO: Dick Johnson (2014-2022), Mary Dillion (2022-Present), Former CEO of Ulta

CFO: Lauren Peters (2011-2021), Andrew Page (2021-2022), Michael Baughn (2023-Present), Former EVP of Finance of Kohls Corp

COO: Frank Bracken (2021-2022), Elliott Rodger (2022-Present), Former CPO of Project44

Analysis

1. Formal $1.2B share repurchase program reduced shares outstanding by 44.4 million to return capital back to shareholders
2. Net debt primarily increased due to the $1.1 billion acquisitions of Atmos and WSS
3. Multiple compression primarily driven by slowdown in comparable store sales
4. Inventory increase, sales declines, and store closures drove free cash flow reduction

Notable Events

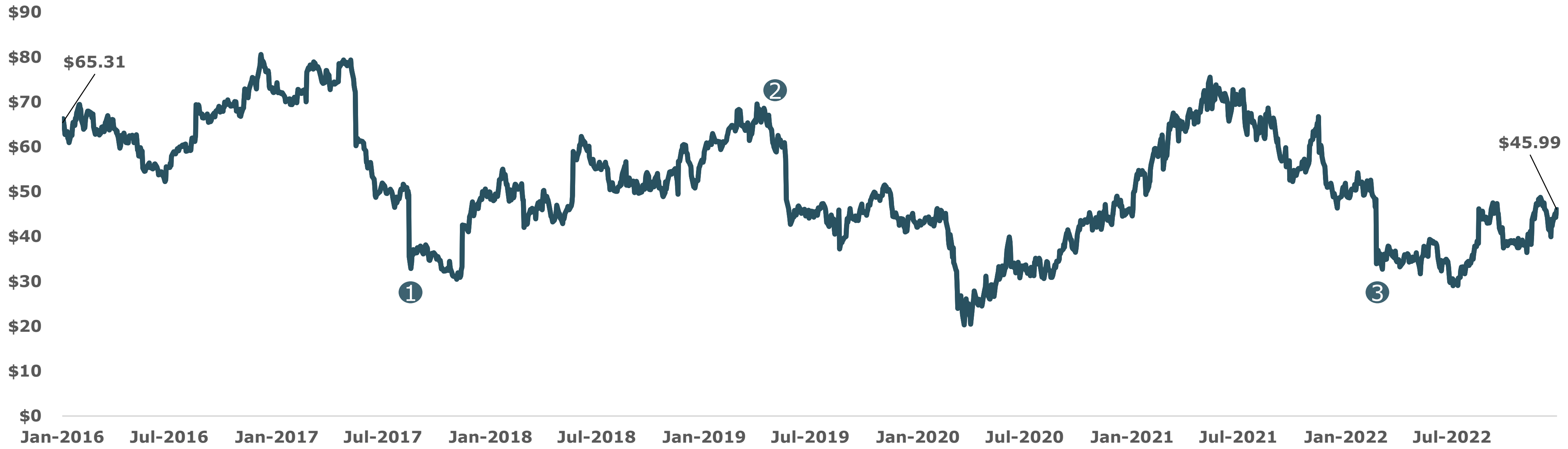
Notable Events

1. **Decrease in Q2 2017 Net Income (Aug. 2017):** Footlocker's adjusted earnings per share for Q2 2017 was 62 cents on revenue of $1.701 billion, falling short of the expected earnings per share of 90 cents on sales of $1.8 billion. The decrease was due to sales of some recent top styles falling well short of expectations, limited availability of innovative new products in the market, and a shift in the retail landscape.

2. **Decrease in Q1 2019 Net Income (May 2019):** Footlocker's adjusted earnings per share was $1.53, falling short of the $1.60 per share expected by analysts. The decrease in net income was due to a variety of factors, including pressure from shoe companies like Nike selling directly to customers, the broader shoe industry facing potential tariffs on footwear imported from China, and lower-than-expected repurchases of shares.

3. **Decrease in 2022 Forecast (Feb. 2022)**: Foot Locker's shares plunged as much as 36% following a bleak full-year forecast. The company expects comparable sales to fall 8% to 10% in fiscal 2022. The decrease is largely due to Nike, Foot Locker's biggest supplier, ramping up selling directly to customers, reducing its contribution to Foot Locker's total purchases from 70% in the past year to an estimated 60% in 2022.

# of 20%+ Drawdowns	5
Max Drawdown	-74.6%



Competitive Landscape

Competition

- **The Gap (GPS ~$4.1B market cap):** Gap is a global apparel retail company offering clothing, accessories, and personal care products for men, women, and children under brands such as Gap, Banana Republic, Old Navy, Athleta, and Intermix. The company operates through company-operated stores, franchise stores, and e-commerce platforms worldwide. Its business model is based on the sale of these products directly to end consumers, generating revenue from retail sales both in physical stores and online.
- **Nike (NKE ~$183.1B market cap):** Nike is a global leader in the design, development, and marketing of athletic footwear, apparel, equipment, and accessories. Its product portfolio caters to a wide range of sports and fitness activities, with products sold under the Nike and Converse brands. The company's business model revolves around the sale of its products to retail accounts, through Nike-owned retail stores and online, and through a mix of independent distributors and licensees worldwide.
- **Adidas (ADS.DE ~$26.1B market cap):** Adidas is a sports apparel and equipment manufacturer, offering a wide array of products including footwear, clothing, and accessories for various sports and lifestyle segments. The company's business model is built on a blend of direct-to-consumer sales through Adidas-owned stores and e-commerce platforms, as well as wholesale distribution to third-party retailers globally.

Foot Locker's performance has been negatively impacted by a decline in sales, driven by a changing vendor mix and macroeconomic challenges, including inflation and reduced income tax refunds. The shift by key partners like Nike towards a direct-to-consumer approach has further strained Foot Locker's business model. Despite efforts to adapt, strategic repositioning such as the transition of the Champs Sports has led to additional sales declines, underscoring Foot Locker's underperformance relative to its competitors.

Perceived Moat (2016) – N/A

Conclusion - What drove shareholder underperformance?

Foot Locker

1. **Shift in Consumer Preferences:** Over the years, consumers moved away from licensed apparel towards more performance-oriented assortments. This shift was particularly noticeable in Foot Locker Europe and Champs Sports, where customers moved away from certain lifestyle and licensed apparel programs that had previously driven strong results. This change in consumer behavior required Foot Locker to adjust its product offerings, which may have led to temporary disruptions and challenges in sales performance. Furthermore, this shift in preferences also opened up opportunities for competitors to cannibalize sales. For instance, brands like Nike and Adidas capitalized on the trend towards performance-oriented assortments, with unique versions of their respective iconic silhouettes gaining traction. Additionally, other brands such as Crocs and Uggs also benefited from the shift in consumer preferences, offering products that resonated with casual footwear.

2. **Nike's Shift to Direct-to-Consumer:** Nike's shift towards a direct-to-consumer model has been a significant development in the retail industry. This strategy allows consumers to purchase directly from Nike, bypassing traditional retailers like Foot Locker. As Nike is a major supplier for Foot Locker, accounting for approximately 68% of all merchandise purchased in 2021, this shift could have led to a significant reduction in product availability and sales for Foot Locker. Moreover, this shift is part of a broader industry trend where suppliers are increasingly selling products through their own direct-to-consumer channels. This trend could potentially lead to a decrease in the availability of high-demand products for retailers like Foot Locker, as suppliers might prioritize their own channels. While Foot Locker has been adapting its business model to this changing retail landscape, the shift towards direct-to-consumer sales by major suppliers like Nike likely had a significant impact on Foot Locker's sales and overall performance.

3. **Decline in Basketball Category:** The basketball category, traditionally a significant contributor to Foot Locker's sales, experienced a decline that had a substantial impact on the company's overall performance. In the first quarter of 2018, men's basketball was down low-single digits, despite gains in new marquee styles and the Jordan brand. This decline was primarily driven by a decrease in men's basketball, which was offset in part by an increase in certain running styles. The decline in the basketball category was also attributed to changing consumer preferences and the performance of specific basketball shoe models. For instance, the signature side of the basketball business saw the biggest decline, with primary losses coming from the LeBron and KD product lines . As an investment analyst, it's crucial to note that this decline in a significant part of Foot Locker's product portfolio likely had a substantial impact on the company's overall performance. The company's ability to adapt to these changes and innovate within its product offerings will be a key factor to watch in evaluating its future performance. Furthermore, the company's strategies to offset these declines, such as increasing its focus on other growing categories like running styles, will also be important in assessing its potential for recovery and growth.

Invesco (IVZ)

Company Overview

Founded in 1978, Invesco Ltd. (IVZ) is a global investment management firm that focuses on delivering distinctive investment capabilities worldwide to meet client needs. The company's offerings span across various asset classes and investment vehicles, including passive and active strategies, ETFs, and a spectrum of ESG ETFs. Invesco's business model is centered on achieving strong, long-term investment performance, being instrumental to clients' success, harnessing the power of their global platform, and perpetuating a high-performance organization.

	1/1/2016	12/31/2022	
Stock Price*	$33.19	$24.61	
Market Cap	$14,067.9	$8,181.6	
Enterprise Value	$20,704.1	$21,133.7	
Shares Outstanding	423.9	454.8	
Net Debt	$5,658.4	$7,323.5	1
Debt/Equity	84.7%	50.8%	
Dividend Yield	3.3%	4.1%	2
P/E	14.5x	11.3x	
EV/Sales	4.0x	3.5x	
EV/EBITDA	14.0x	13.7x	
FCF/Share	$2.2	$1.1	3
Gross Margin	N/A	N/A	
EBITDA Margin	28.9%	25.4%	
Trailing 3yr Rev CAGR	8.7%	1.7%	4
Trailing 7yr Rev CAGR		3.5%	
Analyst Buy %	21.7%		
Analyst Hold %	60.9%		
Analyst Sell %	17.4%		

*Numbers in millions excluding stock price

Management

CEO: Marty Flanagan (2005-2023), Andrew Schlossberg (2023-Present), Former Managing Director of Americas at Invesco

CFO: Lauren Starr (2007-2020), Laura Dukes (2020-Present), Former CFO of SunTrust Banks, Inc.

COO: N/A

Analysis

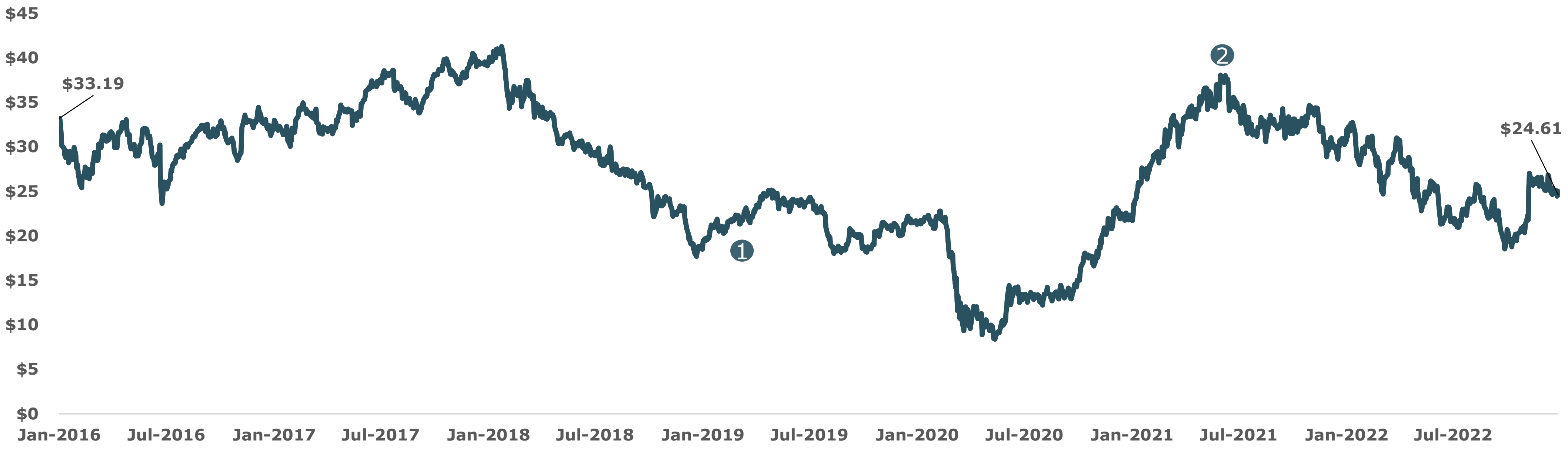
1. Invesco's net debt increased 29.4% due to increased borrowing for business expansion or investment activities and marketing its QQQ ETF
2. 24.2% increase in dividend yield suggesting that the company has been returning more income to shareholders to boost share price and attract investors
3. Invesco saw a 50% decrease in FCF/share due to lower operating income, increased expenses, net market losses, changes in tax rates, and challenging market conditions
4. Invesco’s 3-year revenue CAGR decreased over the 7-year period, representing a largescale slowdown in the company’s revenue growth rate

Notable Events

Notable Events

1. **Acquisitions (Mar. 2019):** Invesco acquired Oppenheimer Funds in 2019, strengthening its client base globally. The $5.4 billion acquisition was financed by issuing new common and preferred shares, which diluted existing shareholders and weighed on the share price. Although the deal was expected to produce significant cost synergies, it also incurred substantial integration expenses that negatively impacted earnings.
2. **Activist Investor (Oct. 2020-Feb. 2022):** Billionaire activist investor Nelson Peltz acquired a 9.9% stake in Invesco in October 2020 and joined its board. Over the next 15 months, Invesco's operating margin improved and earnings more than doubled. With this progress achieved, Peltz and his Trian Fund Management colleague Ed Garden departed Invesco's board in February 2022.

# of 20%+ Drawdowns	4
Max Drawdown	-79%



Competitive Landscape

Competition

- **T. Rowe Price Group (TROW ~$24.4B market cap):** T. Rowe Price Group, Inc. is a global investment management firm providing a broad array of mutual funds, sub-advisory services, and separate account management for individual and institutional investors, retirement plans, and financial intermediaries. The company offers a diverse range of products including domestic and international stock funds, balanced funds, bond funds, and money market funds. Operating on an AUM model, TROW earns revenue through management fees calculated as a percentage of the assets managed.
- **BlackRock (BLK ~$106.4B market cap):** BlackRock, Inc. is the world's largest asset management firm, offering a comprehensive suite of investment management products to institutional, retail, and individual clients globally. Its offerings include single and multi-asset class portfolios investing in equities, fixed income, alternatives, and money market instruments. BlackRock operates on an assets-under-management (AUM) model, earning revenue primarily from management fees based on a percentage of the AUM.
- **Franklin Templeton (BEN ~$13.2B market cap):** Franklin Templeton is a global investment management firm providing a wide array of financial products and services to individual, institutional, and high-net-worth investors. The firm offers mutual funds, pension plans, and portfolio management services, among others, across different asset classes and geographical regions. Its business model is based on assets under management, with revenues primarily derived from management and service fees.

In 2016, Invesco was recognized for its unique investment teams and positive flows despite market volatility, positioning it competitively in the industry. However, by 2022, the firm faced challenges such as market uncertainties and increased pressure on net revenue yield due to the rise of low fee passive products. Larger firms like T. Rowe Price, BlackRock, and Franklin Templeton outperformed Invesco due to their extensive product offerings, strong brand recognition, and larger scale of operations. These firms' ability to leverage technology for improved client service and operational efficiency may have also given them a competitive edge. Overall, Invesco's performance relative to its peers has declined over this period.

Perceived Moat (2016) – Branding

Rationale: In 2016, Invesco's branding was a significant differentiator for the company within the industry. The firm was recognized for its strong investment culture and the ability to leverage the capabilities of its investment teams to help clients across the globe achieve their investment objectives. This strong brand identity contributed to Invesco's competitive positioning, enabling it to attract and retain clients, and achieve positive business outcomes.

Reason for Erosion of Moat: Throughout the time period, the competitive landscape in the asset management industry has intensified, with competitors like T. Rowe Price, BlackRock, and Vanguard eroding Invesco's branding advantage. By 2022, despite Invesco's efforts to differentiate itself, the firm faced challenges such as market uncertainties and increased pressure on net revenue yield due to the rise of low fee passive products.

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Conclusion - What drove shareholder underperformance?

1. **Underperformance of Client Accounts:** Invesco's client accounts significantly underperformed competing investment products from 2016-2022 across multiple capabilities. This consistent lag versus rivals led to major asset outflows as clients pulled money from Invesco's funds. The loss of assets under management severely impacted Invesco's investment management revenues. The mutual fund business was substantially disrupted with the rise of Vanguard's passive index funds tracking the S&P 500. Invesco, at the time, was heavily reliant on its funds from mutual fund assets under management, with only one large index fund in its QQQ, or the NASDAQ tracking index fund. Invesco's revenue was eroded by a rise in index funds and general asset redemptions out of mutual funds as money flowed into Blackrock and Vanguard's index funds.

2. **Challenging Market Conditions:** The years 2016-2022 were exceptionally turbulent for investors, creating a toxic mix of challenges for active managers like Invesco. Major geopolitical shocks including Brexit, US-China tensions, and Russia's invasion of Ukraine fueled uncertainty and volatility. Meanwhile central banks shifted to tightening rates, compounding market stress. Navigating concurrent spikes in volatility, recession fears, and shifting monetary policy amid geopolitical flare-ups made it extraordinarily difficult for Invesco's funds to deliver consistent outperformance versus benchmarks through this period. The challenging macro backdrop was a major headwind to generating alpha. This turbulent environment made it difficult for Invesco's funds to deliver strong, consistent returns versus benchmarks and peers. Investors took money out of actively managed mutual funds, the bulk of Invesco's revenue at the time, and put it into passively managed index funds created by competitors who charged lower fees for safer and more diversified returns during times of turbulence.

3. **Increased Competition:** The asset management industry has become increasingly competitive from 2016 to 2022. Major players like T. Rowe Price, BlackRock, and Vanguard have aggressively gained market share, often at the expense of firms like Invesco. The industry has seen a shift towards lower fee passive products, which have gained and may continue to gain share at the expense of active products. This trend has put pressure on Invesco's revenue potential from its higher-fee active funds. Furthermore, the increasing size and market influence of certain distributors of investment products and of certain direct competitors may have negatively impacted Invesco's ability to compete at the same levels of profitability. As a result, these competitive pressures have weighed on Invesco's brand, pricing power, and ability to attract assets versus rivals during this period.

The Kraft Heinz Company (KHC)

Company Overview

Kraft (est. 1903) and Heinz (est. 1876), established The Kraft Heinz Company (KHC) in 2015 through a merger of equals. KHC is a leading global food and beverage company with a diverse product portfolio that includes coffee, ketchup, marshmallows, hotdogs, and cheese, among others. The company has been undergoing a digital transformation, creating a digital factory and hiring tech talent such as data scientists, machine learning specialists, and cloud architects to drive efficiency and innovation.

	1/1/2016	12/31/2022	
Stock Price*	$72.70	$54.65	
Market Cap	$88,218.2	$49,866.9	
Enterprise Value	$116,166.2	$69,798.9	
Shares Outstanding	1,213.5	1,224.9	1
Net Debt	$20,397.0	$19,740.0	
Debt/Equity	38.1%	42.5%	
Dividend Yield	2.9%	4.1%	2
P/E	35.7x	14.7x	
EV/Sales	4.3x	2.6x	
EV/EBITDA	N/A	15.3x	
FCF/Share	N/A	$1.3	3
Gross Margin	33.7%	32.0%	
EBITDA Margin	N/A	17.2%	
Trailing 3yr Rev CAGR	N/A	2.0%	4
Trailing 7yr Rev CAGR**		5.4%	
Analyst Buy %	31.8%		
Analyst Hold %	63.6%		
Analyst Sell %	4.5%		

*Numbers in millions excluding stock price

Management

CEO: Bernardo Viera Hees (2013-2019), Miguel Patricio (2019-Present), Former CMO of Anheuser-Busch

CFO: Paul Basilio (2015-2017), David Knopf (2017-2019), Paulo Basilio (2019-2022), Andre Maciel (2022-Present), Former Head of Commercial Finance at Kraft Heinz

COO: N/A

Analysis

1. 1% increase in shares outstanding suggesting limited shareholder dilution over the period
2. KHC raised its dividend in 2017 then reduced it again in 2019; management prefers paying dividends to its shareholders over buying back shares
3. FCF/Share not available in 2016 due to the merger between Kraft and Heinz finalizing in July of 2015, just months before the start of our time frame
4. Kraft Heinz Company announced the merger between Kraft Foods and H.J. Heinz in early 2015, therefore no accurate revenue data is available to calculate a backwards-looking three-year revenue CAGR in 2016

Notable Events

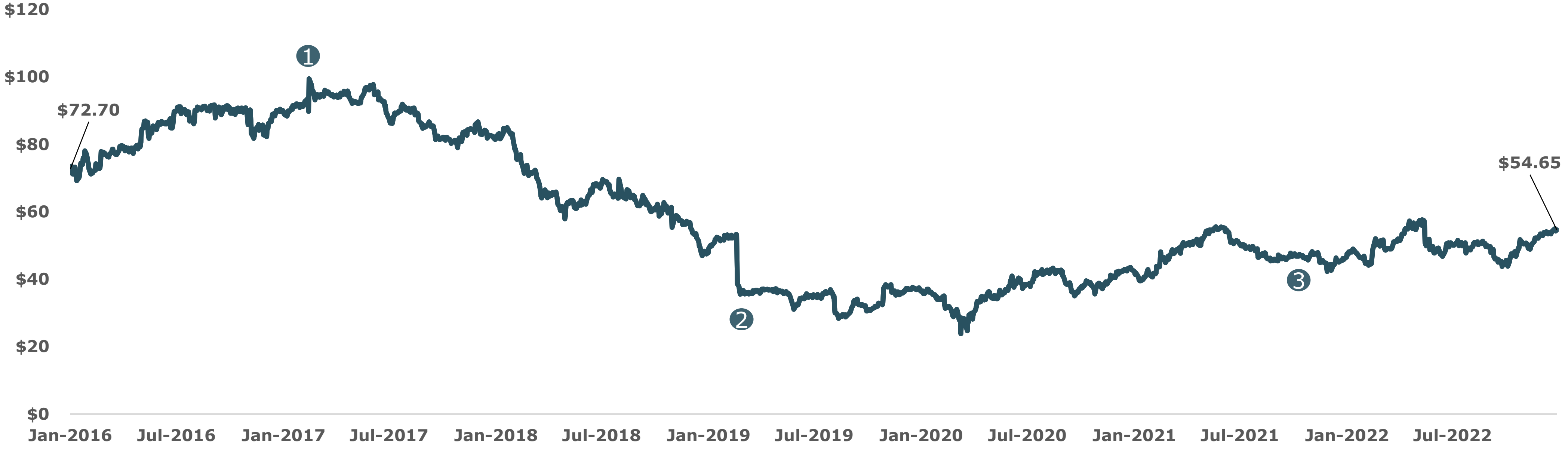
Notable Events

❶ • **Rejected Takeover of Unilever (Feb. 2017):** On February 17, 2017, Kraft Heinz made a $143 billion bid to acquire competitor Unilever, but Unilever rejected the offer because it felt the proposal undervalued the company. Unilever stated it saw no financial or strategic merit for shareholders in the deal, shutting the door on the proposed mega-merger between the two consumer goods giants. Despite Unilever's swift rejection, Kraft Heinz said it looked forward to working to reach an agreement on a potential transaction, leaving the possibility open for a higher offer or future talks.

❷ • **Q4 2019 Earnings (Feb. 2019)**: Kraft Heinz shares plunged 27% to record lows on February 22, 2019, following disappointing fourth quarter earnings results, a big write-down, a dividend cut, and disclosure of an SEC investigation into the company's procurement practices. The massive single-day selloff wiped out over $15 billion in market value for Kraft Heinz and sent the stock tumbling below $40 for the first time since Kraft spun off in 2012.

❸ • **Accounting Fraud (Oct. 2021):** The Securities and Exchange Commission charged Kraft Heinz and two former executives in September 2021 for engaging in accounting misconduct from 2015-2018 that resulted in misreporting cost savings and inflated earnings. To resolve the charges, Kraft agreed to pay a $62 million penalty. The accounting improprieties led Kraft to restate several years of inflated financial reporting after its 2019 internal investigation found nearly $208 million of bogus cost savings.

# of 20%+ Drawdowns	1
Max Drawdown	-76%



Competitive Landscape

Competition

- **Mondelez International (MDLZ ~$91.0B market cap):** Mondelez International, Inc. is a multinational food and beverage company based in the United States. Formed in 2012, it was previously under the Kraft Foods brand before being spun off as Mondelez. The company's diverse product portfolio includes popular brands in various categories, such as chocolates (Cadbury, Milka), biscuits and cookies (Oreo, Chips Ahoy!), gum and candy (Trident, Sour Patch Kids), and other snack products (Ritz, Toblerone).
- **Kellogg (K ~$24.3B market cap):** Kellogg Company, commonly known as Kellogg, is a major American multinational food company. Founded in 1906, Kellogg is a global leader in the production of breakfast cereals, snacks, and convenience foods. The company's product portfolio includes popular brands such as Kellogg's Corn Flakes, Frosted Flakes, Special K, Rice Krispies, Pop-Tarts, Pringles, and Cheez-It, among others.
- **General Mills (GIS ~$49.4B market cap):** General Mills is a leading American multinational food company, headquartered in Minnesota, USA. Established in 1928, the company has grown to become one of the world's largest producers of packaged consumer foods. General Mills offers a diverse range of well-known food brands in various categories, including breakfast cereals, snacks, baking products, frozen foods, yogurt, and pet food.

At the start of the 2016-2022 period, Kraft Heinz seemed well-positioned competitively after its 2015 merger. As a newly combined CPG giant, Kraft Heinz boasted leading brands like Kraft Mac & Cheese, Oscar Mayer, Heinz Ketchup, and Philadelphia Cream Cheese. Its focus on zero-based budgeting and synergies from the merger delivered earnings growth and margin expansion in 2016-2017, outpacing rivals. However, by the end of the period in 2022, Kraft Heinz struggled both operationally and competitively. Its sales declined as competitors innovated in faster growing categories like natural/organic foods. Kraft Heinz failed to adapt its portfolio, instead clinging to legacy brands while writing down the value of Kraft and Oscar Mayer. Its bid for Unilever was rebuffed in 2017. Meanwhile, other CPG peers pivoted their portfolios, as evidenced by acquisitions like General Mills-Annie's, Hershey-Amplify Snacks, and Conagra-Pinnacle Foods.

Perceived Moat (2016) – Branding, Scale Economies

Rationale: Branding – Kraft Heinz Co. has a portfolio of world-class, iconic brands. The company was successful with big bets and innovations like Lunchables, P3, Heinz Yellow Mustard, Sauces in Europe, and Mayo in Brazil in 2016. It continued to support strong levels of investment in R&D to carry forward big bets in 2016 and 2017. The company's brands are well recognized and trusted by consumers, which can create a significant barrier to entry for competitors.

Scale Economies –The company significantly improved its case fill rate in the United States and Europe to over 97%, its best performance in both the legacy Heinz and legacy Kraft business in 2016. The company's large scale allows it to spread its fixed costs over a larger volume of output, which can lead to lower average costs and a competitive advantage.

Reason for Erosion of Moat: KHC’s moats were eroded as it failed to invest in product innovation and refresh its legacy brands to align with changing consumer preferences for healthier, fresher foods. The company also relied too heavily on cost cutting and zero-based budgeting, sacrificing marketing and R&D spending needed to maintain brand strength. Finally, competitors innovated their portfolios through acquisitions of on-trend brands while Kraft clung to outdated categories, causing its scale advantage to diminish as smaller rivals gained share in faster growing spaces.

Conclusion - What drove shareholder underperformance?

1. **SEC Investigation:** In September 2021, the SEC charged Kraft Heinz and two former executives with engaging in a years-long accounting scheme from 2015-2018 that resulted in misstated cost savings and inflated earnings. The SEC accused Kraft of manipulating supplier agreements and touting bogus cost savings that misled investors, requiring the company to restate several years of inflated financial reporting. The high-profile SEC enforcement action against a iconic American brand like Kraft Heinz damaged its reputation with consumers and shareholders. The misconduct went to the heart of the company's perceived integrity and financial reporting credibility. The lawsuit cemented perception that management prioritized reported earnings over ethics and compliance. This reputational harm from the SEC charges further undermined investor confidence in Kraft Heinz's brand and strategy, weighing on its stock price performance.

2. **Changes in Consumer Preference:** Kraft Heinz failed to keep pace with evolving consumer preferences over the 2016-2022 period, sacrificing its competitive position. As consumers increasingly sought out fresh, organic, and innovative products, Kraft clung to outdated legacy brands while underinvesting in R&D and marketing. The company's rigid focus on cost-cutting prevented needed pivot to align with demand for healthier, more transparent offerings. Critically, Kraft missed key trends like clean label, plant-based, and sustainability that competitors leveraged to drive growth. For example, while General Mills and Hershey acquired natural/organic brands like Annie's and Amplify Snacks, Kraft doubled down on processed cheese and lunchmeat. Kraft ceded ground in emerging spaces to nimble upstarts, lacking relevant M&A and innovation of its own. Its failure to refresh flagship brands or move into faster-growing categories made Kraft Heinz ill-equipped to compete as tastes evolved. Adapting to changes in consumer behavior is mission-critical in the food industry, and Kraft's inability to do so was a key driver of its deteriorating performance.

3. **Increased Competition & Failure to Pivot:** Kraft Heinz's intense focus on cost-cutting backfired, as the company failed to adapt its outdated brands and product portfolio to meet changing consumer preferences. While competitors acquired natural and organic brands, Kraft clung to legacy products like Kraft Mac & Cheese as shopper tastes shifted healthier. Analysts criticized the lack of innovation and overreliance on synergies from the Kraft-Heinz merger, with failed bids for Unilever signaling acquisition-driven growth rather than fixing the core business organically. The SEC investigation into Kraft's accounting practices further undermined credibility. With margins squeezed by grocery price wars, the rigid emphasis on costs over consumer-focused investment to refresh its offerings led to sales declines, eroding market share, and plummeting financial performance, weighing heavily on shareholder returns.

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3D Systems Corporation (DDD)

3D SYSTEMS

Company Overview:

Founded in 1986, 3D Systems Corporation, also known as 3D Systems, is a leading provider of comprehensive 3D printing and digital manufacturing solutions. The company markets its products and services through subsidiaries in North America, South America, Europe, the Middle East, and the Asia Pacific and Oceania region. Their offerings include 3D printers for plastics and metals, materials, software, and digital design tools. These solutions support advanced applications in two key industry verticals: Healthcare Solutions and Industrial Solutions.

	1/1/2016	12/31/2022	
Stock Price*	$9.83	$7.40	
Market Cap	$1,101.7	$970.6	1
Enterprise Value	$953.5	$904.0	
Shares Outstanding	112.1	131.2	
Net Debt	-$146.9	-$68.4	
Debt/Equity	1.0%	67.0%	2
Dividend Yield	N/A	N/A	
P/E	N/A	N/A	
EV/Sales	1.4x	1.7x	
EV/EBITDA	N/A	N/A	
FCF/Share	-$0.2	-$0.7	
Gross Margin	33.0%	41.0%	
EBITDA Margin	N/A	N/A	
Trailing 3yr Rev CAGR	23.5%	-5.1%	3
Trailing 7yr Rev CAGR		-3.0%	
Analyst Buy %	23.8%		
Analyst Hold %	61.9%		
Analyst Sell %	14.3%		

*Numbers in millions excluding stock price

Management

CEO: Vyomesh Joshi (2016-2020), Jeff Graves (2020-Present), Former CEO of Mts Systems Corp.

CFO: Dave Styka (2015-2016), John Mcmullen (2016-2019), Todd Booth (2019-2020), Jagtar Narula (2020-2022), Michael Turner (2022-Present), Former CFO of Innovative Chemical Products Group

COO: Mark W Wright (2014-2016), No current COO

Analysis

1. The market cap of 3D Systems decreased by ~12% over the period, largely due to high material costs, slow printing time, and limited consumer adoption
2. Debt to equity ratio increased 66% due to the issuing of a $460 million convertible bond, making acquisitions, and investing in growth and restructuring
3. Sales growth decreased due to factors such as irregular sales cycles, inventory management complexities, and prevailing macroeconomic conditions

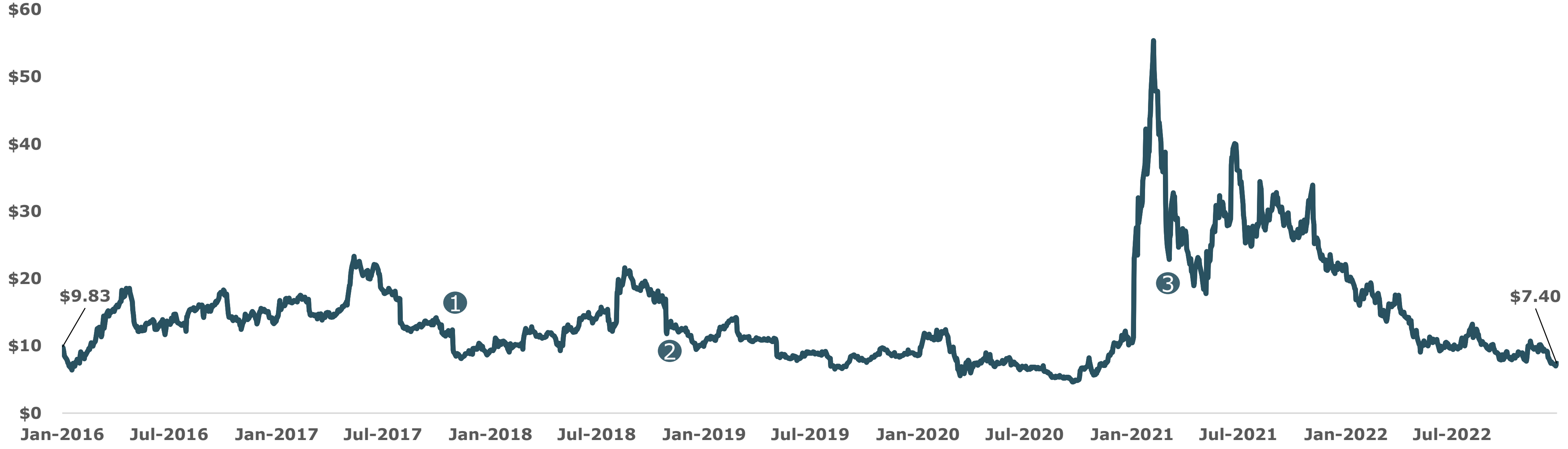
Notable Events

1 • **Q3'17 Performance (Oct. 2017)**: 3D Systems faced a challenging Q3 in 2017, with total revenue for the quarter decreasing due to a mix and price of units sold which resulted in no increase in printer revenue. Despite a 10% increase in healthcare revenue and a 3% increase in on-demand manufacturing revenue, the company's software revenue remained flat. Additionally, the company's non-GAAP R&D expenses increased by 21%, primarily driven by investments in plastics, metals, materials, and software. This combination of factors contributed to the company's underperformance in Q3 2017.

2 • **Q3'18 Performance (Nov. 2018):** 3D Systems faced significant challenges in Q3 2018. The company's total revenue decreased to $164.5 million, down from $176.6 million in Q2 2018, marking a notable slowdown in the company's growth. While printer revenue increased by 17% due to a 93% increase in printer unit sales, the company warned of continued fluctuation in printer unit sales, revenue mix, and overall average ASPs.

3 • **Q4’20 Performance (Mar. 2021):** In FY2020, the company's stock initially rose due to the successful sale of non-core software assets, creating high expectations. The company's financial performance fell short, with a notable drop in consolidated revenue and gross profit, and cost-cutting measures signaled the severity of the situation.

# of 20%+ Drawdowns	3
Max Drawdown	-68%



Competitive Landscape

Competition

- **Stratasys (SSYS ~$0.8B market cap):** Stratasys is a global leader in 3D printing and additive manufacturing solutions, offering a wide range of products from desktop 3D printers to large, advanced production systems. The company's business model is centered on providing innovative solutions to industries such as healthcare, aerospace, automotive, and education, enabling them to prototype, produce, and personalize products more efficiently.
- **Formlabs (Private):** Formlabs is a leading manufacturer in the 3D printing industry, known for its high-quality, affordable desktop stereolithography printers, materials, and software. The company's business model is centered on providing professionals in various industries, including engineering, design, healthcare, and education, with the tools to create complex and detailed 3D printed models.
- **Voxelijet (VJET ~$0.2B market cap):** Voxeljet is a leading provider of high-speed, large-format 3D printers and on-demand parts services to industrial and commercial customers. The company's business model is centered on delivering advanced additive manufacturing systems and services that cater to a wide range of industries, including automotive, aerospace, film, engineering, and architecture.

The 3D printing industry underwent a significant shift from prototyping to additive manufacturing for production, driven by advancements in 3D printing solutions. However, external factors such as the COVID-19 pandemic and supply chain disruptions led to a slowdown in the industry, disappointing investors.

Perceived Moat (2016) – Process Power

Rationale: 3D systems leveraged its unique 3D printing process, which combines hardware, software, and material science, to create solid objects from computer models. This process was applied on an industrial scale with appropriate materials to manufacture unique components for improved functionality at commercially viable costs. The company's process power was further demonstrated by its ability to shift from prototyping applications to using 3D printing for production, driven by advancements and innovations in 3D printing solutions that improved durability, repeatability, productivity, and total cost of operations.

Reason for Erosion of Moat: 3D Systems' process power eroded due to high material costs, slow printing times, and limited consumer adoption. The high costs made the technology less accessible, impacting the company's competitive positioning. Slow production times reduced efficiency, making it less appealing to industries requiring speed. Lastly, despite its potential, 3D printing failed to gain widespread consumer acceptance, contributing to the industry slowdown.

Conclusion - What drove shareholder underperformance?

1. **High Material Costs:** High material costs have been a significant factor in the underperformance of 3D Systems. The company's strategy of investing in materials and software to support the shift to 3D production led to increased costs. Despite a 4% increase in materials revenue, the company had to write down a significant amount in inventory, indicating that the cost of materials was not being fully recouped. The company's focus on a broad range of materials also increased costs, as it required investment in research and development and supply chain optimization. Furthermore, the company's strategy of focusing on part cost rather than material cost has not yet led to significant improvements in performance. The company's focus on production applications, which provide higher volume materials usage, has also not yet led to significant improvements in performance.

2. **Slow Printing Time:** Slow printing time has also contributed to the underperformance of 3D Systems. Despite investments in improving the reliability and speed of its printers, significant improvements in performance have not been realized. The company's focus on production applications increased the demand for fast printing times, but this demand has not yet been met. The company's strategy of focusing on production printers and reducing supply chain costs has not yet led to significant improvements in printing time. Additionally, the company's focus on developing a broad range of materials, which requires more time to print, has also contributed to slow printing times. The company's strategy of focusing on production applications, which require fast printing times, has not yet led to significant improvements in printing time.

3. **Limited Consumer Adoption:** Limited consumer adoption has been a significant factor in the underperformance of 3D Systems. Despite investments in marketing and customer support, significant improvements in performance have not been realized. The company's strategy of focusing on production applications and providing a complete solution has not yet led to significant consumer adoption. The company's focus on a broad range of materials and printers has also increased the complexity of its offerings, which may have limited consumer adoption. Moreover, the company's focus on specific markets such as investment casting and jewelry, and entry-level prototyping, has not yet led to significant consumer adoption. The company's strategy of focusing on production applications, which require a high level of consumer adoption, has not yet led to significant improvements in consumer adoption.

Expedia Group (EXPE)

Company Overview

Expedia Group, commonly known as Expedia, was founded in 1996. The company is a global travel technology company that operates several international online travel brands, including Expedia.com, Hotels.com, Hotwire.com, and many more. Expedia's core products include a range of travel booking options, such as flights, hotels, car rentals, cruises, and vacation packages, as well as business-to-business (B2B) services for travel industry partners. The company's business model involves providing a marketplace for travelers and travel service providers, leveraging technology to enhance the travel booking experience, and expanding its addressable market through the delivery of its technology as microservices.

	1/1/2016	12/31/2022	
Stock Price*	$120.80	$91.48	
Market Cap	$18,152.3	$13,673.6	
Enterprise Value	$20,367.4	$17,603.6	
Shares Outstanding	137.5	150.6	1
Net Debt	$1,491.2	$2,485.0	
Debt/Equity	57.3%	177.8%	2
Dividend Yield	0.8%	N/A	
P/E	54.5x	18.5x	
EV/Sales	3.1x	1.5x	
EV/EBITDA	22.5x	9.4x	
FCF/Share	$4.7	$17.8	3
Gross Margin	80.1%	84.3%	
EBITDA Margin	13.6%	16.1%	
Trailing 3yr Rev CAGR	18.3%	-1.1%	4
Trailing 7yr Rev CAGR		8.3%	
Analyst Buy %	51.9%		
Analyst Hold %	48.1%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Dara Khosrowshahi (2005-2017), Mark Okerstrom (2018-2019), Peter Kern (2020-Present), Former CEO of Univision Communication

CFO: Mark Okerstrom (2011-2017), Alan Pickerill (2018-2019), Eric Hart (2020-2022), Julie Whalen (2022-Present), Former CFO of Williams-Sonoma

COO: N/A

Analysis

1. ~10% share dilution as company raised money to attempt to pay down debt
2. Debt to equity increase of 210% as large debt issuances occurred in 2017 and 2020 to raise capital for investments and help rebound the company post-COVID-19 pandemic
3. Large 278% increase in FCF/share due to improvements in adj. EBITDA, favorable working capital dynamics, declining capital intensity, and a deferment to merchant bookings
4. Decrease in Expedia’s trailing 3-year due to decreasing search results as a result of the COVID-19 pandemic and increase in competition

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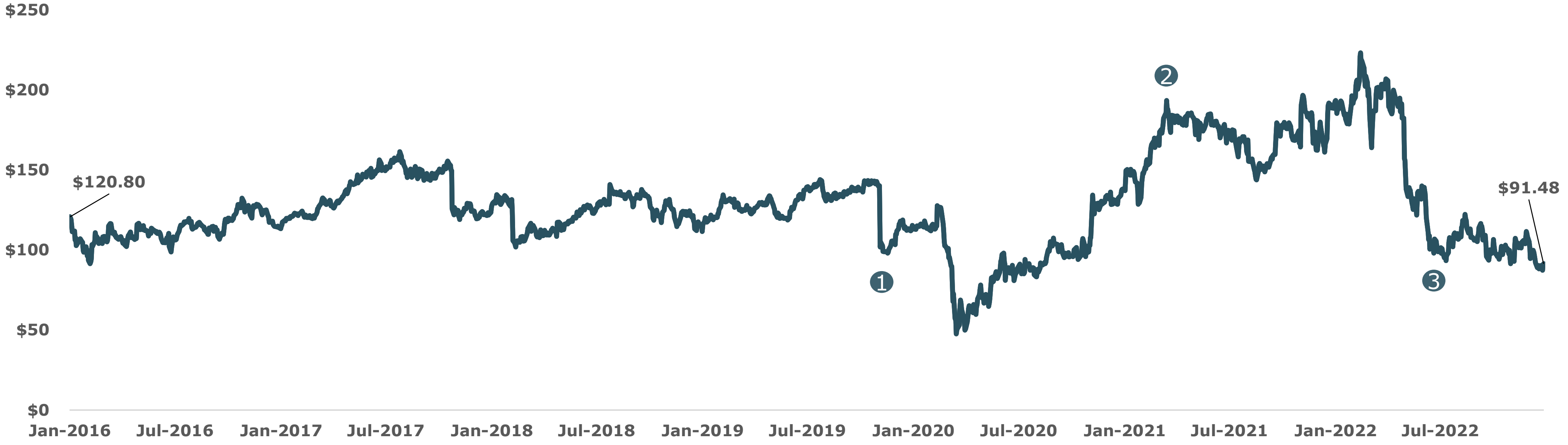
Notable Events

Notable Events

- ❶ **Q3 2019 Earnings Miss (Nov. 2019):** Expedia's stock price fell sharply after the company reported lower than expected Q3 earnings of $3.38 per share, below forecasts of $3.80 per share. The earnings miss was blamed partly on decreased visibility in Google search results. Expedia also cut its full year earnings outlook due to the headwinds, leading investors to sell off shares.
- ❷ **Post Pandemic Travel Boom (Mar. 2021):** The easing of COVID-19 pandemic restrictions led to a boom in travel demand, as people began taking postponed trips and booking new vacations. Expedia benefited from this post-pandemic travel rebound, with bookings and revenue increasing sharply compared to the prior year.
- ❸ **Q1 2022 Financial Underperformance and Market Challenges (Jun. 2022):** Between April and June 2022, Expedia's share price plummeted due to a combination of market challenges and financial underperformance. The company reported a net loss of $122 million in Q1 2022, despite seeing recovery indicators in the leisure travel sector. The impact of the Omicron variant and the war in Ukraine also contributed to the company's underperformance during this period. Competitors like Airbnb outperformed expectations and an earnings miss from Expedia led investors to believe the company’s competitive positioning had been eroded by Airbnb.

# of 20%+ Drawdowns	5
Max Drawdown	-70%



Competitive Landscape

Competition

- **Booking Holdings (BKNG ~$78.2B market cap):** Booking Holdings Inc. is a leading provider of online travel and related services to consumers and local partners across more than 220 countries and territories worldwide. The company's portfolio includes some of the most recognized brands in the industry, such as Booking.com, Priceline, Agoda, Kayak, Rentalcars.com, and OpenTable. Through these platforms, Booking Holdings offers a broad array of travel services including accommodation reservations, car rentals, flight bookings, restaurant reservations, and various other travel-related services.
- **Airbnb (ABNB ~$54.2B market cap):** Airbnb, Inc. is a global online marketplace that connects people looking to rent their homes with people who are looking for accommodations. The platform offers a wide range of unique travel experiences in more than 220 countries and territories around the world, from single rooms to entire homes, along with Experiences that are handcrafted activities designed and led by local experts.
- **Tripadvisor (TRIP ~$2.5B market cap):** Tripadvisor, Inc. is one of the world's largest travel platforms, providing users with a wide array of travel choices along with millions of reviews and opinions from travelers worldwide. The platform offers a comprehensive selection of accommodations, restaurants, experiences, airlines, and cruises, allowing travelers to plan and book their perfect trip.

In 2016, Expedia was a strong contender in the online travel industry, boasting an expansive global lodging portfolio with over 307,000 properties available on its sites. The company was making strides in mobile technology and loyalty programs, with the Hotels.com mobile app surpassing 60 million downloads and its Rewards program growing steadily. However, the landscape was evolving, with competitors like Airbnb, Booking.com, and TripAdvisor emerging as leaders in the alternative accommodation and vacation rental market. In 2022, despite its efforts to optimize results by managing marketing investments holistically across the brand portfolio, Expedia was outpaced by its competitors. Airbnb, Booking.com, and TripAdvisor had not only grown their market share but were also aggressively pursuing direct online distribution of their products and services. The rise of the "sharing economy" further compounded Expedia's challenges, as it reshaped the travel and lodging industry and shifted consumer preferences towards alternative accommodations. As a result, Expedia's market position weakened, underscoring the company's struggle to keep up with the evolving dynamics of the travel industry and the competitive strategies of its rivals.

Perceived Moat (2016) – Network Economies

Rationale: In 2016, Expedia's moat was largely driven by its network economies. Expedia's scale, with over 307,000 properties available on its sites in 2016, allowed it to negotiate competitive rates with its supply partners. This scale advantage not only provided a wide range of choices to its customers but also created barriers for smaller competitors who might not have been able to match Expedia's extensive property listings and competitive pricing. This scale, coupled with the company's strong brand and extensive user base, positioned Expedia as a dominant player in the online travel industry in 2016.

Reason for Erosion of Moat: By 2022, Expedia's property listings had grown to 2 million, the same number it had in 2019, indicating a slowdown in its growth. Meanwhile, competitor Airbnb had over 6 million properties, significantly outpacing Expedia. This suggests that Expedia’s network economies, which was its key competitive advantage in 2016, has eroded over time as competitors have scaled more rapidly and potentially offered a wider range of choices to customers. Expedia’s pricing power had been eliminated and along with that its moat.

Conclusion - What drove shareholder underperformance?

1. **Increased Competition:** Expedia faced increased competition from rival online travel agencies like Airbnb, which significantly outpaced Expedia's property count. Google's entrance into the travel space with flight and hotel metasearch products posed another major challenge, potentially increasing Expedia's traffic acquisition costs and diverting searches away from its platform. Changes in search algorithms at Google, which Expedia relied on for significant traffic, also presented a risk factor that could impact visibility and revenues. Additionally, the emergence of metasearch sites that aggregated results across travel providers gave consumers more options and siphoned traffic from Expedia's platform. Facing these threats from multiple sides, Expedia struggled to maintain its leadership position as competitors ate into its market share.

2. **Struggle to Adapt to Shifts in Consumer Preference:** A key factor in Expedia's underperformance from 2016-2022 was its struggle to adapt to shifts in consumer preferences, especially the rise of alternative lodging and mobile booking. Expedia expanded into alternative accommodations with its VRBO brand, but faced fierce competition from Airbnb, which far outpaced Expedia's property count by 2022. The surge in mobile booking also brought new rivals, as travel bookings migrated from desktop to apps. Expedia aimed to improve its mobile capabilities, but it's unclear how successful these efforts were in attracting mobile users amid rising competition. Additionally, Google's increasing dominance presented challenges, as its flight and hotel metasearch products drove traffic acquisition costs up for Expedia while diverting searches away from its platform. Expedia's inability to fully capitalize on these consumer trends was detrimental to its market position.

3. **Lack of Innovation:** While Expedia expanded into the alternative accommodations market with the acquisition of VRBO in 2015, it faced stiff competition from platforms like Airbnb, which emerged as a leader in this space. By 2022, Airbnb had over 6 million properties, significantly outpacing Expedia's 2 million properties. This indicates that Expedia may have been slow to adapt to the growing consumer preference for alternative lodging options, which could have impacted its market share and revenues. Expedia relied heavily on its legacy business models, which may have hindered its ability to innovate and adapt to new market trends. For instance, the company continued to facilitate both merchant (Expedia Collect) and agency (Hotel Collect) hotel offerings with its hotel supply partners through both agency-only contracts as well as its hybrid Expedia Traveler Preference (“ETP”) program. While this model may have worked in the past, the rapid evolution of the travel industry and the emergence of new business models may have necessitated a more innovative approach.

NuVasive Inc (NUVA)

NUVASIVE

Company Overview

Founded in 1997, NuVasive Inc. is a medical device company that specializes in developing innovative surgical solutions to fulfill unmet clinical needs while improving clinical, financial, and operational outcomes. The company's business model is focused on rapidly developing and commercializing these solutions, and it relies heavily on its ability to acquire, develop, and introduce new products and enhancements to existing products to keep pace with changes in technology and market demand. The company's success is also dependent on its ability to effectively demonstrate to surgeons and hospitals the value proposition of its products and procedural solutions.

	1/1/2016	12/31/2022	
Stock Price*	$52.25	$41.24	
Market Cap	$2,565.3	$2,150.0	
Enterprise Value	$2,476.2	$2,908.5	
Shares Outstanding	49.1	52.1	
Net Debt	-$96.5	$758.5	1
Debt/Equity	52.0%	115.9%	2
Dividend Yield	N/A	N/A	
P/E	56.7x	43.0x	
EV/Sales	3.1x	2.4x	
EV/EBITDA	12.1x	11.6x	
FCF/Share	$0.3	$0.6	
Gross Margin	76.2%	70.3%	3
EBITDA Margin	25.3%	20.9%	
Trailing 3yr Rev CAGR	9.4%	1.0%	4
Trailing 7yr Rev CAGR		5.8%	
Analyst Buy %	25.0%		
Analyst Hold %	75.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Greg Lucier (2015-2018), Chris Barry (2018-Present), Former Senior VP of Surgical Innovations at Medtronic PlC

CFO: Quentin S Blackford (2014-2017), Raj Asarpota (2017-2019), Matt Harbaugh (2020-Present), Former Executive VP of Specialty Generics at Mallinckrodt PLC

COO: Pat Miles (2015-2016), Jason Esq (2016-2017), no current COO

Analysis

1. The significant increase in debt helped fund the $150 million acquisition of Simplify Medical in 2019, which expanded NuVasive's product portfolio
2. Debt to equity doubled throughout the period; NuVasive took on $450 million in new debt to fund acquisitions in 2019
3. 590bps decrease in gross margin reflecting lower profitability due to acquisitions of businesses with lower gross margins
4. 84% decrease in trailing 3-year revenue CAGR due to decline in sales during the COVID-19 pandemic shutdowns and supply chain disruptions coupled with staffing shortages post-COVID-19 pandemic

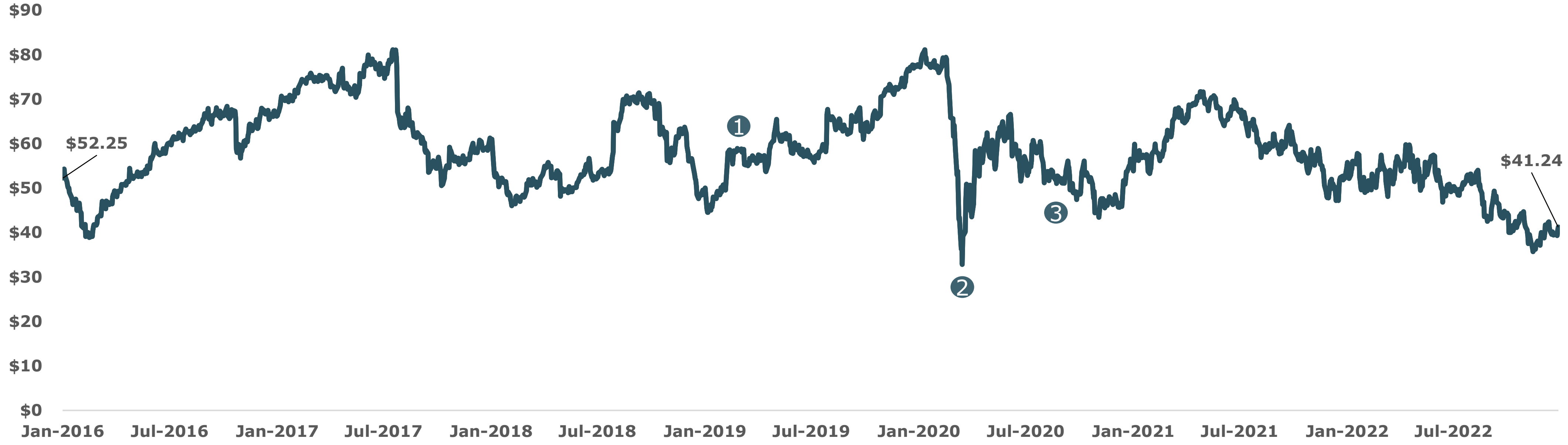
Notable Events

❶ • **Lackluster Acquisition (Feb. 2019):** NuVasive's $150 million acquisition of Simplify Medical in February 2019 expanded its product portfolio but also increased leverage, weighed on margins, and presented integration challenges that contributed to slower growth and a >20% stock price decline through end of 2022. The deal was seen as a key factor behind NuVasive's financial underperformance in the years after the acquisition.

❷ • **COVID-19 Pandemic (Mar. 2020):** The COVID-19 pandemic caused a significant reduction in elective spine surgery volumes starting in 2020, which weighed on NuVasive's revenue growth through 2022; the pandemic also disrupted NuVasive's supply chain and distribution, driving up costs and impairing product deliver. As a result, NuVasive's stock price hit a pre-pandemic high in February 2020 that it has yet to recover to due to the ongoing impacts to operations and financial results.

❸ • **MAGEC System Lawsuits (Sep. 2020):** NuVasive faced lawsuits and plummeting sales after recalling its MAGEC system for early onset scoliosis in 2020, due to device malfunctions that caused severe complications in patients. The recall and subsequent FDA safety warnings about biocompatibility issues with the redesigned device hurt NuVasive's reputation and revenue growth. Multiple studies found high failure rates with complications in up to 57% of MAGEC implant patients, further damaging market perception of the product.

# of 20%+ Drawdowns	10
Max Drawdown	-60%



Competitive Landscape

Competition

- **Medtronic (MDT ~$103.4B market cap):** Medtronic plc is a global leader in medical technology, services, and solutions, developing and manufacturing devices and therapies to treat chronic diseases. Its broad product portfolio includes pacemakers, defibrillators, heart valves, stents, insulin pumps, spinal fixation devices, neurovascular products, and surgical tools. The company's business model is based on the sale of these medical devices and therapies to healthcare institutions and professionals around the world.
- **Stryker Corporation (SYK ~$92.5B market cap):** Stryker Corporation is a globally recognized medical technology company that offers innovative products and services in Orthopedics, Medical and Surgical, and Neurotechnology and Spine segments. Its product portfolio includes implants used in joint replacement and trauma surgeries, surgical equipment, neurovascular and spinal devices, and endoscopic systems. The company's business model revolves around the design, manufacture, and sale of these medical devices, primarily to healthcare providers and institutions.
- **Alphatec Spine (ATEC ~$1.3B market cap):** Alphatec Spine, Inc. is a medical technology company dedicated to innovating spine surgery. It designs, develops, and markets spinal fusion technology products and solutions for the treatment of spinal disorders associated with disease and degeneration, congenital deformities, and trauma. The company's business model is primarily based on the sale of these medical devices to healthcare providers and institutions.

NuVasive was well-positioned in the growing spine market in 2016 but faced increasing competition from larger players like Medtronic and Alphatec Spine over time. These rivals had advantages in brand recognition, hospital/surgeon relationships, distribution reach and financial resources. Despite R&D investments, NuVasive struggled to keep pace in developing new products and obtaining regulatory clearances. By 2022, NuVasive had lost competitive ground, further hurt by legal disputes with rivals. Unable to match competitors' product innovation and market dynamics, NuVasive lost its competitive edge in the spine surgery market during this period.

Perceived Moat (2016) – Counter Positioning

Rationale: In 2016, NuVasive was competitively positioned in the large and growing global spine market, with the company highlighting its industry-leading innovation and integrated procedural solutions as key strengths. NuVasive was counter-positioned against other traditional more invasive medical surgery companies, as it had developed a unique approach to the spine market that was difficult for competitors to replicate without sacrificing their existing business.

Reason for Erosion of Moat: NuVasive’s counter positioning was eroded over the timeline of the 7-year period due to competitors who had access to greater resources and a larger distribution network developing alternative treatments products, and procedures for the treatment of spine disorders that competed with NuVasive’s offerings. Additionally, NuVasive’s product development strategy, which was based on certain assumptions about demographic trends in the treatment of spine disorders, did not keep pace with the real rapidly changing market dynamics. NuVasive carved out a market niche to itself when it launched the revolutionary Maximum Access Surgery for spine surgery, but the company’s innovation slowed, and it had no way to sustain profits from being outcompeted as competitors caught up to NuVasive’s once innovative products and procedures.

Conclusion - What drove shareholder underperformance?

NUVASIVE

1. **Legal Disputes:** NuVasive faced costly legal disputes such as patent infringement lawsuits with rival Alphatec Spine starting in 2019. These legal battles could have significantly impacted NuVasive's competitive positioning and financials. Defending against lawsuits creates financial costs such as legal fees and potential damages or settlements. Additionally, litigation is a distraction for management who must devote time and resources to the cases rather than focus on business operations and strategy. Finally, NuVasive's reputation in the marketplace may have suffered from the publicity around these lawsuits, making surgeons and hospitals less inclined to use their products. The direct costs and indirect impacts of NuVasive's legal disputes likely hurt their competitiveness against rivals like Alphatec during this period. With lawsuits posing threats to the company's finances, management attention, and brand perception, NuVasive's shareholder value and market position were put at risk by these legal conflicts with competitors.

2. **Increased Competition:** Over the years, NuVasive faced increasing competition from both larger and smaller spine companies, including key competitors like Medtronic and Alphatec Spine. As a leader in the spinal hardware market, Medtronic had far greater resources and scale compared to NuVasive. Medtronic's decades of experience, massive salesforce, and broad product portfolio made it challenging for NuVasive to take market share. Meanwhile, emerging competitors like Alphatec were nimble and innovative. Alphatec developed competitive offerings and enhanced their sales and marketing efforts to go after NuVasive's core business. These larger and smaller competitors had several innate advantages over NuVasive, including greater name recognition, established relationships with a greater number of surgeons and hospitals, larger distribution networks, and greater financial resources. This increased competition from all sides likely put immense pressure on NuVasive's market share and profitability, significantly contributing to the company's shareholder underperformance.

3. **Slowdown in Innovation:** NuVasive's product development strategy was based on assumptions about demographic trends and spine disorder treatment that may have missed rapidly shifting market dynamics. The company likely struggled to keep pace with changing surgeon needs and expectations. Meanwhile, competitors were nimble and quick to innovate, rapidly iterating spinal implants and procedural instrumentation. NuVasive's slower product development process caused them to lose ground as rivals launched improved next-generation offerings. With outdated portfolio lacking key innovations, NuVasive likely lost market share as surgeons adopted competitors' newer technologies. This potential slowdown in innovation left NuVasive unable to keep up with the market's demanding pace of change. The resulting decline in cutting-edge products and loss of market share likely hurt NuVasive's financial performance and shareholder value. Lagging product innovation was a major factor allowing aggressive competitors to erode NuVasive's competitive position.

4. **Impact of the COVID-19 Pandemic:** The COVID-19 pandemic had a severe impact on NuVasive's business starting in 2020. With hospitals postponing elective surgeries to focus on COVID-19 pandemic care, NuVasive saw a major reduction in spine procedure volumes as patients delayed operations. This top-line decline in revenue-driving procedures significantly hurt financial performance. Moreover, COVID-19 pandemic severely disrupted global supply chains. NuVasive faced shortages of key materials and components, longer shipping times, constrained logistics capacity, and spiking costs for raw materials, labor, and delivery. The inability to reliably obtain supplies and manufacture products likely further reduced volumes and revenue. These pandemic-related impacts to operations and procedures likely diminished NuVasive's financial performance and shareholder value. The COVID-19 pandemic created a perfect storm of reductions in elective surgeries decreasing demand just as supply chain turmoil limited NuVasive's ability to fulfill orders. This combination of revenue decline and operational disruption provides a compelling explanation for NuVasive's pandemic-era underperformance, of which the company has never fully recovered with its all-time highs being just days before the beginning of the global pandemic.

Fluor Corporation (FLR)

FLUOR®

Company Overview

Fluor Corporation, commonly known as Fluor, was incorporated in Delaware in September 2000, but through its predecessors, it has been in business for over a century. The company is a global professional services firm providing engineering, procurement, construction, fabrication and modularization, operations, maintenance and asset integrity, as well as project management services, on a global basis. Fluor provides these services to its clients in a diverse set of industries worldwide including oil and gas, chemicals and petrochemicals, mining and metals, infrastructure, life sciences, advanced manufacturing and advanced technologies.

	1/1/2016	12/31/2022	
Stock Price*	$47.71	$38.03	
Market Cap	$6,756.3	$3,924.8	
Enterprise Value	$5,491.4	$3,811.8	
Shares Outstanding	141.6	142.1	
Net Debt	-$1,381.1	-$1,323.0	
Debt/Equity	31.7%	65.2%	
Dividend Yield	1.6%	N/A	1
P/E	13.0x	481.4x	2
EV/Sales	0.3x	0.3x	
EV/EBITDA	5.8x	13.5x	
FCF/Share	$4.3	-$1.0	3
Gross Margin	5.8%	3.6%	4
EBITDA Margin	5.2%	2.1%	
Trailing 3yr Rev CAGR	-13.1%	-7.4%	
Trailing 7yr Rev CAGR		-3.9%	5
Analyst Buy %	54.2%		
Analyst Hold %	41.7%		
Analyst Sell %	4.2%		

*Numbers in millions excluding stock price

Management

CEO: David Seaton (2011-2019), Carlos Hernandez (2019-2020), David Constable (2021-Present), Former EVP at Fluor Corp

CFO: Biggs Porter (2012-2017), Bruce Stanski (2017-2019), Mike Steuert (2019-2020), Jospeh Brennan (2020-Present), Former Senior VP: Operation Controller

COO: Peter Oosterveer (2014-2017), No current COO

Analysis

1. Suspended dividends in 2021 due to cash flow issues; operating CF decreased 86.4% in 2021
2. P/E expanded 3,603% due to tanking earnings attributable to margin compression, impairments, and execution issues
3. FCF/Share turned negative due to declining revenues and margins despite numerous divestitures to boost cash
4. Gross margin decreased 220bps due to lower volumes, cancellations of projects, and reliance on fixed cost contracts
5. Revenue CAGRs were all negative due to reduced volumes of projects, lower contributions from the power services business, and margin compression

Notable Events

FLUOR®

Notable Events

- ❶ **Q2 2017 Earnings Miss (Aug. 2017):** Fluor Corp reported a revenue of $4.7 billion, slightly down from $4.9 billion the previous year due to a decline in the Energy, Chemicals & Mining segment. The company's EPS was a loss of $0.17, largely due to a $0.89 charge on three power projects in the Industrial, Infrastructure & Power segment due to improper estimating, craft productivity, and equipment issues. Margins compressed to 0.7% from 5.1% YoY.
- ❷ **CEO Stepped Down (May 2019):** Fluor reported a 13.1% decrease in revenues YoY, 41% decrease in sales to government customers, and E&C revenues decreasing 21% during their Q1 2019 earnings call, along with an adjusted net loss of $19 million. Right after, CEO David Seaton stepped down which conveyed uncertainty to investors.
- ❸ **Infrastructure Investment and Jobs Act (Nov. 2021):** President Biden signed the Bipartisan Infrastructure Deal which allocated billions of dollars to infrastructure development. This positively impacted many construction and infrastructure companies such as Fluor, which directly benefited from government funding to stimulate operations.

# of 20%+ Drawdowns	5
Max Drawdown	-90%

Competitive Landscape

FLUOR®

Competition

- **AECOM (ACM ~$11.0B market cap):** AECOM is an American multinational engineering firm that provides a wide range of professional services in various sectors, including infrastructure, environment, construction, design, and consulting. Established in 1990 and headquartered in Los Angeles, California, AECOM has grown into one of the largest and most diverse engineering and consulting companies in the world. AECOM's projects span across multiple industries, such as transportation, water resources, energy, buildings, and defense.
- **Bechtel Group (Private):** Bechtel is an American multinational engineering, construction, and project management company. Founded in 1898 and headquartered in Reston, Virginia, the company offers a comprehensive range of services, including engineering, procurement, construction, and project management for various industries, such as infrastructure, power, oil and gas, mining, and telecommunications.
- **Jacobs Solutions (J ~$18.0B market cap):** Jacobs is a multinational engineering and construction firm headquartered in Dallas, Texas. With a history dating back to 1947, Jacobs has established itself as a leading player in the engineering and consulting services industry. The company offers a comprehensive range of solutions across various sectors, including aerospace, infrastructure, environmental, water, and transportation.

During the early part of the period from 2016-2018, Fluor was the dominant player in the engineering and construction industry, winning large projects and sustaining steady revenues and profits. However, Fluor began underperforming peers in the 2019-2020 timeframe as cost overruns mounted and new contract awards slowed. While macro industry headwinds emerged, Fluor faltered more severely than competitors due to execution missteps and organizational issues. By 2021-2022, Fluor's decline accelerated as revenues and margins deteriorated despite restructuring efforts. At the same time, the company lost ground to focused competitors like Jacobs which secured more profitable government work, with industry consolidation also eroding Fluor's leadership position.

Perceived Moat (2016) – Switching Costs, Scale Economies

Rationale: Switching Costs - Fluor's large, complex projects like oil refineries or chemical plants created high switching costs for clients once contracted. Breaking a contract to switch contractors would force clients to write off sunk costs and re-incur expensive ramp up fees. This built significant inertia to continue using Fluor's services despite execution issues that emerged later. Competitors faced challenges in dislodging Fluor once they were the contractor of record on major multi-year projects. This customer lock-in effect gave Fluor a moderate competitive moat.

Scale Economies - With over $18 billion in revenues in 2016, Fluor's large size afforded advantages in critical areas like purchasing leverage, overhead absorption, and sharing knowledge across projects. Fluor's scale allowed lower materials and equipment costs through volume discounts unavailable to smaller regional competitors. Their project experience enabled spreading fixed overhead over more revenue.

Reason for Erosion of Moat: Fluor's core competitive advantages centered on customer switching costs and scale economies stemming from its size. However, execution missteps damaged client trust while consolidated rivals offered new contracting models to facilitate switching away from Fluor. Organizational and managerial inefficiencies as well as divestitures further diluted Fluor's scale benefits. As these two key moats weakened, Fluor was left vulnerable to margin pressures and share losses.

Conclusion - What drove shareholder underperformance?

1. **Project Execution Issues:** Fluor faced substantial charges, lawsuits, and cost overruns related to alleged deficiencies in how it budgeted, managed, and executed fixed-price projects across multiple segments. These project execution problems resulted in significant unanticipated costs that Fluor absorbed, directly damaging profit margins. Their COGS margin increased from 94% in 2016 to 97.4% in 2022 due to numerous one-time project delay and restructuring costs. For example, charges tied to a gas-fired power plant project in Citrus County Florida alone totaled over $90 million by 2021, while an offshore project in 2020 cost them $186 million in additional project adjustments. Fluor's proven inability to deliver major projects on time and on budget was unlike top competitors like Bechtel and stood in stark contrast to Fluor's historic project excellence. This resulted in competitors, like Jacob, to secure much more high-margin government projects and left Fluor with reduced work and compressed margins.

2. **Industry Consolidation:** Mergers among major global engineering and construction competitors like Jacobs’s acquisition of CH2M Hill served to increase rivals' size, positioning, and competitiveness versus Fluor. For instance, the Jacobs-CH2M tie-up bolstered Jacobs’s capabilities in infrastructure sectors where Fluor previously held edge. This M&A activity eroded the competitive cost structure, bidding power, and other advantages Fluor previously enjoyed from its scale. Fluor failed to keep pace and adjust strategy amid consolidating industry dynamics.

3. **Ill-timed Divestitures:** Fluor engaged in several major divestitures right before broader weakness emerged in many of its core end-markets around 2019-2020. The company sold profitable business units like government services and equipment rental right before broader weakness emerged in core oil & gas and mining end markets. The sales removed over $1 billion in annual revenues from stable business lines like government services and equipment rentals that could have provided cushions as growth slowed and macro challenges intensified. Instead, proceeds were used for share buybacks rather than reinvestment, worsening the lost diversification. Management claimed the units were non-core, but they offered maturation cash flows to fund innovation plus valuable revenue diversification away from cyclical sectors. With revenues compressed, fixed costs comprised a larger portion of the expense structure, squeezing Fluor's margins. The sudden revenue declines forced rapid restructuring versus a more managed approach, which further incurred steep one-time costs. In essence, Fluor's timing on major divestitures was flawed - selling too much, too soon before markets turned. This strategic mistake compounded Fluor's operational and competitive challenges.

4. **Operational Inefficiencies:** Fluor maintained a highly decentralized business unit structure which enabled internal competition for projects and duplication in back-office functions. This increased costs and hindered optimal resource allocation compared to more integrated industry peers. The decentralized structure also bred inconsistencies in strategy and execution across Fluor's divisions. Another one of the key issues has been with the volume and mix of new awards, which could continue to adversely impact the operating results of the company’s fabrication yard in China. To address these challenges, the company has implemented several strategic initiatives and organizational changes aimed at strengthening its financial position and improving operational performance. This included additional restructuring activities initiated during the first quarter of 2019, which involved the rationalization of resources, real estate, and overhead across various geographies. Fluor Corporation has also faced a range of risks that have contributed to its operational inefficiencies. These include delays or defaults in client payments, failure to meet timely completion or performance standards resulting in higher costs or reduced profits, and liabilities arising from faulty services. Moreover, the company's results have been impacted by known and unknown risks, causing its actual results to differ materially from its expectations and projections. This resulted in significant EBITDA margin compression, which dropped from 4.9% in 2016 to 2.6% in 2022 and was even negative in 2019 and 2021 (-4.9% and -0.2%).

Stanley Black & Decker (SWK)

Company Overview

Founded in 1843, Stanley Black & Decker Inc. is a global provider of hand tools, power tools, power tool accessories, automatic door access technology, and engineered fastening systems. The company operates in two main segments: Tools & Outdoor and Industrial. The Tools & Outdoor segment, which makes up a large portion of the company, includes power tools, outdoor power equipment, and hand tools, storage, and accessories. The Industrial segment is heavily weighted towards the Engineered Fastening business, which provides highly engineered fasteners and machines that apply the fasteners used in manufacturing and production for cars, planes, and a variety of other products.

	1/1/2016	12/31/2022	
Stock Price*	$104.87	$86.40	
Market Cap	$15,701.8	$11,113.4	
Enterprise Value	$19,083.7	$19,367.4	
Shares Outstanding	149.7	147.9	
Net Debt	$3,334.3	$7,501.9	1
Debt/Equity	64.9%	81.3%	1
Dividend Yield	2.0%	3.9%	
P/E	17.1x	14.9x	
EV/Sales	1.7x	1.1x	
EV/EBITDA	11.0x	21.7x	
FCF/Share	$6.0	-$14.1	2
Gross Margin	35.6%	18.9%	3
EBITDA Margin	15.5%	5.3%	
Trailing 3yr Rev CAGR	3.3%	5.5%	4
Trailing 7yr Rev CAGR		6.1%	
Analyst Buy %	15.0%		
Analyst Hold %	85.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: James Loree (1999-2022), Donald Allan (2022-Present), Former CFO

CFO: Donald Allan (1999-2021), Corbin Walburger (2022-2023), Patrick Hallinan (2023-Present), Former CFO of fortune Brands Innovations

COO: Jim Loree (2009-2016), Chris Nelson (2023-Present), Former President of Carrier's heating, ventilation, and air-conditioning segment

Analysis

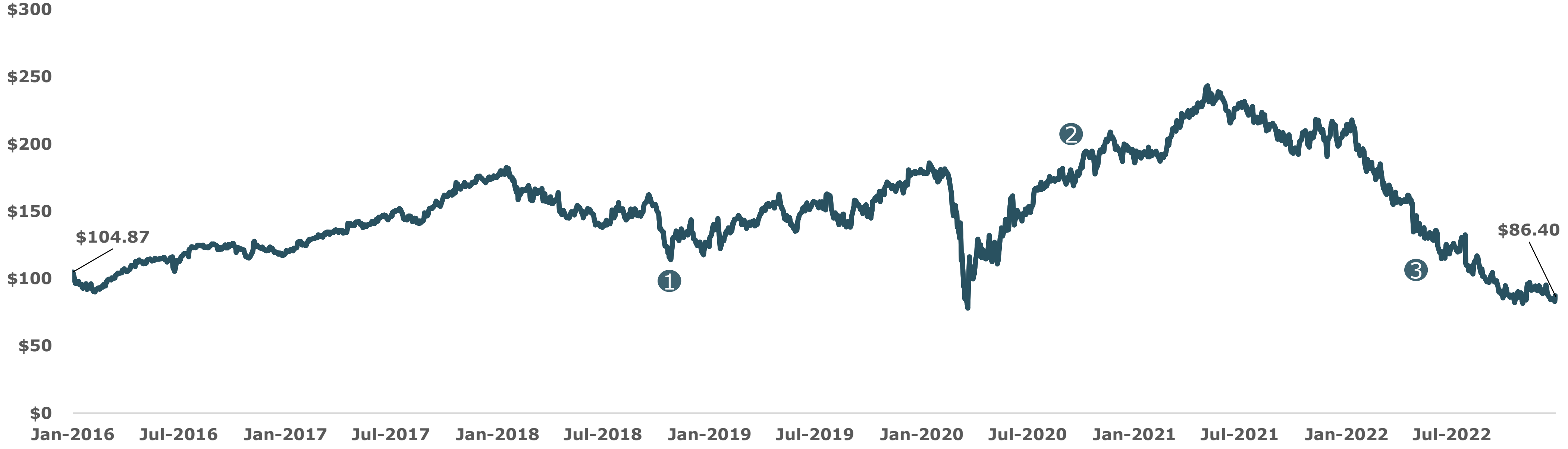
1. Debt/equity and net debt both increased substantially from 2021 to 2022 due to acquisition funding
2. FCF/Share flipped negative due to decreases in working capital
3. Gross margins were nearly cut in half from 2021 to 2022 and EBITDA margins fell by two-thirds indicating significant compression in profitability due to divestitures
4. SWK's revenue growth grew from a 3-year CAGR of 3.3% in 2016 to 5.5% in 2022, largely attributed to 20.5% revenue growth in 2021 from divestitures

Notable Events

Notable Events

- ❶ **2018 Revised Outlook (Oct. 2018):** In their Q3 2018 earnings call, SWK's management revised its 2018 EPS outlook to \$5.90-\$6.00 from \$7.00-\$7.20 due to restructuring charges associated with preparation to implement a \$250 million cost reduction program in 2019.
- ❷ **COVID-19 Pandemic Recovery(2020):** Despite facing supply constraints from the pandemic, SWK ultimately recovered quickly due to increases in demand for DIY home improvement projects. They experienced margin expansion during the second half of 2020 due to hiked demand to offset raw material price increases and supply chain cost issues.
- ❸ **Cost Pressures (2022):** SWK saw a tough year in 2022 due to supply constraints, slowing demand, and external headwinds such as commodity, currency, and tariff challenges. The company also experienced a softening of markets and had to navigate a challenging macroeconomic environment, including inflation, rising interest rates, and significantly slower demand. In response, they divested their security, healthcare, and access technologies businesses in 2022. Though revenues increased the first half of 2022 due to benefits of the divestitures, their margins decreased from 17% to 9.3% in 1 year.

# of 20%+ Drawdowns	9
Max Drawdown	-66%



Competitive Landscape

Competition

- **Snap-on (SNA ~$11.5B market cap):** Snap-on Incorporated is an American manufacturer and distributor of high-quality tools, equipment, and diagnostic solutions for professionals in the automotive, aviation, and industrial sectors. Established in 1920, Snap-on has large product portfolio including hand tools, power tools, tool storage solutions, diagnostic equipment, and automotive repair information systems. Snap-on's business model revolves around a direct sales approach, with a network of franchisees and company-owned stores, ensuring personalized service and support for its customers.
- **Makita Corporation (6586.T ~$9.5B market cap):** Makita Corporation is a leading Japanese manufacturer of power tools, cordless tools, and related accessories, known for its high-quality and innovative products. Established in 1915, Makita has a long history of excellence in engineering and design, catering to both professional tradespeople and DIY enthusiasts. The company's product lineup includes a wide range of power tools, such as drills, saws, grinders, sanders, and cordless equipment powered by their renowned lithium-ion battery technology.
- **Techtronic Industries Company (0669.HK ~$36.5B market cap):** TTI is a multinational manufacturing company based in Hong Kong. Founded in 1985, TTI has grown to become a global leader in the design, production, and marketing of power tools, outdoor power equipment, and floor care appliances. The company's extensive brand portfolio includes well-known names such as Milwaukee, Ryobi, Hoover, and Dirt Devil.

From 2016 to 2021, SWK faced challenges but also showed resilience and adaptability. The company expanded its product range, achieved strong e-commerce growth, and integrated new brands into its portfolio. Despite competition, particularly from Techtronic, SWK remained confident in its competitive position, citing its strong brands and innovation track record. The company also demonstrated financial prudence and strategic agility in response to inflationary pressures and a challenging business environment. However, in 2022, SWK faced several challenges such as supply chain disruptions, logistical challenges and constraints on semiconductor supply, and a slowing demand environment that contributed to underperformance in the end of the period.

Perceived Moat (2016) – Branding

Rationale: SWK's portfolio of brands was a significant competitive advantage in 2016. The company owned several world-class brands, including DEWALT, Stanley, Black & Decker, Porter-Cable, and BOSTITCH. These brands were not only recognized globally but were also associated with high-quality products. This strong brand recognition helped the company to attract and retain customers, command premium pricing, and differentiate its products in the market. Furthermore, the company's brands were seen as reliable and trustworthy, which likely increased customer loyalty and reduced the likelihood of customers switching to competitors. The strength of SWK's brands was a key factor in its market leadership in the tools and storage industry.

Failure to Develop Additional Moat: While SWK's branding moat did not necessarily erode over the time period, SWK failed to develop another moat which was reflected in FY2022. Facing slowing demand, ongoing supply chain struggles, and intensifying competition, SWK continued to lose market share and profitability in 2022. The combination of high debt levels, restructuring costs, lack of major innovations, and loss of retailer shelf space left SWK poorly positioned to keep pace as consumers cut back on discretionary tool purchases. SWK's lack of strategic agility and overreliance on lagging legacy brands exacerbated the challenges of weaker retail dynamics and ongoing operational issues in 2022.

Conclusion - What drove shareholder underperformance?

1. **Operational Inefficiencies:** Stanley Black and Decker faced operational challenges, particularly in coordinating geographically separated organizations, systems, and facilities. This resulted in inefficiencies in communication, delays in decision-making, and increased operational costs. The challenge of managing operations across different geographical locations also led to difficulties in standardizing processes and maintaining consistent quality and service levels. Furthermore, the company faced challenges in managing supply chains, logistics, and distribution networks spread across different regions, which was reflected in their EBITDA margin decreasing from 18.5% in 2016 to 9.3.% in 2022. Much of SWK’s drop in share price happened in 2022, when they divested their security, healthcare, and access technologies businesses which led to their 770bps decrease in EBITDA margin. These operational challenges had a significant impact on the company's overall performance, leading to lower productivity, higher costs, and reduced profitability.

2. **Cost Pressures in 2022:** In 2022, Stanley Black & Decker faced several cost pressures and operational challenges which led to rapid dip in share price. The company anticipated the peak of inflation and supply chain cost headwinds to occur in the fourth quarter of 2021 and the first quarter of 2022 and implemented pricing actions and cost controls to mitigate these issues. Operational streamlining was accelerated to reduce complexity in business processes and decision-making, with a focus on growth investment. The company also grappled with high input costs and transport rates, leading to a carryover impact of nearly $800 million, which was addressed through additional price actions in the first quarter. Supply chain and customer service levels were key operational priorities, alongside driving above-market organic growth and integrating strategic outdoor acquisitions. Logistics posed a significant challenge, with goods stuck in transit at ports, prompting the company to aim for a $0.5 billion reduction in inventory in 2022. Supply constraints led to approximately $200 million in unfulfilled professional power tool opportunities in the first quarter, necessitating improvements in supply in subsequent quarters. The company also focused on inventory management, aiming to modestly reduce inventory levels compared to 2021, with most of the improvement expected in the second half of the year.

3. **Technological Changes:** SWK may have struggled to keep pace with rapid technological changes in the industries in which it operates. In today's fast-paced business environment, technological advancements can quickly render existing products, services, or processes obsolete. The company may have faced challenges in continuously innovating and updating its offerings to stay competitive. Additionally, adapting to new technologies often requires significant investment in research and development, new equipment, and employee training. The company may have also faced challenges in integrating new technologies into its existing operations and systems. Failure to keep up with technological changes could have resulted in lost market share to more innovative competitors, decreased customer satisfaction, and reduced profitability.

Avanos Medical (AVNS)

AVANOS

Company Overview

Avanos Medical, Inc., incorporated in Delaware in 2014, is a medical technology company focused on improving patients' quality of life. The company's core products include MIC-KEY enteral feeding tubes for chronic care and On-Q surgical pain pumps for pain management. Avanos is committed to reducing healthcare costs while improving patient outcomes. The business model is centered on sales growth, margin expansion, positive free cash flow, and strategic capital allocation for growth opportunities.

	1/1/2016	12/31/2022	
Stock Price*	$32.76	$27.06	
Market Cap	$1,527.1	$1,258.2	
Enterprise Value	$1,975.7	$1,404.3	
Shares Outstanding	46.6	46.5	
Net Debt	$448.6	$146.1	1
Debt/Equity	54.8%	21.2%	1
Dividend Yield	N/A	N/A	
P/E	17.6x	24.6x	
EV/Sales	1.3x	1.7x	
EV/EBITDA	N/A	11.7x	
FCF/Share	$0.6	$1.5	2
Gross Margin	33.3%	53.7%	3
EBITDA Margin	N/A	14.7%	
Trailing 3yr Rev CAGR	-2.2%	5.5%	
Trailing 7yr Rev CAGR		-8.9%	4
Analyst Buy %	42.9%		
Analyst Hold %	42.9%		
Analyst Sell %	14.3%		

*Numbers in millions excluding stock price

Management

CEO: Robert Abernathy (2014-2017), Joe Woody (2017-Present), Former CEO of Halyard Health

CFO: Steve Voskuil (2014-2019), Michael Greiner (2020-Present), Former VP of Finance at Avanos

COO: Chris Lowery (2014-2017), No current COO

Analysis

1. Net debt decreased 67.4% and reduced debt position due to numerous debt repayments throughout the period
2. FCF/Share increased 150% due to increased revenues from different product mixes leading to margin expansion and divestitures
3. Gross margins expanded 2,040bps with the divestiture of their less profitable S&IP business
4. 7-year revenue CAGR is negative because of Avanos's divestiture of their S&IP business which led to a 61.6% decrease in revenues in 2017; all other years in the period experienced positive revenue growth

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Notable Events

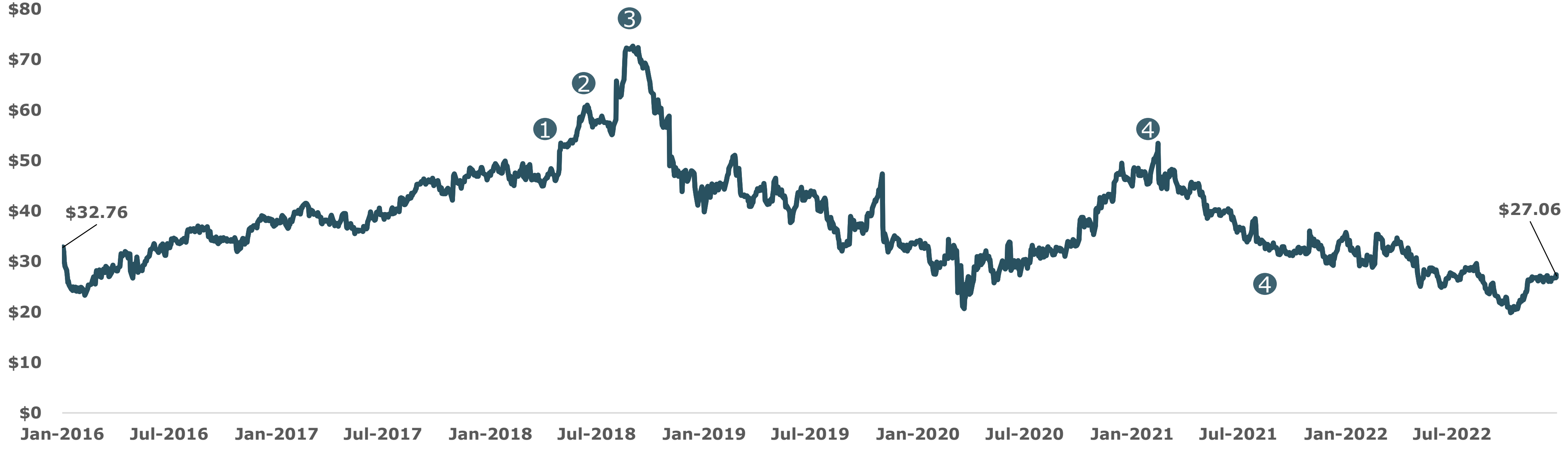
1 • **Divestiture of S&IP (Apr. 2018):** Closed the divestiture of their Surgical and Infection Prevention (S&IP) business which included Halyard Health and the company's IT system. They received $710 million in cash which resulted in a gain of $89.9 million. Avanos rebranded to be a pure-play medical devices company and changed their name to Avanos in June 2018.

2 • **Acquisition of CoolSystems (Jul. 2018):** Acquired CoolSystems for $65 million in cash. They manufacture and market the Game Ready product line which is used in pain management and rehabilitations of patients recovering from orthopedic surgery or sports-related injuries.

3 • **Q2 2018 Earnings (Aug. 2018):** Reported 7% organic top-line growth driven by strength in Coolief and Chronic care. Raised FY2018 Medical Device sales and EPS expectations from 5% to 7% and from $1.75 to $1.90. The company saw strong demand in chromic care, medical device, and Coolief.

4 • **MicroCool Lawsuit (Jul. 2021):** Avanos paid $22 million to resolve criminal charges relating to its fraudulent misbranding of its MicroCool surgical gowns in a class action lawsuit.

# of 20%+ Drawdowns	5
Max Drawdown	-72%



Competitive Landscape

AVANOS

Competition

- **Boston Scientific Corporation (BSX ~$66.3B market cap):** Boston Scientific Corporation is a leading medical technology company founded in 1979, headquartered in Massachusetts, USA. The company specializes in the development and manufacturing of innovative medical devices aimed at treating a wide range of medical conditions and diseases. Their product portfolio includes devices for interventional cardiology, peripheral interventions, urology, endoscopy, neuromodulation, and more. They also offer a range of neuromodulation products that are used to manage chronic pain and other neurological disorders.

- **Medtronic (MDT ~$103.4B market cap):** Medtronic is one of the largest and most established companies in the field of medical devices and solutions. It offers a broad range of products, including devices for cardiac and vascular therapies, neurological treatments, spine and orthopedics, and diabetes management. As a competitor of Avanos, Medtronic also provides various products and technologies in the field of pain management, which may include neuromodulation devices, spinal cord stimulation systems, and other solutions for chronic pain relief.

- **Becton, Dickinson, and Company (BDX ~$72.3B market cap):** Becton, Dickinson, and Company (BD) is a prominent global medical technology company and a competitor of Avanos. Founded in 1897, BD is a leading provider of medical devices, laboratory equipment, and diagnostic solutions. The company's diverse product portfolio includes devices for medication management, diabetes care, anesthesia delivery, and infection prevention, among others. Like Avanos, BD also offers a range of products in the field of pain management, including syringes, needles, and related accessories.

At the beginning of the 2016-2022 period, Avanos was in a strong position due to its pain management and respiratory care products, and steady revenue growth. However, by the end of 2022, Avanos fell behind its rivals due to challenges in the industry, such as increased regulations and pricing pressures. While the entire medical device sector faced these issues, Avanos struggled more than its peers. Its revenue growth was slower, losing market share in respiratory care to Medtronic and BDX. One contributing factor was Avanos' reliance on its legacy pain management business instead of investing in innovation. In summary, Avanos failed to adapt to changing industry dynamics, putting it behind more diversified competitors like Medtronic and BDX.

Perceived Moat (2016) – Counter Positioning

Rationale: Avanos differentiated itself by focusing on non-opioid solutions for pain management, aiming to help patients transition from surgery to recovery. The company also expanded its direct-to-patient advertising efforts, particularly for its COOLIEF product, setting it apart from competitors who might rely more on traditional physician-focused marketing strategies. Additionally, Avanos prioritized international growth, restructuring its leadership and building sales and marketing capabilities to expand its presence in global markets. These strategies potentially positioned Avanos uniquely in the market, differentiating it from competitors.

Reason for Erosion of Moat: Avanos' core competitive advantage was its strong position in niche pain management products, allowing it to command premium pricing. However, increased competition from larger rivals like Medtronic and patent expirations eroded this moat over time. By 2022, Avanos lacked differentiated offerings, facing pricing pressure and share losses across its pain management portfolio.

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Conclusion - What drove shareholder underperformance?

1. **Declining Growth in its Pain Management Division:** Avanos's core Pain Management business saw slowing growth during this period as usage of opioids declined. The company failed to adequately diversify its pain portfolio into faster growing non-opioid alternatives. It also faced pricing pressure and supply constraints for some of its pain products. This weakness in Avanos's largest business weighed on its overall financial performance over a multi-year period. Despite acquisitions meant to strengthen Pain Management, core weaknesses remained.

2. **Integration Challenges With Acquisitions:** Avanos pursued acquisitions to drive growth but struggled with integrating these effectively. The 2017 acquisition of NeoMed created distraction and execution issues. In 2018, Avanos bought Game Ready's compression therapy business but had problems capturing synergies. Acquisitions added complexity faster than Avanos could handle operationally, which prevented Avanos from maximizing the potential of newly acquired products and businesses. These acquisition integration issues persisted over several years.

3. **Lack of Innovation:** A key factor behind Avanos's shareholder underperformance compared to medical device peers was the company's failure to invest sufficiently in innovation and growth initiatives. Avanos relied heavily on legacy pain management products, lacking R&D spending to refresh its portfolio. With only 3% of revenues reinvested into R&D, Avanos's pipeline lagged rivals struggling to defend market share against patent expirations and pricing pressures. Additionally, unlike diversified players such as BDX, Avanos failed to pursue transformative M&A deals to augment growth or expand into new product categories despite a strong balance sheet. Instead, management remained focused on maximizing cash flows from aging products rather than revitalizing the business. This stagnant innovation and lack of bold M&A left Avanos confined to slow-growth legacy markets, causing it to underperform as the industry consolidated around more dynamic competitors. Ultimately, an insular culture stunting investment for the future was the key factor behind Avanos' shareholder returns lagging the market and peers.

4. **Operational Missteps and Loss of Key Contracts:** Avanos made some operational mistakes that created additional headwinds. In 2019, it had an enterprise resource planning system implementation issue that disrupted order fulfillment. It also lost two group purchasing organization contracts in 2018 for its Digestive Health products. These operational issues hampered Avanos' ability to capitalize on newer growth platforms. The lost GPO contracts permanently impacted its market position in Digestive Health.

5. **Impact of COVID-19 Pandemic:** The COVID-19 pandemic severely affected Avanos' hospital and outpatient procedure-related businesses starting in 2020. Elective procedures were deferred, which reduced demand for Avanos' surgical and interventional pain products. Its Cold Therapy business also suffered from lower physician office visits and less need for post-operative recovery products. The pandemic's demand impact came at an already challenging time for Avanos. This exacerbated its weak financial performance.

MicroStrategy (MSTR)

Company Overview

MicroStrategy Incorporated (MSTR) is a technology company with a history of over 30 years of innovation. The company offers a comprehensive business intelligence platform designed to meet all an organization's analytics needs, with a focus on enterprise analytics, embedded analytics, and cloud offerings. MSTR's business model involves providing customers with innovative analytics tools and techniques, including personalized applications, immersive interactive visualizations, simple no-code and low-code application development with open APIs, and flexibility of consumption through mobile interfaces. In addition to its software business, MSTR has a unique strategy of acquiring and holding Bitcoin long-term, and it does not currently plan to engage in sales of Bitcoin.

	1/1/2016	12/31/2022	
Stock Price*	$171.13	$141.6	
Market Cap	$1,944.9	$1,602.3	
Enterprise Value	$1,459.2	$4,014.8	
Shares Outstanding	9.3	9.4	
Net Debt	-$485.7	$2,412.6	1
Debt/Equity	0.0%	N/A	
Dividend Yield	N/A	N/A	
P/E	18.6x	N/A	2
EV/Sales	2.8x	8.0x	
EV/EBITDA	9.4x	N/A	
FCF/Share	$12.0	-$1.3	3
Gross Margin	83.7%	79.8%	4
EBITDA Margin	29.3%	N/A	
Trailing 3yr Rev CAGR	-2.2%	0.9%	
Trailing 7yr Rev CAGR		-0.8%	5
Analyst Buy %	83.3%		
Analyst Hold %	16.7%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Michael J Saylor (1989-2022), Phong Le Q (2022-Present), Former CFO of MicroStrategy

CFO: Phong Le Q (2015-2019), Lisa Mayr (2019-2020), Phong Le Q (2020-2022), Andrew Kang (2022-Present), Former CFO of GreenSky Inc

COO: Phong Le Q (2018—2020), No current COO

Analysis

1. Significant increase in net debt as the company issued billions in debt to fund Bitcoin purchases; CEO has repeatedly said that he prefers Bitcoin to cash on the balance sheet
2. P/E ratio becomes non-existent as the company became unprofitable in 2020 and has seen massive net losses in FY2021 and FY2022
3. Massive decrease in FCF/share as the company has become unprofitable and sees volatility whenever the price of Bitcoin moves
4. Gross margin compression of 4.6% due to higher operating expenses and changing cost structures
5. Negative trailing 7-year revenue growth as the company’s core business activities slowed and they invested heavily in bitcoin

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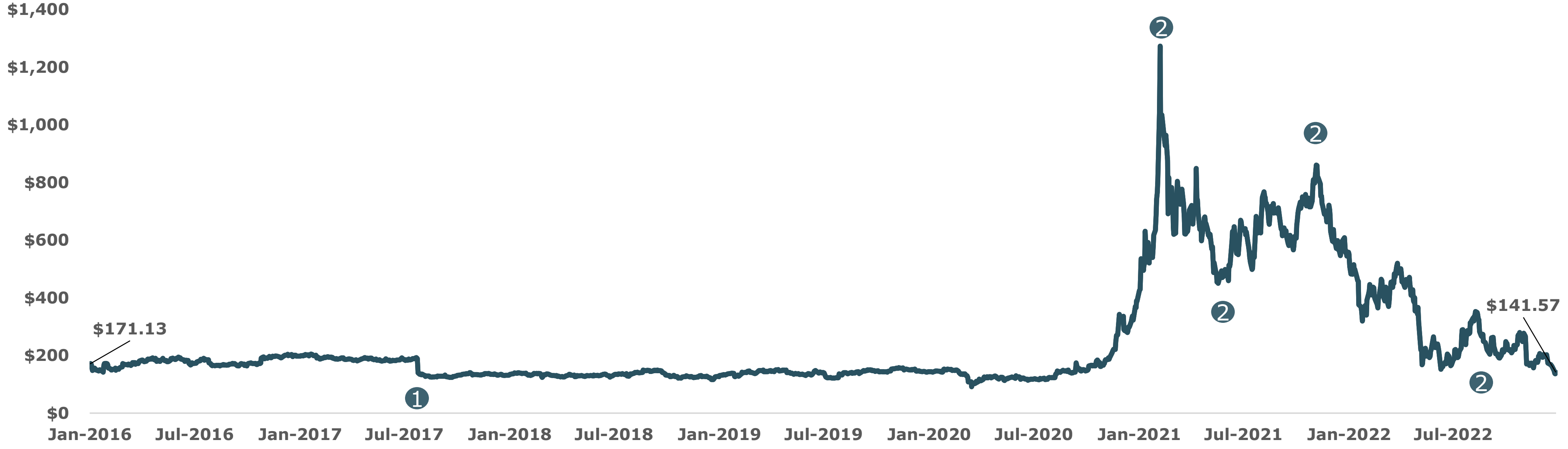
Notable Events

Notable Events

1. **Q3 2017 Earnings (Jul. 2017):** MicroStrategy missed EPS and revenue guidance in Q3 2017, claiming that the company had seen much more infrequent and slowing demand for its third-party data center hosting facilities which have reduced revenue in turn.
2. **Bitcoin Investment (2020-Present):** MicroStrategy's large bitcoin holdings contribute to increased volatility in its share price. Since 2020, the company has accumulated over 132,000 bitcoin worth billions of dollars. As a highly volatile asset, bitcoin's price swings dramatically impact the value of MicroStrategy's holdings, for better or worse. This translation of bitcoin's price changes to MicroStrategy's balance sheet has resulted in elevated volatility in the company's stock compared to peers without significant cryptocurrency exposure.

# of 20%+ Drawdowns	3
Max Drawdown	-89%



Competitive Landscape

Competition

- **Salesforce: Tableau Software (CRM ~$131.4B market cap):** Tableau is a leading data visualization and business intelligence software developed by Tableau Software, which is now part of Salesforce. Founded in 2003, Tableau has gained popularity for its user-friendly and interactive data visualization capabilities. It allows users to connect to various data sources, analyze, and create insightful visualizations, making it easier to understand complex datasets and uncover valuable insights. Tableau's drag-and-drop interface enables non-technical users to create compelling dashboards and reports without the need for extensive coding or programming knowledge.
- **Oracle Corporation (ORCL ~$220.4B market cap):** Oracle Corporation is a multinational technology company based in the United States, specializing in cloud computing, database management systems, and enterprise software solutions. The company's product portfolio includes database technologies, cloud infrastructure, enterprise applications, and various business software solutions. Oracle's flagship product is its Oracle Database, a leading relational database management system used by businesses worldwide. The company also offers cloud-based services, including Oracle Cloud Infrastructure (OCI) and Software as a Service (SaaS) applications.
- **Microsoft (MSFT $1,788.2B market cap):** Microsoft Corporation is a multinational technology company headquartered in the United States. The company's diverse product portfolio includes operating systems (Windows), productivity software (Microsoft Office), cloud computing services (Microsoft Azure), and more. Microsoft also offers a business intelligence and analytics platform called Microsoft Power BI, which competes with MicroStrategy in the business intelligence and data visualization space. Power BI allows users to connect to various data sources, create interactive reports, and gain valuable insights from their data.

In the beginning of the period, MicroStrategy was viewed as a leader in the business intelligence software market, competing well against giants like Oracle and Microsoft. However, by the end of 2022, MicroStrategy had clearly lost ground to competitors, as growth stagnated, margins declined, and cash flows deteriorated. While the overall BI industry grew steadily, MicroStrategy failed to keep pace and its competitive position weakened significantly over the 7-year period. This manifested in near zero revenue growth, falling profitability, and declining market share for MicroStrategy as rivals outpaced it. MicroStrategy's increased focus on amassing bitcoin diverted attention and resources away from its core BI software business, a key reason for its deteriorating competitive stance.

Perceived Moat (2016) – N/A

Conclusion - What drove shareholder underperformance?

1. **Increased Competition:** MicroStrategy's competitive position in the business intelligence software market deteriorated significantly between 2016-2022 due to intensifying competition. Major rivals like Oracle, Microsoft, and Salesforce poured resources into new product development and rapidly released innovative capabilities that MicroStrategy failed to match. As competitors' offerings became more advanced, customers defected to their superior platforms. MicroStrategy's product stagnated due to lack of innovation, and soon it was viewed as a laggard in the industry. This manifested in stalled revenue growth, contracting profit margins, weakening cash flows, and loss of market share as MicroStrategy fell behind rivals that out-executed them on product. The company's leadership failed to recognize and respond to surging competition, instead resting on their laurels while hungrier competitors ate their lunch in the core BI software business.

2. **Investments in Bitcoin:** MicroStrategy's massive debt-funded investments in bitcoin from 2020-2022 severely damaged shareholder value and diverted focus from its core software business. The company plowed billions of dollars into speculative bitcoin buys unrelated to its BI software offerings, funded by risky debt and dilutive stock issuances. As a volatile crypto asset, bitcoin's collapse in 2022 led to MicroStrategy's holdings declining over 75% from peak value, creating billions in paper losses. This crypto foray tarnished MicroStrategy's reputation with customers and investors, required assuming imprudent levels of financial leverage, and distracted resources toward crypto asset management rather than product innovation. Doubts arose concerning management's judgment in making such large bets on an unstable asset class unrelated to software. The company’s Bitcoin investment began in August of 2020 with a $250 million investment. At the time of writing, in mid-2023, MSTR owns roughly $4.5 billion in Bitcoin, and the share price in ~90% correlated with changes in price in Bitcoin. In summary, the bitcoin misadventure backfired spectacularly, sowing shareholder distrust while eroding MicroStrategy's competitive edge in BI software.

Enviri Corporation (NVRI)

Company Overview

Founded in 1853, Harsco Corporation (HSC), rebranded to Enviri Corporation in 2023, is a global market leader in environmental solutions and services. The company operates through two main segments: Harsco Environmental and Clean Earth. Harsco Environmental provides environmental services and products to the steel industry, while Clean Earth offers waste management solutions across various markets. The company's strategic objective is to become a single-thesis environmental solutions company, and as part of this strategy, it plans to divest its Rail business.

	1/1/2016	12/31/2022	
Stock Price*	$7.66	$6.34	
Market Cap	$613.5	$499.9	
Enterprise Value	$1,473.9	$1,929.7	
Shares Outstanding	80.1	79.5	
Net Debt	$821.2	$1,376.2	1
Debt/Equity	290.0%	234.0%	
Dividend Yield	8.6%	N/A	
P/E	14.3x	N/A	2
EV/Sales	0.9x	1.0x	
EV/EBITDA	6.0x	13.8x	
FCF/Share	-$0.03	$0.2	3
Gross Margin	23.0%	19.0%	4
EBITDA Margin	14.0%	7.0%	
Trailing 3yr Rev CAGR	-17.3%	7.9%	5
Trailing 7yr Rev CAGR		1.3%	
Analyst Buy %	50.0%		
Analyst Hold %	50.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Nick Grasberger (2014-Present), Former CFO at Harsco

CFO: Pete Minan (2014-2021), Anshooman Aga (2021-2022), Former CFO of Harsco Employees Pension Plan

COO: N/A

Analysis

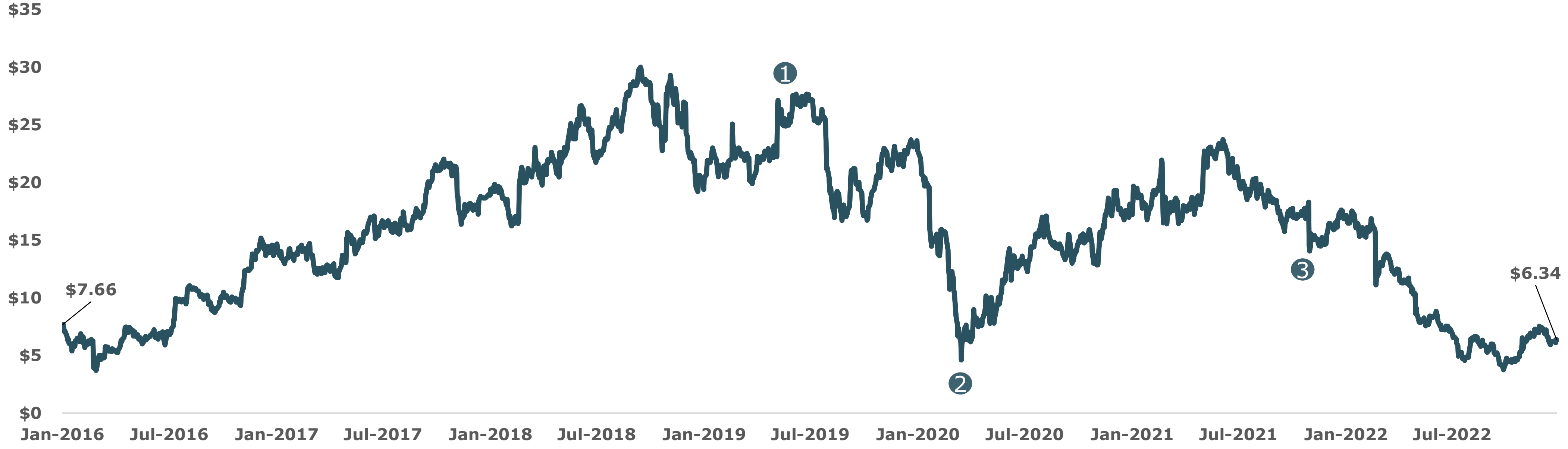
1. Net debt jumped 67% from $821 million to ~$1.4 billion to fund acquisitions; debt/equity declined from 290% to 234% but is still highly leveraged
2. P/E multiple declined from 14.3x to N/A as net income turned negative due to weakness in the steel industry, restructuring charges, and impairment charges
3. FCF/Share swung from negative to positive at $0.2 per share due to cash proceeds from divestitures, higher revenues, and cost controls
4. Gross margins decreased 400bps due to shift to environmental solutions which had lower margins than traditional industrial and rail businesses
5. Revenue CAGR improved from -17% to 7.9% over the two periods due to new products and economic recovery

Notable Events

Notable Events

- ❶ **Clean Earth Acquisition (May 2019):** Announced acquisition of Clean Earth for $625 million in cash. It is one of the largest specialty waste processing companies in the U.S., providing processing and beneficial reuse solutions for hazardous wastes, contaminated materials, and dredged volumes. Part of their plain to shift towards environmental solutions and eventually rebrand to enviri.
- ❷ **COVID-19 Pandemic (2020):** Reduced steel production, supply chain disruptions, and lower industrial activity generated significant challenges in 2020. While conditions did improve, pandemic impacts have lingered as a headwind.
- ❸ **Q3 2021 Earnings Miss (Nov. 2021):** Revenue growth was -7.7%, EBITDA and EPS dropped from $0.17 to $0.10. The company experienced foreign exchange impacts and rising prices which led to lower revenues and earnings.

# of 20%+ Drawdowns	15
Max Drawdown	-85%



Competitive Landscape

Competition

- **Casella Waste Systems (CWST ~$4.1B market cap):** Casella Waste Systems is a leading solid waste management company based in the United States. Founded in 1975, the company provides integrated waste management services, including collection, disposal, recycling, and resource management solutions. Casella operates a network of landfills, transfer stations, recycling facilities, and organics processing facilities across multiple states in the Northeastern and Midwestern regions of the U.S.
- **Stericycle (SRCL ~$4.6B market cap):** Stericycle is a global company specializing in medical waste management, secure information destruction, and environmental services. Founded in 1989, it operates in North America, Europe, and other regions, providing waste disposal and compliance solutions to various industries, including healthcare, pharmaceuticals, and biotechnology. The company offers services such as medical waste collection, transportation, treatment, and disposal, ensuring proper handling of potentially hazardous materials.
- **Covanta (Private):** Covanta is a prominent American company specializing in sustainable waste management and energy-from-waste solutions. The company operates waste-to-energy facilities, where municipal solid waste is converted into renewable energy, reducing the volume of waste sent to landfills. Covanta's energy-from-waste process involves the combustion of waste materials to produce steam, which is used to generate electricity or heat.

Between 2016 and 2022, Enviri encountered challenges due to market downturns and declining revenues and operating income. The company implemented strategic initiatives to improve performance and emphasized key competitive factors, including resource recovery solutions, industry experience, technology, safety, service, and value. However, by the end of 2022, Enviri's performance was impacted by inflation, foreign exchange translation, exited contracts, lower service and eco-products volumes, and the energy crisis in Europe. Despite the challenges, the company maintained a positive long-term outlook, expecting growth driven by economic expansion and innovation in environmental solutions.

Perceived Moat (2016) – Switching Costs

Rationale: Many of Enviri's multi-year environmental services contracts contained high switching costs for customers. Transitioning to a new provider involved business disruption, training investment, and upfront capital costs. Enviri's equipment was also installed directly at mill sites. To change vendors, steelmakers would incur significant ramp-up expenses and production risks. Further, Enviri's specialized technical expertise and permitting created challenges for rivals seeking to replace them. These sizable switching costs helped retain customers, supported Enviri's pricing power, and deterred competition. While not insurmountable, the inconvenience and costs imposed on customers wishing to change providers strengthened Enviri's competitive position.

Reason for Erosion of Moat: Between 2016 and 2022, Enviri's competitive advantage from switching costs experienced significant erosion due to several factors. Execution issues led to the loss of some customer contracts, making it easier for clients to switch to alternative providers. The emergence of lower-cost competitors and substitutes in environmental services diluted the advantage of Enviri's existing switching costs. Industry consolidation reduced customer switching costs as integrated rivals offered broader end-to-end services, giving clients more options to switch within the same provider. Additionally, during market uncertainty, customers sought vendors with stronger financial health, downplaying the perceived benefits of sticking with Harsco based on switching costs.

Conclusion - What drove shareholder underperformance?

1. **Market Downturns:** Cyclical downturns in major end markets like steel and rail drove lower demand and impacted results from 2016-2022. Excess global steel capacity caused production declines, especially in the US and Europe. With steel mills being a major customer base for environmental services, reduced steel output lowered revenues and site utilization. Downturns were exacerbated by surges of cheap Chinese steel imports. Meanwhile, the North American and European rail industries faced growth headwinds, hurting rail equipment revenues. These cyclical factors made it difficult to achieve stable growth, putting pressure on margins and forcing cost actions. Concentrated exposure to these cyclical sectors increased overall business volatility and risk profile. The company was unable to sufficiently diversify its customer base and product portfolio to mitigate these industry swings.

2. **Contract Issues:** Project delays, cost overruns, and losses related to fixed-price contracts created significant charges and losses during 2016-2022. The company took on complex, lump-sum rail equipment contracts that later faced substantial delays and production issues. These execution missteps resulted in large financial impacts. Writing down problematic legacy contracts created volatility in financial results. The contract issues reflected inadequate risk assessment as well as insufficient progress monitoring and change management once projects began. These problems indicated ineffective operational controls and an imbalance in contract risk appetite versus capabilities. The contract charges significantly hurt profitability.

3. **COVID-19 Pandemic Disruptions:** The COVID-19 pandemic created various operational and commercial headwinds in 2020 and 2021. Widespread restrictions early on reduced steel output, limiting demand for environmental services. Site access restrictions also disrupted service delivery and project timelines. Meanwhile, the pandemic caused global supply chain turmoil, leading to production inefficiencies and delays. Enviri also faced much higher safety, cleaning, labor, and raw material costs from the COVID-19 pandemic. Furthermore, lower industrial activity squeezed revenues, while travel bans hindered new sales. Various construction projects were postponed as well. The uncertainties around customer demand and cash flows posed financial risks too. While conditions improved later, the pandemic impacts lingered as a drag on performance.

4. **Increased Leverage:** The company took on sizable debt loads to fund acquisitions during 2016-2022, weighing on the balance sheet. The additional interest costs and high leverage curtailed strategic flexibility going forward. The large debt amounts also increased vulnerability to cash flow volatility and business declines. The company's credit profile weakened substantially, raising borrowing costs. The high leverage limited ability to fund growth investments organically. Delaying deleveraging inhibited capacity to handle market downturns. Paying down debt had to take priority over other uses of cash. While the acquisitions added revenue, the increased leverage eroded any financial cushion and hurt overall results.

Patterson Companies Inc (PDCO)

PATTERSON COMPANIES, INC.

Company Overview

Patterson Companies is a prominent distributor of dental and animal health products, as well as veterinary and rehabilitation equipment. With a rich history spanning over 140 years, the company has established itself as a trusted partner to dental and veterinary professionals across North America. Patterson Companies offers a comprehensive portfolio of products, including dental supplies, equipment, software solutions, animal health products, and rehabilitation equipment, catering to the needs of dental and veterinary practices. They also provide value-added services such as practice management software, educational resources, and technical support, empowering healthcare practitioners to deliver quality care and enhance their practice efficiency.

	1/1/2016	12/31/2022	
Stock Price*	$43.59	$36.16	
Market Cap	$4,334.2	$2,720.8	
Enterprise Value	$5,369.6	$3,320.6	
Shares Outstanding	99.4	97.1	1
Net Debt	$1,035.4	$598.6	2
Debt/Equity	83.0%	71.0%	
Dividend Yield	1.9%	3.4%	3
P/E	23.0x	14.8x	
EV/Sales	1.2x	0.5x	
EV/EBITDA	14.4x	10.7x	
FCF/Share	$0.4	-$10.4	4
Gross Margin	24.0%	20.0%	5
EBITDA Margin	8.0%	5.0%	
Trailing 3yr Rev CAGR	3.4%	5.3%	
Trailing 7yr Rev CAGR		7.5%	6
Analyst Buy %	21.4%		
Analyst Hold %	64.3%		
Analyst Sell %	14.3%		

*Numbers in millions excluding stock price
**Patterson does not list a COO before 2022

Management

CEO: Scott Anderson (2010-2017), Mark Walchirk (2017-2022), Don Zurbay (2022-Present), Former CFO of Patterson

CFO: Ann Gugino (2012-2018), Don Zurbay (2018-2022), Kevin Barry (2022-Present), Held various VP roles at Patterson

COO: Kevin Pohlman** (2022-Present), Former VP of Sales and Marketing at Patterson

Analysis

1. Issued share buyback program in 2018 and 2021; management was confident in the strength of end markets and value proposition
2. Paid off significant debt in 2018-2020 and 2022; reduced debt balance by 42.2%
3. Patterson has consistently paid a dividend throughout the period; management views dividend as important component of capital structure allocation strategy
4. Significant decrease in FCF/Share due to decrease in earnings and increased inventory
5. 400bps decrease in gross margin despite management's long-term strategy to increase profit margins; failure to increase margins attributed to pharmaceutical consolidation and increased animal health segment in product mix (less profitable)
6. Maintained a 7.5% revenue CAGR over the 7 years; mainly attributed to temporary double-digit boosts in revenue from Animal Health International and Miller Veterinary Supply acquisitions

Notable Events

PATTERSON COMPANIES, INC.

Notable Events

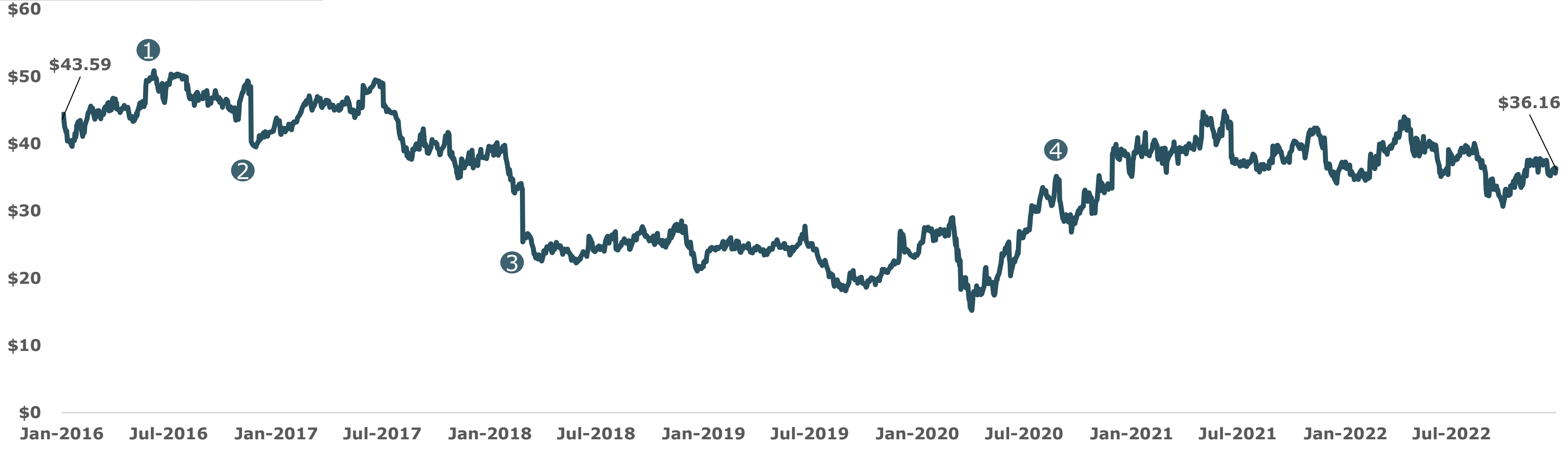
1 • **Integration of Animal Health International (May 2016):** Patterson doubled their animal health supply business in FY2016 through the acquisition of Animal Health International for $1.1 billion in April 2015. Their animal health segment revenues grew 96.5% in FY2016, compared to a decrease of 1.6% a year before.

2 • **Q2 '17 Earnings Miss (Nov. 2016):** Patterson's CEO reported that the company had elected to not extend its historic 20-year exclusivity agreement with Dentsply Sirona and switch to dental supplier Heartland Dental to provide a fuller range of product options. While they saw slow recovery in animal end markets, Patterson faced significant challenges in sales execution due to the AHI integration process and drug pricing due to consolidation of pharmaceutical companies.

3 • **FTC Antitrust Lawsuit (Feb. 2018):** In February 2018, the FTC announced that it was suing Patterson, Henry Schein, and Benco Dental Supply for allegedly violating US antitrust laws. The FTC complain alleged that the companies conspired to refuse to provide discounts or otherwise serve buying groups.

4 • **Recovery Post-COVID-19 Pandemic (Jun.-Aug. 2020):** The dental market recovered faster than expected; Patterson outperformed the industry and increased market share by being at the forefront of supplying dental office reopening with their comprehensive product portfolio.

# of 20%+ Drawdowns	12
Max Drawdown	-70%



Competitive Landscape

Competition

- **Henry Schein (HSIC ~$10.8B market cap):** Henry Schein is a leading global provider of healthcare products and services, serving dental, medical, animal health, and technology markets. By leveraging its extensive distribution network and robust e-commerce platform, Henry Schein offers a comprehensive range of products, including dental and medical supplies, equipment, practice management software, and innovative digital solutions.
- **AmerisourceBergen (ABC ~$33.5B market cap):** AmerisourceBergen is a leading provider of animal health products and services. As a subsidiary of AmerisourceBergen, MWI Animal Health has an extensive portfolio of pharmaceuticals, vaccines, diagnostics, and other veterinary products. Additionally, MWI Animal Health offers inventory management, online ordering platforms, and educational resources, to help veterinarians optimize their practices.
- **Covetrus (Private):** Covetrus is a leading global animal health technology and services company that offers a comprehensive suite of platforms including practice management software, e-commerce solutions, and telemedicine services. Covetrus distributes pharmaceuticals, vaccines, and diagnostics through their extensive global distribution network. They also provide value-added services such as inventory management, financial solutions, and educational resources.

Patterson Companies has largely relied on two large acquisitions throughout the period to boost their animal health segment revenues into the double digits. However, these increases seem to only be temporary, and the company has not been able to sustain consistent revenue growth throughout the period due to its lagging dental segment. Their dental business has struggled with decreasing consumables and digital sales due to soft end markets. Though Patterson gave investors reasons for growth due to its strong portfolio of products in the beginning of 2016, they have struggled to improve earnings and profit margins despite management’s confidence in strong end markets within animal health and dentistry. Competitors like HSIC and ABC have come to outcompete Patterson during this period, leading to the company’s lackluster performance in share price.

Perceived Moat (2016) – Scale Economies

Rationale: At the beginning of the period Patterson benefitted from economies of scale throughout their large supplier and distribution network. As a large distributor in both the animal health and dental spaces, Patterson had large-scale purchasing power and sought out both exclusive and non-exclusive contracts with manufacturers that allowed them to buy products at lower costs per unit. Their most prominent partners in the beginning of the period were IDEXX and Dentsply Sirona, which both contributed to high margins and revenue growth. Additionally, with a vast network of facilities across the US, Patterson benefitted from logistical scale economies, which allowed them to distribute inputs across various locations.

Reason for Erosion of Moat: In 2015 and 2016, respectively, Patterson lost both contracts with IDEXX and Dentsply Sirona. IDEXX switched to a direct distribution model and cut out all third-party suppliers like Patterson, and Patterson decided to terminate their 20-year exclusive contract with Dentsply Sirona. These two hits to both their animal health and dental segment led Patterson to struggle to recover profit margins and grow revenues organically. Without consistent suppliers and lower costs, Patterson lost their moat and competitive edge.

Conclusion - What drove shareholder underperformance?

1. **Weak Dentist End Market:** Patterson, though historically a dental supply company, was a victim of headwinds in the dentistry market throughout the period. Though their dentist segment carries higher profit margins than their animal supply segment, Patterson was not able to sustain strong enough revenue growth in their dentist segment. As a result, majority of Patterson's revenues came in from their animal health segment, shifting their product mix and decreasing profit margins throughout the period. Patterson's CEO, Scott Anderson, was confident in the recovery of the dental supply market (pre-pandemic), however, the market saw slow increases and only had a CAGR of 1% from 2018-2023. Despite Patterson's efforts to restructure and increase their dental sales force, their dental revenue segment only saw a 0.6% CAGR over the 7-year period, ultimately generating low returns. Patterson struggled to increase earnings, margins, and revenues as a result which contributed to their underperformance over the period.

2. **Threat of Online Retailers (Amazon):** In 2017, Amazon began to rapidly expand through numerous acquisitions and geographical expansions into the enterprise, grocery, and audio industries. This incited fear among Patterson investors, as Amazon was able to easily enter the veterinarian and dental supply markets through their online retail business. After Morgan Stanley issued a stark warning to investor in December of 2017, Patterson shares took a tumble and added pressure to the company. After Patterson terminated their exclusive contract with oral goods manufacturer Dentsply Sirona in November 2016, Amazon began to access critical products from the supplier in December of 2017. As the period progressed, Amazon disrupted the dental supplier industry and nearly 34% of physicians used Amazon to purchase medical and dental supplies via Business Prime due to convenience and lower product costs. This market share grab by the retail giant directly contributed to Patterson's decline in revenue growth within their dental supply business and caused their share price to fall in 2018.

3. **FTC Antitrust Lawsuit:** After a Morgan Stanley analyst warned investors about the threat of Amazon to dental suppliers like Patterson, the US Federal Trade Commission filed a lawsuit against dental supplier leaders Patterson, Benco Dental Supply, and Henry Schein. The complaint alleged that the three companies broke antitrust law by conspiring to refuse discounts to dentists and raise prices. Patterson's share price fell 7.4% in one day, hitting a new 52-week low. This drawdown in the leading dental supply companies provided a window for Amazon to enter the market, which further contributed to Patterson's loss in revenue and market share. This lawsuit brought Patterson down to a 48.1% drawdown within a month of the FTC filing, and the stock didn't recover until mid-2020.

4. **Diminishing Profit Margins:** For years, Patterson's management has pushed for their long-term strategy for sustainable profit margin growth through all segments, with a focus on their animal health business. While Patterson captured significant market share through generating solid sales volume growth in their animal health segment, they struggled to improve profit margins. Their gross margin fell 400bps during the period despite Patterson's efforts to improve profitability through strategic sourcing, product mix shifts, integrating private labels, restructuring sales initiatives, and changing their cost structure. This was in part due to a challenging environment related to brand and pharmaceutical manufacturers pricing consolidation as well as rising interest rates in 2021. Patterson too many steps to improve their operating margins, however, they were largely unsuccessful with increasing overall profitability throughout the period. While they did slightly increase their animal health margins in 2021, this was then offset by decreased profitability in their dental segment due to COVID-19 pandemic related challenges. Patterson's inability to increase their profit margins led to overall decreases in their bottom line and led investors to believe that Patterson's core operations were not profitable.

AZZ Inc. (AZZ)

Company Overview

AZZ Inc. is a global provider of metal coating services and highly engineered equipment. With over 80 years of industry experience, AZZ specializes in protecting and enhancing critical infrastructure. They offer a comprehensive range of corrosion protection solutions, including hot-dip galvanizing, powder coating, and proprietary coatings. AZZ's expertise extends to various sectors, such as power generation, transmission and distribution, oil and gas, industrial, and telecommunications. Additionally, AZZ designs and manufactures specialized equipment, such as electrical enclosures, switchgear, and custom fabrications, tailored to meet the unique requirements of their clients.

	1/1/2016	12/31/2022	
Stock Price*	$52.51	$44.59	
Market Cap	$1,354.5	$999.5	
Enterprise Value	$1,658.7	$2,045.1	
Shares Outstanding	25.8	24.9	
Net Debt	$304.3	$1,045.4	1
Debt/Equity	69.0%	123.0%	
Dividend Yield	1.2%	1.7%	2
P/E	17.8x	13.1x	
EV/Sales	1.9x	1.8x	
EV/EBITDA	10.0x	9.1x	
FCF/Share	$3.8	$1.5	3
Gross Margin	26.0%	20.0%	4
EBITDA Margin	19.0%	20.0%	
Trailing 3yr Rev CAGR	3.2%	14.0%	5
Trailing 7yr Rev CAGR		5.7%	
Analyst Buy %	25.0%		
Analyst Hold %	75.0%		
Analyst Sell %	0.0%		

Management

CEO: Thomas Ferguson (2013-Present), Held various leadership roles at Flowserve for 25 years

CFO: Paul Fehlman (2014-2019), Philip Schlom (2019-Present), Previous VP and Chief Accounting Officer of AZZ

COO: Tim Pendley (1999-2018), Gary Hill (2017-2022)**, Kurt Russell (2022-Present) and Bryan Stovall (2009-Present), Has held various leadership roles at AZZ since 2008

Analysis

1. Net debt increased 243.5% due to the acquisition of Precoat Metals for $1.28 billion in 2022
2. AZZ has consistently paid a dividend throughout the period to return capital back to shareholders
3. FCF/Share decreased 60.5% due to increases in inventories and accounts receivables
4. Gross margin decreased 600bps over the period due to shift in product mix; energy made up a larger portion of revenue until 2021; COVID-19 pandemic impact reduced sales volume; acquisitions diluted margins as acquired businesses had lower profitability
5. 3-year revenue CAGR increased to 14% by 2022 due to 5 acquisitions boosting metal coating revenues in 2021 and Precoat Metals integration increasing revenues 209.4% in Q2 2023 (quarter ending August 2022)

*Numbers in millions excluding stock price
**AZZ added a second COO in 2020

Notable Events

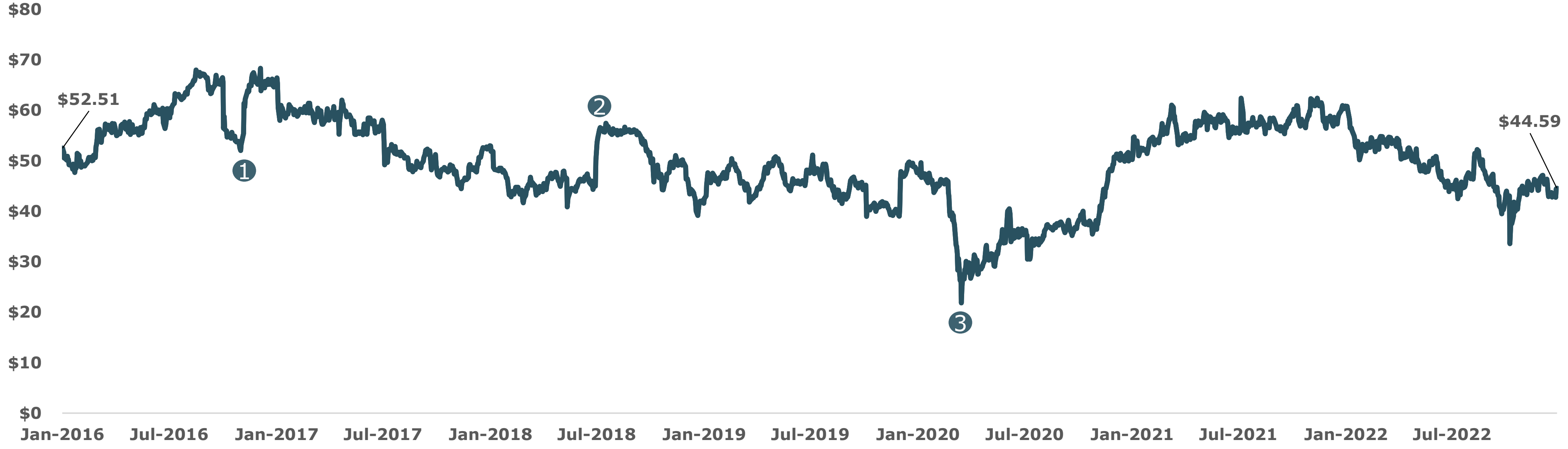
Notable Events

❶ • **Nuclear Logistics LLC Divestiture (Oct. 2016):** In October 2016, AZZ announced the divestiture of their Nuclear Logistics business as part of their strategy to focus on core operations of industrial welding, galvanizing metal coatings, and electrical products. However, because of AZZ's lean management team, they were distracted with the divesture and shifted their focus away from core operations during weakening galvanizing and welding markets, which contributed to a 6.3% decrease in revenues in Q2 and a 250bps decrease in gross margin. Additionally, due to divestiture delays, AZZ incurred millions of charges that impacted profitability.

❷ • **Q1 2019 Earnings Beat (Jul. 2018):** AZZ saw a jump in share price following their Q1 '19 earnings call, which reported strong revenue growth and margin expansion attributed to the integration of Rogers Brothers Galvanizing and Lectrus Facility, as well as market headwinds relating to increased demand and strong turnaround activity. Margins increased 340bps and revenues were up 18.6%, positioning AZZ to capture market share and implement new M&A growth initiatives.

❸ • **COVID-19 Pandemic (Jan. 2021):** Normally a strong quarter for AZZ, their Q1 2021 saw many challenges due to effects from the pandemic. Refiners shut down production, delayed capex and maintenance spend, revenues decreased 26.2%, and net income contracted 74.2%.

# of 20%+ Drawdowns	6
Max Drawdown	-68%



Competitive Landscape

Competition

- **Eaton Corporation (ETN ~$62.6B market cap):** Eaton Corporation is a global power management company that provides innovative solutions for customers to efficiently manage power and improve energy usage. The company specializes in electrical components and systems, such as circuit breakers, power distribution units, and backup power solutions. Additionally, Eaton offers hydraulic pumps, motors, and aircraft fuel systems, catering to the needs of diverse markets.
- **Valmont Industries (VMI ~$7.1B market cap):** Valmont Industries' Metal Coating Division is a leader in coating solutions for metal products. Leveraging its expertise in coating technologies, Valmont offers a diverse range of services, including hot-dip galvanizing, powder coating, and e-coating, to enhance the durability, corrosion resistance, and aesthetics of metal surfaces. They serve various end markets such as infrastructure, transportation, agriculture, and energy.
- **nVent Corporation (NVT ~$6.4B market cap):** nVent Corporation is a global leader in providing electrical solutions. With a diverse portfolio of products and services, nVent serves a wide range of industries including industrial, commercial, and residential sectors. The company specializes in electrical enclosures, thermal management systems, and electrical connection solutions that ensure the safe operation of electrical equipment in various environments.

In the beginning of the period, AZZ benefitted from strong margins and revenue growth attributed to acquisition benefits and rising zinc prices. However, market conditions, execution challenges, and operational inefficiencies ultimately led AZZ’s share price to fall throughout the period. AZZ’s key end markers such as oil and gas, petrochemical, and mining had lower spending during the beginning years of the period, leading to volume and margin issues. Most notably, however, AZZ’s management team faced many execution issues leading to millions in impairment charges throughout the period.

Perceived Moat (2016) – Scale Economies

Rationale: AZZ benefitted from economies of scale in the beginning of the period due to their sheer size and market share in the metal galvanizing and electricity industries. Being a leader in the galvanizing industry, AZZ has the necessary resources and has invested high upfront fixed costs for the hot-dip and manufacturing processes. This prevented other smaller cap players from entering the industry and allowed AZZ to gain market share.

Reason for Erosion of Moat: AZZ experienced operational issues associated with poor divestitures, acquisitions, and management decisions. Weaker demand in end markets and increased one-time charges reduced capacity utilization at AZZ’s manufacturing facilities, causing unfavorable absorption of fixed costs which decreased margins and prevented AZZ from growing volumes.

Conclusion - What drove shareholder underperformance?

1. **Diminishing Profit Margins:** AZZ's underperformance can largely be attributed to their diminishing profit margins. Because AZZ's metal coating business is highly dependent on zinc prices, AZZ's margins and share price were largely tied to commodity price volatility throughout the period. Likewise, many of AZZ's customers are in the oil and gas industry, which are also highly influenced by oil price volatility, making AZZ vulnerable to geopolitical events and market downturns. However, AZZ faced many impairment and other one-time charges throughout the period that were attributed to poor management decisions, customer decisions, and divestitures. The exit of Mitsubishi from the US nuclear market resulted in a $10 million asset impairment charge for AZZ, forcing them to sell off their nuclear business. AZZ's management began to divest the non-core business which incurred millions in one-time charges that decreased margins. Coupled with delays in the divestitures, AZZ was forced to pay more in delay charges.

2. **COVID-19 Pandemic Effects:** AZZ's share price fell 68% in March 2020 because of the COVID-19 pandemic and struggled to recover post-pandemic until the end of 2020. AZZ saw temporary manufacturing facility closures, reduced customer demand in oil and gas, mining and industrials, supply chain constraints, and project delays that caused a ~26% decrease in revenues during the quarter. This large drop slowed AZZ's recovery from pandemic-driven headwinds, until their strategic initiatives to divest non-core assets and enhance shareholder value.

3. **Execution Issues:** Due to various leadership changes at AZZ during the observed period, management faced numerous execution issues that resulted in million of fees, ultimately lowering AZZ's margins and hindering revenue growth. Most notably, AZZ struggled to divest their unprofitable nuclear energy business, Nuclear Logistics (NLI). Seeing a weakening end market for nuclear energy, AZZ announced the divestiture of NLI to Westinghouse in October 2016. However, due to the bankruptcy of Westinghouse and management's inability to find a suitable buyer, the divestiture did not close until February 2020, resulting in $12.8 million in delay charges. AZZ also saw numerous realignment, operational, and supply chain issues due to the COVID-19 pandemic that resulted in $15+ million in charges and cost overruns, ultimately decreasing AZZ's margins. To combat the inability to grow, AZZ's management turned to an aggressive M&A strategy, most notably acquiring Rogers Brothers Galvanizing in 2018 Precoat Metals in 2022. Though these acquisitions boosted revenues for a few quarters, ultimately, the synergies were not sustainable, and AZZ's margins decreased from one-time costs and numerous other dilutive acquisitions.

4. **Weak End Markets:** AZZ saw negative revenue growth between Q2 2017 and Q3 2018, which brought AZZ's stock price down ~40% and remained stagnant until a steep drawdown due to the COVID-19 pandemic. In FY2017, AZZ saw market contraction in the energy and solar spaces, as well as lower major refinery turnarounds for their oil and gas customers. This resulted in a 4.4% decline in revenue and a 110bps decrease in gross margins in FY2017. Additionally, many of AZZ's customers in the electrical segment deferred more projects that expected, coupled with competitor pricing increases, AZZ saw margins decrease in the electrical segment. In the galvanizing sector, AZZ saw weaker markets along the Gulf Coast in 2017-2018 affecting sales volume as well as surges in zinc prices in 2017 and the first half of 2018. Because AZZ relies heavily on zinc for metal coating, they were unable to offset zinc inflation with price increases or operational improvements. Ultimately, AZZ's businesses were tied heavily to the growth of their end markets, and because of decreased industrial spending AZZ struggled to increase grow revenues.

Dave and Buster's (PLAY)

Company Overview

Dave & Buster's is a leading owner and operator of high-volume entertainment and dining venues. The company was founded in 1982 in Dallas, Texas and operates under the concept of "Eat Drink Play and Watch" all in one location. The core of their business model revolves around providing a multi-faceted customer experience that combines interactive games, attractive television viewing areas, high-quality dining, and full-service beverage offerings in a highly energized atmosphere. Their primary target demographic is adults aged 21-39, but they also appeal to families, which make up approximately 40% of their customer base. Their stores average 40,000 square feet and range in size between 16,000 and 70,000 square feet.

	1/1/2016	12/31/2022	
Stock Price*	$41.71	$36.18	
Market Cap	$1,731.5	$1,711.4	
Enterprise Value	$2,067.3	$4,477.5	1
Shares Outstanding	41.51	48.3	
Net Debt	$335.8	$2,766.1	2
Debt/Equity	110.8%	796.2%	
Dividend Yield			
P/E	31.0x	11.8x	
EV/Sales	2.5x	2.6x	
EV/EBITDA	11.7x	8.3x	
FCF/Share	$0.4	$3.97	3
Gross Margin	81.1%	84.2%	
EBITDA Margin	21.0%	31.0%	
Trailing 3yr Rev CAGR	10.9%	65.1%	
Trailing 7yr Rev CAGR		12.4%	4
Analyst Buy %	100%		
Analyst Hold %	0%		
Analyst Sell %	0%		

Management

CEO: Stephen King (2006-2018), Brian Jenkins (2018-2021), Chris Morris (2021-Present), Former CEO of Main Event Entertainment

CFO: Brian Jenkins (2006-2018), Scott Bowman (2019-2022), Michael Quartieri (2022-Present), Former CFO of LiveXLive Media

COO: Margo Manning (2016-2022), Tony Wehner (2022-Present), Former COO of Main Event

Analysis

1. Enterprise value increased by over 100%, due to an increase in leverage and accounting standards
2. Changes in lease accounting standard resulted in a $1.1 billion recognition of lease liabilities and the cash acquisition of Main Event added an $850 million senior term loan
3. Increase in net debt drove free cash flow growth. Dave and Buster's debt to asset ratio nearly doubled over the period
4. The opening of new units and acquisition of Main Event drove revenue growth. The median** same-store sales growth over the period was 1.1%

*Numbers in millions excluding stock price

**Median used to minimize the outlier influence of the COVID-19 pandemic; venues were shutdown and the reopening of in-person dining resulted in extraordinary circumstances

Notable Events

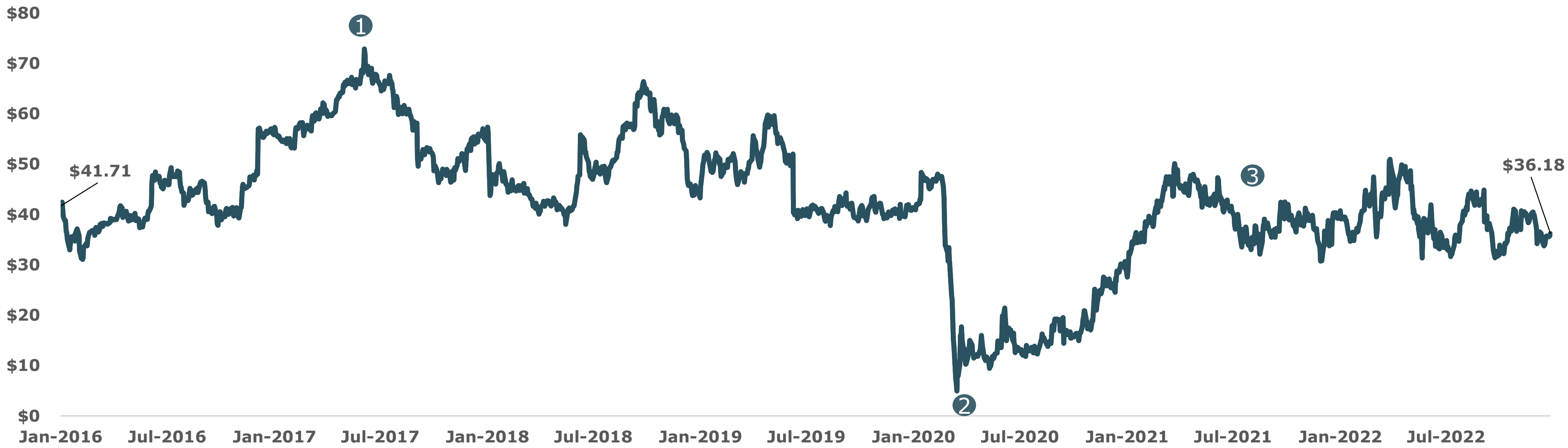
Notable Events

1 • **FY'17 Downward Guidance (Dec. 2017):** Dave and Buster's fell more than 17% after announcing downward guidance for FY'17 (Jun. 2017); management revised previous estimates due to weaker financial performance during peak weeks. The challenges mentioned included increased competition and a slow down in consumer demand. In addition, there were store closures due to hurricanes. FY'17 resulted in declining same-store sales.

2 • **COVID-19 Pandemic (Mar. 2020):** The COVID-19 pandemic ceased all business operations. In March 2020, the company temporarily closed all 137 locations. The pandemic forced the company to cease operations, halt their share repurchasing program, and furlough all hourly workers and 94% of store management personal. Stores operated at limited capacity and 33 stores did not reopen until August of 2021.

3 • **Acquisition of Main Event (Jul. 2021):** Dave and Buster's acquired Main Event from Ardent Leisure Group (ASX:ALG) and Redbird Capital for $835 million in all-cash transaction. As a result, Dave and Buster's locations nearly doubled. The transaction reported an estimated $20 million in cost synergies due to store support consolidation and supply-chain efficiencies

# of 20%+ Drawdowns	3
Max Drawdown	-93%



Competitive Landscape

Competition

- **Topgolf Callaway Brands: (MODG ~$6.7B market cap)** Topgolf is a leading technology-enabled golf entertainment business that was founded in 2000. The company offers a variety of services and products, including state-of-the-art open-air golf and entertainment venues, revolutionary Toptracer ball-tracking technology, and a digital media platform. Topgolf operates both domestically and internationally. As of December 31, 2022, Topgolf had 77 Company-operated venues. Topgolf also licenses its proprietary Toptracer technology to independent driving ranges, golf courses, and for use in golf broadcasts. This technology enhances the traditional driving range experience by delivering instant shot replays, gameplay for all skill levels, and a data record of all shots.
- **Chuck E. Cheese (Private):** Chuck E. Cheese is an American family entertainment center and restaurant chain that was founded by Atari co-founder Nolan Bushnell on May 17, 1977, in San Jose, California. The brand is known for its unique combination of family-friendly dining and entertainment, offering a wide variety of pizza, sandwiches, appetizers, desserts, and beverages, as well as a myriad of arcade games, amusement rides, and animatronic displays. Chuck E. Cheese had over 500 locations across the United States and internationally, including in Canada, Saudi Arabia, United Arab Emirates, and more.
- **Bowlero (BOWL ~$2.2B market cap):** Bowlero provides entertainment solutions and is the largest operator of bowling entertainment centers in the world. The company was formed through a business combination of the Isos SPAC and Bowlero Corp. The Bowlero operates traditional bowling centers and arcades. In addition, they host non-professional bowling tournaments and related broadcasting.

Dave & Buster's saw increased competition over the period. In 2016, PLAY was operating in a niche market that it dominated. Despite the entrance of competitors, most of Dave & Buster's competition was regional non-chain-based entertainment stores. Over the time period, the competition from companies like Topgolf Callaway Brands, Chuck E. Cheese, and Bowlero increased substantially. MODG's Topgolf brand became increasingly popular with a consumer shift towards golf and attempts to be active. This increased competition coupled with the company being forced to shut-down all stores during the COVID-19 pandemic led to a stagnant share price and no meaningful growth over the period.

Perceived Moat (2016) – N/A

Conclusion - What drove shareholder underperformance?

1. **COVID-19 Pandemic:** The COVID-19 pandemic was the main catalyst of Dave & Buster's underperformance. The company's temporary suspension of all locations in March of 2020, triggered a 93% drawdown in the company. Dave & Buster's responded to lockdown mandates by partnering with third-party delivery companies (UberEATS, DoorDash), but performed worse than other restaurant peers. The company's full reopening occurred in August of 2021.

2. **Increased Competitive Landscape:** Dave & Buster's same-store sales began to dwindle due to increased competitive pressure from Topgolf and Main Event (pre-acquisition). Prior to the pandemic, both companies directly cannibalized sales from Dave and Busters. During the pandemic, all three businesses suffered as a result of lockdowns. Only recently have companies resumed their normal operations. Today, Dave and Buster's faces even larger headwinds from competition. The competitive landscape in "Eatertainment" is larger than ever: fast-growing concepts such as Chicken N Pickle, Punch Bowl Social, Puttshack, are cannibalizing sales in the in-person entertainment space. In addition, the sophistication of home-based forms of entertainment (streaming, video games, AR/VR) are an increasing threat. All these competitive pressures led to a drawdown in Dave & Buster's share price, and despite a post-COVID-19 pandemic recovery, PLAY struggled to pre-COVID-19 pandemic highs.

Gogo Inc. (GOGO)

Company Overview

Gogo Inc. is a holding company that operates through its subsidiaries, with the principal operating subsidiary being Gogo Business Aviation LLC. The company is the world's largest provider of broadband connectivity services for the business aviation market. Gogo's mission is to provide ground-like connectivity to every passenger on every flight around the globe, enabling superior passenger experiences and efficient flight operations. To accomplish this mission, Gogo designs, builds, and operates dedicated air-to-ground networks, engineers and maintains in-flight systems of proprietary hardware and software, and delivers customizable connectivity and wireless entertainment services and global support capabilities to its aviation partners.

	1/1/2016	12/31/2022	
Stock Price*	$17.01	$14.76	
Market Cap	$1,460.3	$1,878.5	
Enterprise Value	$1,657.3	$2,488.9	
Shares Outstanding	85.9	127.3	1
Net Debt	$197.0	$610.4	2
Debt/Equity	851.8%	N/A	
Dividend Yield	N/A	N/A	
P/E	N/A	20.8x	3
EV/Sales	3.3x	6.2x	
EV/EBITDA	39.3x	15.0x	
FCF/Share	-$0.4	$0.5	4
Gross Margin	55.9%	65.0%	
EBITDA Margin	8.4%	41.1%	
Trailing 3yr Rev CAGR	23.6%**	-21.5%	5
Trailing 7yr Rev CAGR		-3.0%	
Analyst Buy %	71.4%		
Analyst Hold %	14.3%		
Analyst Sell %	14.3%		

*Numbers in millions excluding stock price

**The 2016 three-year revenue CAGR was adjusted to two-years as no revenue data was available prior

Management

CEO: Michael Small (2010-2018), Oakleigh Thorne (2018-Present), former CEO of Thorndale Farm LLC, his personal family office

CFO: Norman Smagley (2010-2017), Barry Rowan (2017-Present), former CFO of Cool Planet Energy Systems

COO: John Wade (2016-2018), Sergio Aguirre (2022-Present), Former President of Business Aviation

Analysis

1. Large 48% increase in shares outstanding as the company attempts to fundraise
2. Net debt increased 210%; the company took on significant debt during the period, totaling $1.2 billion in 2019
3. Gogo became profitable in 2021 after Intelsat bought Gogo In-Flight Wi-Fi business for $400 million
4. Increase in FCF/Share due to Gogo selling its Wi-Fi segment and becoming profitable as a result, despite significant share dilution
5. Trailing 3-year revenue CAGR decrease due to the company’s early rapid adoption and hype when compared to the struggles it has incurred over the period

Notable Events

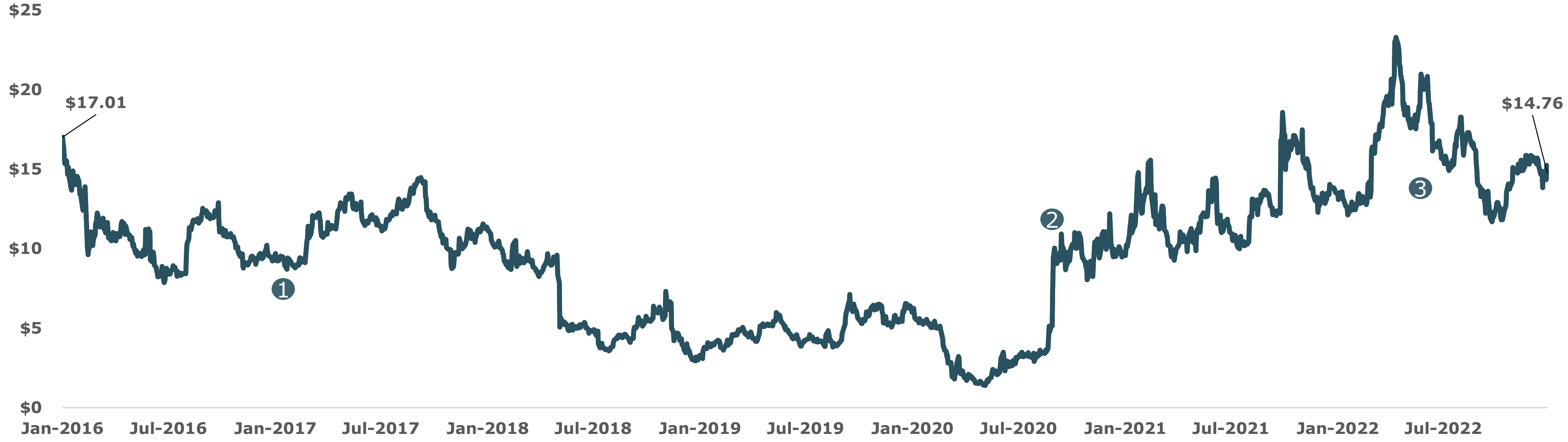
Notable Events

1. **Securities Litigation (Feb. 2017):** A putative class action lawsuit was filed against Gogo on June 27, 2018, by a stockholder of the company. The lawsuit was filed on behalf of all purchasers of Gogo's securities from February 27, 2017, through May 4, 2018. The complaint alleges misrepresentations or omissions by Gogo relating to the reliability of and installation and remediation costs associated with Gogo's 2Ku antenna. The plaintiffs seek to recover an unspecified number of damages from Gogo and the individual defendants.

2. **Intelsat Buys Gogo's Wi-Fi Business (May 2020):** Satellite operator Intelsat agreed to purchase the in-flight broadband business of Gogo for $400 million, funding the deal partially through its ongoing chapter 11 bankruptcy restructuring intended to address billions in debt. Intelsat sees growing consumer demand for in-flight connectivity and views the acquisition as strengthening its business despite filing for bankruptcy in May 2020 due to its heavy debt load. Gogo will remain a public company and plans to use proceeds to pay down debt and invest in other areas like 5G offerings.

3. **SmartSky Litigation (Feb. 2022)**: In February 2022, competitor SmartSky Networks sued Gogo for allegedly infringing patents in the 5G service segment. This lawsuit is ongoing and has impacted investors confidence in Gogo as a business as legal fees and a potential loss in the lawsuit would erode profits.

# of 20%+ Drawdowns	3
Max Drawdown	-93%



Competitive Landscape

Competition

- **Iridium Communications (IRDM ~$6.5B market cap):** Iridium Communications Inc. operates as a satellite communications company that offers voice and data communication systems and services to businesses, the U.S. and foreign governments, non-governmental organizations, and consumers worldwide. Its products include satellite phones, broadband data devices, and various accessories, while its services encompass voice calls, messaging, and broadband data services, along with machine-to-machine services for tracking and monitoring assets.
- **SmartSky Networks (Private):** SmartSky Networks is an aviation communications provider that develops cutting-edge in-flight connectivity solutions. Its flagship product, SmartSky 4G LTE, is an air-to-ground network that delivers high-speed, low-latency connectivity for commercial and private aircraft across the United States. The company operates on a service-based model, where customers pay for the connectivity services, enhancing in-flight productivity, entertainment, and overall travel experience.
- **ViaSat (VSAT ~$2.4B market cap):** ViaSat Inc. is a global communications company that provides high-speed satellite broadband services and secure networking systems covering military and commercial markets. Its product portfolio includes home internet services, in-flight internet for commercial airlines, network services for government and military use, and portable satellite terminals. The company's business model comprises both subscription-based services for consumers and businesses, and contractual agreements with government and military entities.

At the start of the period, Gogo enjoyed a leading position in the in-flight connectivity market as a pioneer in the space, leveraging its first-mover advantage and partnerships with airlines. However, by 2022, Gogo struggled to keep pace with competitors who had caught up and overtaken Gogo in areas like technological capabilities, pricing, product development, and geographic coverage. While the entire in-flight connectivity industry faced headwinds, Gogo failed to maintain its competitive edge. With rivals like Iridium and SmartSky offering superior connectivity solutions, Gogo lost market share and reported declining revenue growth. Though the company identified potential growth opportunities, it had clearly lost the dominant industry position it held at the beginning of the period. Gogo's experience shows the risks of complacency even for innovative first movers in dynamic technology markets.

Perceived Moat (2016) – Counter Positioning

Rationale: As the first mover in in-flight connectivity, Gogo occupied the most advantageous positions before competitors emerged. It cemented partnerships with airlines and patented key technology early on. This counter-positioning allowed Gogo to establish a moat that later entrants struggled to compete against initially. Incumbent businesses offering Wi-Fi on planes through satellite connection could not match Gogo’s service as it would be detrimental to their business model.

Reason for Erosion of Moat: Satellite companies eroded Gogo's early moat with superior satellite technology. Iridium's global network, for instance, neutralized Gogo's coverage and bandwidth advantages from air-to-ground infrastructure. By matching Gogo on critical factors like technology and price, Iridium diminished the counter-positioning that was previously Gogo's strength.

Conclusion - What drove shareholder underperformance?

1. **Increased Competition:** Gogo faced increasing competition from satellite-based providers of in-flight connectivity like ViaSat and Iridium. These rivals boasted significant advantages over Gogo's ground-based network, including broader geographic coverage, faster internet speeds, and the ability to bundle connectivity with in-flight entertainment services like live TV. With their satellite technology, competitors could offer superior connectivity across more flight routes and at bandwidths up to 75Mbps, far greater than Gogo's peak air-to-ground speed of 15Mbps. Additionally, their entertainment bundles appealed strongly to airlines looking for more amenities to offer passengers. Backed by substantial financial and engineering resources as large conglomerates, satellite players were positioned to outpace Gogo. By matching Gogo on critical factors like speed and coverage while providing better-bundled services, satellite competitors applied immense pressure. Their technological and service advantages allowed them to take significant market share from the incumbent Gogo by appealing to airline partners.

2. **Lawsuit and Litigation Issues:** In June 2018, a class action lawsuit alleged Gogo made misrepresentations related to the reliability and costs of its 2Ku antenna used for in-flight connectivity. The plaintiffs sought unspecified damages from Gogo and its executives. This lawsuit threatened Gogo's reputation and finances. Additionally, in February 2022 competitor SmartSky Networks filed a patent lawsuit against Gogo. SmartSky alleged Gogo's 5G offering infringed four of SmartSky's patents and sought compensatory damages, treble willful infringement damages, and recovery of legal costs. Patent lawsuits can hamper companies' ability to compete and require the diversion of resources to legal defense. Substantial damages or settlements, as well as legal costs and management distraction, were potential risks flowing from the lawsuits.

3. **Industry Headwinds:** The COVID-19 pandemic had a significant impact on Gogo's in-flight connectivity business beginning in March 2020, as global aviation traffic declined sharply due to travel restrictions and plummeting demand. Gogo saw a sharp decrease in flight activity and an increase in account suspensions and declines in new service activations, materially and adversely affecting its financial performance. Though Gogo's key metrics began recovering in Q3 2020 and reached pre-pandemic levels by 2022, the severe industry downturn in 2020 due to the COVID-19 pandemic severely disrupted Gogo's business and required agility to manage the crisis. Gogo had to monitor the pandemic and aviation industry closely to navigate an extremely challenging operating environment. Gogo's recovery can be attributed to the company selling its commercial in-flight Wi-Fi segment to Inmarsat.

4. **Company Debt:** Gogo took on substantial debt loads between 2016-2022 that posed financial risks. Specifically, Gogo had $1.19 billion in total debt as of December 31, 2020. While this declined to $819 million in total debt by March 31, 2022, Gogo maintained high leverage throughout the period. Carrying significant debt can strain a company's profitability due to interest expenses. It can also limit flexibility for investing in growth. Additionally, high debt constrains shareholder value as the company's cash flows must be directed towards creditors rather than dividends or buybacks. Gogo's leadership had to strategically manage the company's leverage amid competitive and pandemic disruptions in its industry.

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Walt Disney Co (DIS)

Company Overview

The Walt Disney Company, commonly known as Disney, was originally incorporated in 1923. The company is a global entertainment conglomerate renowned for its film studio division, the Walt Disney Studios, which includes Walt Disney Pictures, Pixar, Marvel Studios, Lucasfilm, 20th Century Studios, and Searchlight Pictures. Disney's other main divisions are Disney Media Networks, Disney Parks, Experiences and Products, and Disney Direct-to-Consumer & International. Disney operates on a business model that involves maximizing the synergy of its unique ecosystem to deepen consumers' connection to its characters and stories, using the power of its far-reaching platforms and new technologies to give consumers the best entertainment experience possible.

	1/1/2016	12/31/2022	
Stock Price*	$102.98	$92.09	
Market Cap	$170,244.3	$158,433.67	
Enterprise Value	$189,098.3	$212,447.7	
Shares Outstanding	1,653.2	1,823.6	
Net Debt	$14,614.0	$40,644.0	1
Debt/Equity	39.2%	48.2%	
Dividend Yield	1.4%	N/A	2
P/E	18.6x	35.6x	3
EV/Sales	3.5x	2.6x	
EV/EBITDA	11.6x	18.2x	
FCF/Share	$4.1	$0.6	4
Gross Margin	43.4%	32.2%	
EBITDA Margin	29.9%	14.1%	
Trailing 3yr Rev CAGR	7.5%	5.9%	
Trailing 7yr Rev CAGR		6.7%	
Analyst Buy %	57.1%		
Analyst Hold %	40.0%		
Analyst Sell %	2.9%		

*Numbers in millions excluding stock price

Management

CEO: Bob Iger (2005-2020), Bob Chapek (2020-2022), Bob Iger (2022-Present), Former CEO of Disney for 15 years

CFO: Christine McCarthy (2015-Present), Former Executive VP of Disney Corporate Real Estate

COO: Tom Staggs (2015-2016), No current COO

Analysis

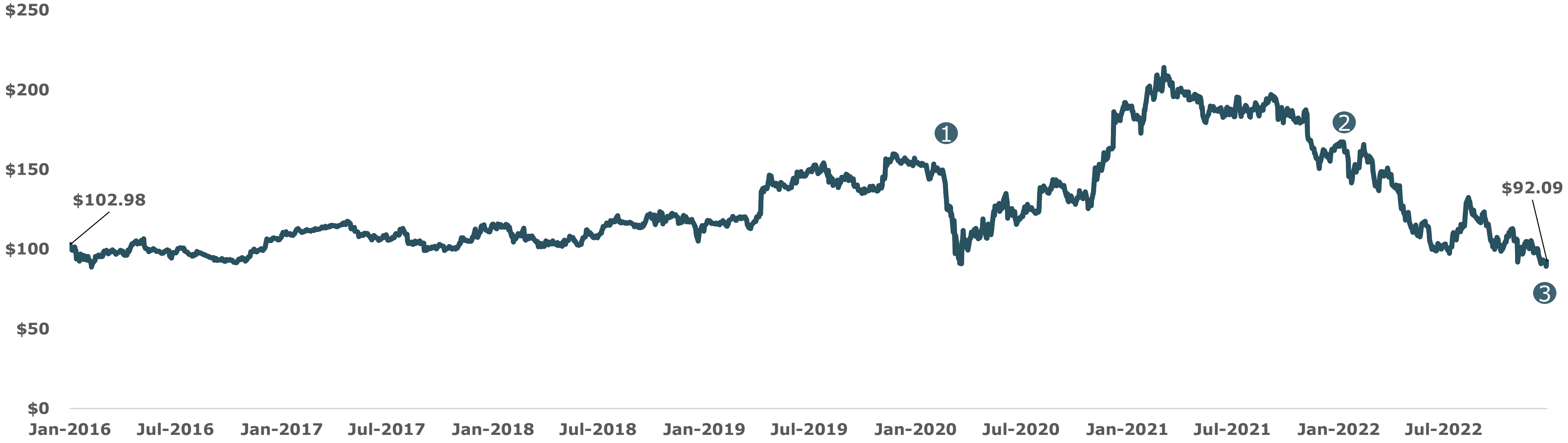
1. Disney's debt increased 178% due to the financial disruptions caused by COVID-19 pandemic, downgrades in debt ratings and substantial investments in content production and acquisitions
2. Disney suspended its dividend due to the impact of COVID-19 pandemic
3. Disney’s saw P/E multiple expansion of 95.4% due to investor confidence in their franchise strategy, investments in parks and resorts, and successful film releases despite decreasing earnings
4. Disney's Free Cash Flow decreased 85% due to increased content spending, lower operating income, and impacts from COVID-19 pandemic

Notable Events

Notable Events

1. • **COVID-19 Pandemic Impact (Mar. 2020)**: Disney’s financial performance was significantly impacted by the COVID-19 pandemic, with an estimated detriment of $6.9 billion on operating income in its Parks, Experiences and Products segment due to closures and reduced capacities. Additionally, Disney had incurred approximately $1 billion in costs in fiscal 2021 to ensure the safety of its employees and guests and comply with government regulations.
2. • **FY’21 Slowdown (Dec. 2021):** In 2021, Disney’s financial performance saw significant fluctuations, with its stock falling 14.3% after its Q4 earnings report due to slower recovery of its Parks, Experiences, and Products segment and slower subscriber growth for Disney+. Despite all parks being open for the first time since the pandemic began, the segment's operating profit fell short of expectations, and Disney+ added fewer subscribers than in the previous quarter.
3. • **FY’22 Challenges (Dec. 2022)**: Disney's challenging year in 2022 was largely due to the ongoing impact of the COVID-19 pandemic, which led to disruptions in film and television productions, increased costs for safety measures, and affected the company's theme parks and resorts. The company's stock was also affected by lower third-party content licensing of film content due to a strategic shift towards distribution on its Direct-to-Consumer services. Additionally, Disney faced controversy over its response to the "Don't Say Gay" bill in Florida, which further impacted its stock performance.

# of 20%+ Drawdowns	2
Max Drawdown	-58%



Competitive Landscape

Competition

- **Paramount Global (PARA ~$11.1B market cap):** Paramount Global, formerly known as ViacomCBS, is a multinational media conglomerate specializing in the production, distribution, and licensing of content across various media platforms worldwide. Its business model revolves around a diverse portfolio of products and services, including television networks, film production, digital content, and subscription-based streaming services such as Paramount+. The company generates revenue through multiple streams, including advertising, content licensing, and direct-to-consumer subscriptions.
- **News Corp (NWSA ~$10.5B market cap):** News Corp is a global diversified media and information services company focused on creating and distributing authoritative and engaging content to consumers and businesses. The company's business model includes a broad portfolio of media properties in news and information services, book publishing, digital real estate services, cable network programming, and pay-TV distribution. News Corp generates revenue through multiple channels including advertising, subscription fees, and the sale of goods and services across its various platforms.
- **Netflix (NFLX ~$131.2B market cap):** Netflix is a leading global streaming entertainment service provider, offering a vast library of films and television series, including those produced in-house. Operating on a subscription-based model, Netflix allows members to watch as much as they want, anytime, anywhere, on nearly any internet-connected screen, all without commercials or commitments. Its revenue is primarily derived from membership fees, which vary based on the type of plan and the country of the subscriber.

Disney's performance has been impacted by increased costs and lower attendance rates at new attractions. The Studio Entertainment segment underperformed due to lower theatrical results and the impact of COVID-19 pandemic. The pandemic led to an estimated $6.9 billion detriment on operating income in fiscal 2020 due to closures and reduced capacities at Disney's Parks, Experiences and Products segment.

Perceived Moat (2016) – Cornered Resource

Rationale: Disney's cornered resources primarily lie in its unique franchises and creative teams, brought in through strategic acquisitions of Pixar, Marvel, and Lucasfilm. These acquisitions have not only enriched Disney's portfolio with valuable intellectual property but also brought in world-class storytellers and innovators. Furthermore, Disney's ability to adapt to technological changes, as demonstrated by ESPN's successful transition to online and mobile platforms, is another unique resource. These cornered resources provide Disney with a significant competitive advantage that is difficult for competitors to replicate.

Reason for Erosion of Moat: Disney's film success has been inconsistent, with major hits like Marvel and Star Wars titles being offset by less successful releases and the impact of COVID-19 pandemic causing theater closures and delayed releases. Despite owning valuable franchises like Pixar, Marvel, and Lucasfilm, Disney has struggled to consistently generate consumer interest and acceptance for its new offerings. The company's significant investments in content production, sports rights, and theme park attractions have often been made without a clear understanding of consumer demand, leading to inefficient use of resources. This inefficiency, coupled with the challenges in the film division, has led to a decline in revenue from theatrical film receipts, theme park admissions, and sales of licensed consumer products, impacting Disney's overall profitability.

Conclusion - What drove shareholder underperformance?

1. **Higher Costs and Lower Attendance:** The opening of Star Wars: Galaxy's Edge led to increased costs due to labor and other cost inflation. However, these expenses did not translate into higher attendance rates. The lower attendance, despite higher occupied room nights, indicates that while the attraction may have drawn in overnight guests, it did not significantly boost overall park attendance. Furthermore, the decrease in attendance at Shanghai Disney Resort was due to lower average ticket prices driven by a higher mix of annual passholder attendees in the current quarter as a result of COVID-19 pandemic-related travel restrictions. Additionally, the impact of Hurricane Matthew, which disrupted operations at Walt Disney World and resulted in the closure of parks for about a day and a half, had an adverse impact on the year-over-year growth in operating income.

2. **Underperformance in Studio Entertainment:** The Studio Entertainment segment saw a decrease in operating income due to lower theatrical and home entertainment distribution results. This was primarily due to the high success of films like Black Panther and Star Wars: The Last Jedi in the previous year, which set a high benchmark that films like Captain Marvel could not meet in the current year. The 21CF film studio had an operating loss in the third quarter of about $170 million, which was driven by the underperformance of theatrical titles including Dark Phoenix, marketing for future releases, and key markets, both domestically and internationally. With no significant worldwide theatrical releases and development expenses. Furthermore, the worldwide theatrical results were adversely impacted by the COVID-19 pandemic as theaters were closed in many quarters, Disney faced a difficult comparison against the strong performance of The Lion King and Toy Story 4 in the prior year quarter.

3. **Impact of COVID-19 Pandemic:** The COVID-19 pandemic had a significant impact on Disney's performance, particularly in the theatrical sector. With theaters closed in many key markets due to pandemic restrictions, Disney was unable to release significant worldwide theatrical releases. This led to unfavorable comparisons against the prior year's strong performances of films like The Lion King and Toy Story 4. The impact of the COVID-19 pandemic on Disney's businesses will continue for an unknown length of time and may continue to impact certain of Disney's key sources of revenue. The most significant impact of the COVID-19 pandemic on Disney's fiscal 2020 operating results was an estimated detriment of approximately $6.9 billion on operating income at Disney's Parks, Experiences, and Products segment due to revenue lost as a result of the closures or reduced operating capacities.

Veeco Instruments (VECO)

Company Overview

Founded in 1945, Veeco Instruments is a manufacturer of semiconductor process equipment. The company's product offerings include ion beam, laser annealing, lithography, MOCVD (Metal Organic Chemical Vapor Deposition), and single wafer etch & clean technologies, which play a crucial role in the fabrication and packaging of advanced semiconductor devices. Veeco's business model is centered around designing equipment to optimize performance, yield, and cost of ownership, and it holds leading technology positions in the markets it serves.

	1/1/2016	12/31/2022	
Stock Price*	$20.64	$18.58	
Market Cap	$845.1	$955.5	
Enterprise Value	$461.3	$964.6	
Shares Outstanding	40.9	51.4	1
Net Debt	-$383.8	$9.2	2
Debt/Equity	0.2%	53.9%	
Dividend Yield	N/A	N/A	
P/E	N/A	6.7x	
EV/Sales	1.0x	1.5x	
EV/EBITDA	27.8x	9.9x	
FCF/Share	$0.1	$1.7	3
Gross Margin	36.4%	40.9%	
EBITDA Margin	3.5%	15.1%	4
Trailing 3yr Rev CAGR	-2.6%	15.5%	5
Trailing 7yr Rev CAGR		4.4%	
Analyst Buy %	30.8%		
Analyst Hold %	61.5%		
Analyst Sell %	7.7%		

*Numbers in millions excluding stock price

Management

CEO: John Peeler (2007-2018), Bill Miller (2018-Present), Former VP of Process Equipment at Veeco

CFO: Sam Maheshwari (2014-2019), John Kiernan (2020-Present), Former CAO at Veeco

COO: Sam Maheshwari (2018-2019), no current COO

Analysis

1. 26% dilution in shares outstanding as Veeco attempted to raise capital for business operations
2. Cash reserves depleted as the company invested in new facilities and technologies over the time period
3. FCF/share increased significantly over the seven-years despite significant dilution, illustrating Veeco’s increase in both gross margin and EBITDA margin generating more cash flow
4. 331% expansion in EBITDA margin reflecting the company’s improvements in operational efficiency and benefits from semiconductor industry trends
5. Flipped trailing 3-year revenue CAGR from negative to positive as the global chip shortage placed higher demand on Veeco’s products, despite not being the industry standard

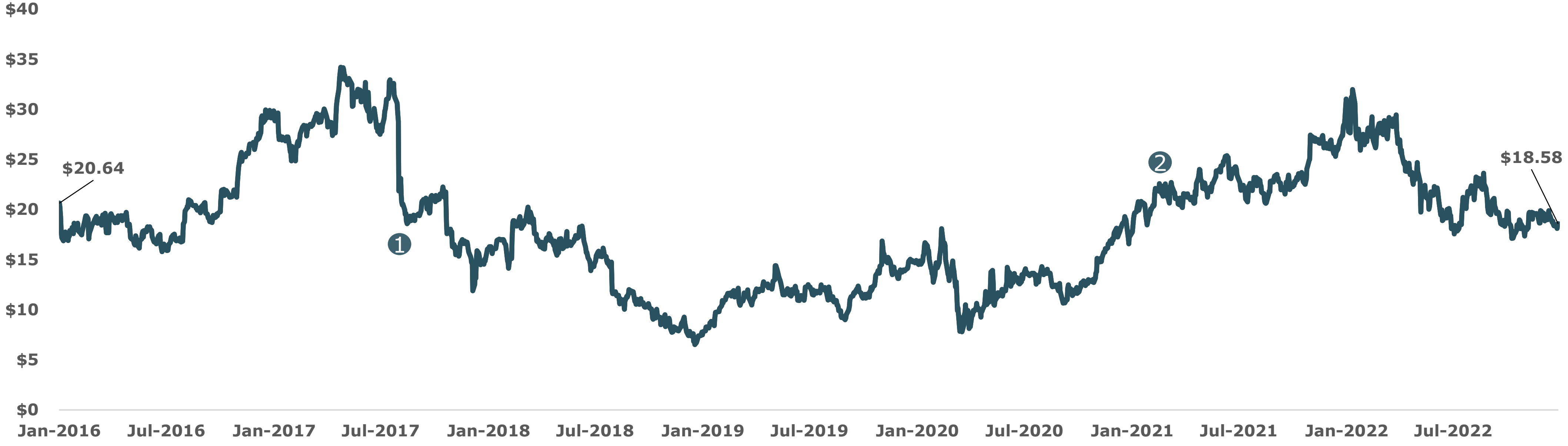
Notable Events

Notable Events

① • **Q3 2017 Earnings (Aug. 2017):** Lower-than-expected EPS and massive GAAP net loss of $9 million caused Veeco's stock to drop ~40%. The company experienced pricing pressures in China and began to face steep competition from other companies making fast technological investments. Veeco's stock reacted immediately as investors believed that the company had lost out to its competitors in the semiconductor equipment manufacturing race.

② • **Chip Shortage (Feb. 2021):** The global chip shortage that started in early 2020 and persisted through 2022 dramatically impacted the semiconductor industry; supply chain disruptions and surging demand for chips used in consumer electronics and autos created a severe shortage of semiconductors worldwide. As an equipment provider to semiconductor manufacturers, Veeco benefited from increased capital investment, with its share price surging over 25% in February 2021 after reporting strong Q4 2020 results and 2021 guidance citing robust demand conditions in semiconductor and 5G markets.

# of 20%+ Drawdowns	4
Max Drawdown	-80%



Competitive Landscape

Competition

- **ASML (ASML ~$223.7B market cap):** ASML Holding N.V. is a world-leading manufacturer of advanced technology systems for the semiconductor industry. The company specializes in photolithography systems, primarily producing extreme ultraviolet (EUV) lithography machines that are critical to produce microchips. ASML's business model revolves around the sale and service of these highly specialized systems to chip manufacturers globally.
- **Applied Materials (AMAT ~$82.2B market cap):** Applied Materials, Inc. is a global leader in materials engineering solutions used to produce virtually every new chip and advanced display in the world. Its expertise in modifying materials at atomic levels and on an industrial scale enables customers to transform possibilities into reality. The company's business model is centered around the sale of manufacturing equipment, services, and software to semiconductor and display industries worldwide.
- **Semtech Corp (SMTC ~$1.8B market cap):** Semtech Corporation is a leading supplier of high-performance analog and mixed-signal semiconductors and advanced algorithms for high-end consumer, enterprise computing, communications, and industrial equipment. Products are designed to benefit the engineering community as well as the global community, through power management, protection to the communications, and connectivity.

In 2016, Veeco Instruments was performing relatively well, maintaining a leading position in MOCVD equipment and generating steady revenue, albeit with declining growth. However, over the next few years, Veeco struggled with competitive pressures, losing market share to rivals like AMAT and suffering from a slowdown in MOCVD demand. By 2022, Veeco had clearly underperformed both the broader semiconductor equipment market and key competitors - revenues declined, margins compressed, and the stock badly lagged behind the SOX index. A failure to keep pace with technology shifts towards EUV lithography and lack of exposure to the memory sector hurt Veeco versus its peers. Despite efforts to expand into new markets like displays and compound semiconductors, competitive challenges left Veeco in a weakened competitive position, leading to significant underperformance within the industry. The company failed to capitalize on growth opportunities in the semiconductor equipment space over the 2016-2022 period.

Perceived Moat (2016) – Process Power

Rationale: Veeco demonstrated strong process power through persistent technology leadership and a robust innovation pipeline, as evidenced by its track record of developing cutting-edge products and obtaining patents for differentiated technologies. The company's long-standing experience in the semiconductor machine and MOCVD equipment market proved helpful in its initial success.

Reason for Erosion of Moat: Veeco's moat eroded as competitors like Applied Materials and Tokyo Electron developed more advanced tools optimized for cutting edge memory and logic semiconductors. As customer demand shifted to new technologies that rivals could better address, Veeco struggled to match their product innovation and lost market share in high-growth segments. Despite efforts to expand into emerging markets, Veeco saw its competitive position weakened over the period by superior competitor offerings and unfavorable demand shifts.

Conclusion - What drove shareholder underperformance?

1. **Increased Competition:** Veeco faced mounting competitive pressures between 2016-2022 from larger, more resource-rich rivals like Applied Materials and Tokyo Electron. These semiconductor equipment giants invested heavily in developing superior EUV lithography and etch/deposition tools optimized for cutting-edge memory and logic chips. Their significant financial firepower for R&D and greater engineering scale allowed them to rapidly innovate new products and capture customer demand in high-growth logic/foundry and memory markets. With its smaller size and more concentrated R&D focused on legacy MOCVD, Veeco struggled to match the technology innovation pace and breadth of product portfolios that competitors were bringing to market. As customer capital spending accelerated for advanced nodes, rivals capitalized with strong market share gains. Veeco's competitive position weakened substantially, as evidenced by declining market share, compressed margins, and underperformance versus larger peers who possessed far greater resources and scale advantages in the semiconductor equipment industry.

2. **Changing Market Conditions:** Veeco faced challenging market conditions between 2016-2022, as demand for its key MOCVD equipment weakened substantially. The LED industry, a major end-market for MOCVD tools, saw cyclical declines during this period. As customers reduced LED capex spending, orders for Veeco's MOCVD platforms slowed. This cyclical downturn in LED/compound semiconductor demand significantly impacted Veeco's growth trajectory. At the same time, semiconductor manufacturers increased investments in advanced lithography systems from ASML to support leading-edge processes below 10nm geometries. With limited exposure to these advanced technologies, Veeco failed to capitalize on the surge in customer spending on EUV lithography. The demand shift towards ASML's innovative EUV systems meant less capex available for Veeco's legacy deposition and etch tools focused on 200mm wafer production. The combination of cyclical declines in LED/compound semiconductor markets which traditionally relied on MOCVD, along with the demand pivot towards advanced lithography where ASML maintained dominance, created substantial headwinds for Veeco. These deteriorating market conditions constrained Veeco's revenue growth and competitive position between 2016-2022.

3. **Geopolitical Risks:** Trade tensions between the US and China escalated significantly between 2016-2022, posing risks for Veeco's business. As a major supplier to Chinese semiconductor and LED manufacturers, Veeco was exposed to changes in US-China trade policy. Specifically, export restrictions on certain semiconductor equipment imposed by the US government disrupted sales to key Chinese customers for Veeco. Uncertainty regarding tariffs and unstable US-China relations also led some Chinese firms to reduce or delay tool purchases from US suppliers like Veeco. Given China represented a major revenue contributor, the souring trade relationship made it more difficult for Veeco to capitalize on growth opportunities in this strategic market. Additionally, as a global company with operations in the US, China, and other countries, Veeco was vulnerable to supply chain disruptions, cost pressures, and reduced customer demand resulting from US-China trade frictions. The intensifying trade disputes generated an uncertain operating environment that posed risks to Veeco's financial performance.

Sensata Technologies (ST)

Sensata Technologies

Company Overview

Founded in 1916, Sensata Technologies Holding plc (ST) is a leading provider of sensors and controls, focusing on emerging technology trends like electrification and the Internet of Things (IoT). The company offers a wide range of products, including sensors, electrical protection components, and battery-energy storage systems, and is expanding its market share on electrified platforms. ST also leverages strategic partnerships and acquisitions to accelerate growth and transformation of their product portfolio.

	1/1/2016	12/31/2022	
Stock Price*	$45.15	$40.69	
Market Cap	$7,683.7	$6,176.6	
Enterprise Value	$10,906.2	$9,209.2	
Shares Outstanding	170.2	152.9	1
Net Debt	$3,222.5	$3,032.6	
Debt/Equity	213.6%	136.9%	
Dividend Yield	N/A	1.0%	2
P/E	20.7x	10.0x	
EV/Sales	3.7x	2.3x	
EV/EBITDA	16.1x	9.7x	
FCF/Share	$2.1	$2.0	
Gross Margin	34.4%	33.6%	3
EBITDA Margin	22.7%	23.6%	
Trailing 3yr Rev CAGR	15.8%	5.3%	4
Trailing 7yr Rev CAGR		4.4%	
Analyst Buy %	56.3%		
Analyst Hold %	43.8%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Martha Sullivan (2013-2020), Jeff Cote (2020-Present), Former COO of Sensata Technologies

CFO: Paul S Vasington (2014-Present), Former CFO of Honeywell International

COO: Jeff Cote (2019-2020), no current COO

Analysis

1. 10.7% decrease in shares outstanding as Sensata focused on buying back shares to boost EPS numbers as the stock struggled
2. The company began paying dividends in FY2022 in an attempt to attract more investors due to the stock's underperformance over the past 7 years
3. 80bps decrease in gross margin due to inflationary pressures and challenges in supply chain during the COVID-19 pandemic
4. Decrease in trailing 3-year revenue CAGR as Sensata saw a slowdown in automotive and industrial markets during and after the COVID-19 pandemic

Notable Events

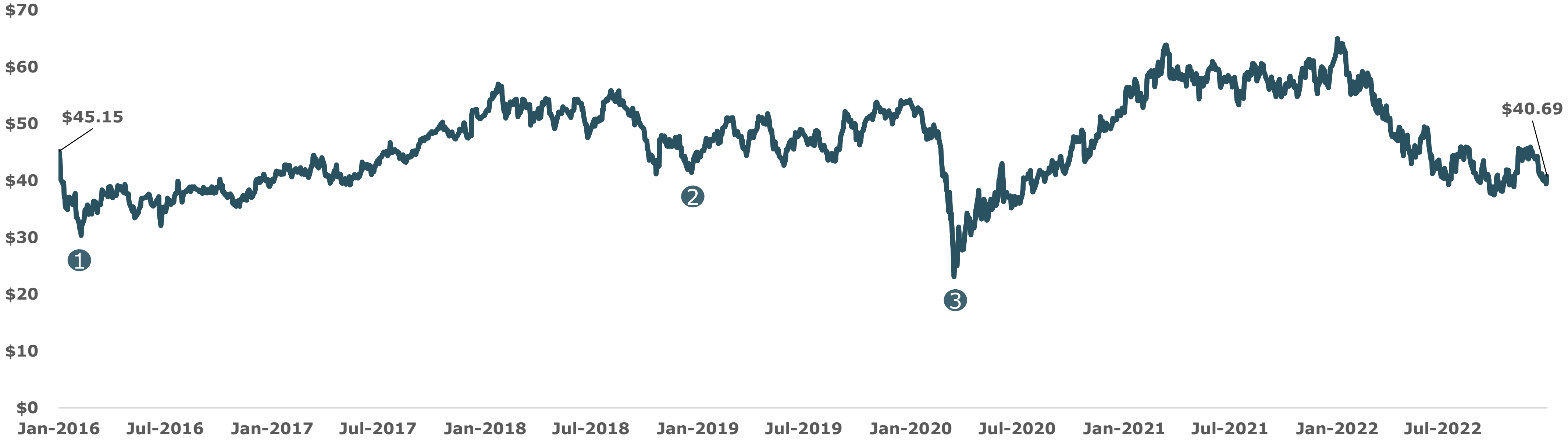
Notable Events

1. **Weak Demand and Market Decline (Feb. 2016):** In 2016, Sensata faced weak demand for its products sold to industrial customers serving the appliance, HVAC, and automotive markets. This led to a decline in organic revenue. Additionally, the company experienced a decline in the heavy vehicle off-road market and a decrease in growth assumption in Aerospace.

2. **Competitive Landscape (Dec. 2018):** Sensata faced competition in its end markets, particularly from large systems integrators like Bosch and Denso in 2019. These competitors had the advantage of being able to manufacture high-quality products at low cost, particularly in markets where low-cost country-based suppliers had entered Sensata's markets. This competition could have affected prices or customer demand for Sensata's products, negatively impacting its profit margins and resulting in a loss of market share.

3. **COVID-19 Pandemic (Mar. 2020):** The global pandemic led to a significant slowdown in various markets, including automotive and industrial sectors. The company experienced a decline in revenue due to lower volumes and productivity headwinds from manufacturing facilities running at significantly lower capacity.

# of 20%+ Drawdowns	5
Max Drawdown	-60%



Competitive Landscape

Competition

- **Danfoss (Private):** Danfoss Group is an engineering company, providing products and services used in areas such as cooling, air conditioning, heating, motor control, and mobile machinery. Its portfolio includes drives, sensors, controls, pumps, and valves among other technologies, aimed at energy efficiency and sustainability. The company's business model is based on the design, manufacture, and sale of engineering solutions to various industries and sectors worldwide.
- **Flex (FLEX ~$9.7B market cap):** Flex Ltd. is a leading global provider of design, engineering, manufacturing, and supply chain services for original equipment manufacturers (OEMs). It offers a range of services from innovation, design, engineering, manufacturing and supply chain services for various industries including technology, consumer electronics, industrial, and healthcare. The company's business model is based on contract manufacturing, where it generates revenue by providing these services to OEMs under contract.
- **Analog Devices (ADI ~$83.5B market cap):** Analog Devices, Inc. is a leading global high-performance semiconductor company dedicated to solving the toughest engineering challenges. It designs, manufactures, and markets a broad line of high-performance integrated circuits (ICs) used in analog and digital signal processing applications. The company's business model is based on the sale of these semiconductor devices to a wide array of industries including automotive, communications, healthcare, industrial, and consumer electronics.

At the beginning of the period in 2016, Sensata Technologies was a strong competitor in its markets, particularly in the automotive and industrial sectors. The company competed based on product performance, quality, service, and price across the industries and markets it served. A significant element of Sensata's competitive strategy was to manufacture high-quality products at low cost, particularly in markets where low-cost country-based suppliers had entered its markets. Sensata's major competitors in the automotive side were large systems integrators like Flex and Danfoss. However, by the end of the period in 2022, Sensata faced several challenges that impacted its competitive position and increased competition from other players in the market, including those offering similar sensor solutions. Additionally, the global COVID-19 pandemic led to a significant slowdown in various markets, including the automotive and industrial sectors, which affected Sensata's revenue and market position. These factors led to volatility in end markets and negatively impacted the company's performance.

Perceived Moat (2016) – Counter Positioning

Rationale: In 2016, Sensata Technologies demonstrated a form of counter positioning by effectively adapting to new regulatory standards in the automotive sector. The company capitalized on regulations such as the Euro 6 emissions standards, which drove the adoption of more sensors in vehicles. Sensata's ability to meet these new requirements provided a competitive advantage, as other companies with less adaptable technologies may have found it challenging to comply with these standards.

Reason for Erosion of Moat: By 2022, Sensata faced challenges due to market volatility, inflation, rising interest rates, and geopolitical events, which impacted its performance. Furthermore, the company's growth in various markets, including automotive and industrial sectors, was lower than expected due to supply chain challenges and cost inflation. The regulatory environment rapidly eroded as competitors were able to eventually adapt and change their business models to profit on the Euro 6 emissions standards, completely eroding Sensata's moat.

Conclusion - What drove shareholder underperformance?

1. **Adverse Conditions in the Automotive Industry:** The automotive industry, which constitutes a significant part of Sensata's business, experienced adverse conditions during the period under review. In 2017, Sensata expected global auto markets to be slightly better than initially expected, but for the full year, markets were in line with the initial guidance provided at the beginning of the year. However, by 2022, Sensata expected automotive production to increase only approximately 2% for the year, which was more aligned to the IHS-pessimistic automotive reduction case with declines in North America and Europe from prior expectations. This suggests that the automotive industry's performance was not as robust as expected, which could have negatively impacted Sensata's performance and, consequently, shareholder returns.

2. **Competitive Pressures:** Sensata operates in highly competitive markets, and the company competes based on product performance, quality, service, and price across the industries and markets it serves. A significant element of Sensata's competitive strategy is to manufacture high-quality products at low cost, particularly in markets where low-cost country-based suppliers have entered Sensata's markets or increased their sales in Sensata's markets by delivering products at low cost to local OEMs. However, certain of Sensata's competitors in the automotive sensor market are controlled by major OEMs or suppliers, limiting Sensata's access to certain customers. These competitive pressures could have affected prices or customer demand for Sensata's products, negatively impacting the company's profit margins and/or resulting in a loss of market share, thereby contributing to shareholder underperformance.

3. **Integration of Acquired Companies:** Sensata's strategy includes growth through acquisitions, and the company has made several acquisitions over the years. However, the integration of these acquired companies into Sensata's operations posed challenges. For instance, in 2016, Sensata noted that the integration of Schrader, a company it had acquired, was going to take longer than the normal two years. By 2017, Sensata was still in the process of integrating the sensing businesses of Custom Sensors & Technologies (CST), which it had acquired in December 2016. The integration of these businesses into Sensata's operations could have resulted in operational inefficiencies, increased costs, and disruptions, which could have negatively impacted Sensata's performance and shareholder returns.

4. **Substantial Indebtedness:** Sensata has substantial indebtedness, which could have contributed to its shareholder underperformance. As of December 31, 2015, Sensata had long-term debt, net of discount, and deferred financing costs, of approximately $3.3 billion. By the end of 2021, Sensata's long-term debt, net, had increased to approximately $4.2 billion. This substantial indebtedness could have increased Sensata's vulnerability to general adverse economic and industry conditions, limited its ability to fund future working capital and capital expenditure needs, and limited its flexibility in planning for, or reacting to, changes in its business and the industry in which it operates. All these factors could have negatively impacted Sensata's performance and, consequently, its shareholder returns.

OSI Systems (OSIS)

OSI SYSTEMS, INC.

Company Overview

OSI Systems is a multinational company that specializes in electronic systems, components, and services for various industries. With divisions in Security, Healthcare, and Optoelectronics, they offer advanced security screening solutions, including X-ray scanners, metal detectors, and explosive trace detection systems. With their security division making up ~50% of revenues, OSI is known for its range of security solutions used in aviation, ports, and high-security environments. In healthcare, OSI Systems provides medical devices such as patient monitoring systems and diagnostic equipment. Additionally, their Optoelectronics division is an extension of their vertical integration and develops and manufactures optoelectronic devices used in communication systems and military applications, as well as their own products.

	1/1/2016	12/31/2022	
Stock Price*	$86.28	$79.52	
Market Cap	$1,701.6	$1,340.3	
Enterprise Value	$1,686.8	$1,714.2	
Shares Outstanding	19.7	16.9	1
Net Debt	-$14.8	$373.9	2
Debt/Equity	11.5%	64.8%	
Dividend Yield	N/A	N/A	
P/E	29.5x	16.0x	3
EV/Sales	1.9x	1.4x	
EV/EBITDA	14.0x	10.6x	
FCF/Share	$2.5	$3.1	4
Gross Margin	34.5%	32.5%	
EBITDA Margin	13.7%	13.6%	
Trailing 3yr Rev CAGR	-1.6%	2.7%	
Trailing 7yr Rev CAGR		4.2%	5
Analyst Buy %	100.0%		
Analyst Hold %	0.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Deepak Chopra (1987-Present), Served as the company's President, CEO, and a Director since the company's inception

CFO: Alan Edrick (2006-Present), Previous Executive VP and CFO of BioSource International

COO: N/A

Analysis

1. Retired 14.2% of shares through share buyback programs to boost EPS
2. Increased net debt 2,626.4% throughout the period for recapitalizations and to repay borrowings under credit facility
3. P/E multiple contraction due to poor revenue growth outlook
4. FCF/Share increased 24%, primarily from stock-based compensation and tax benefits
5. Low revenue CAGR of 4.2% over the 7-year period due to delays in revenue recognition, reduction in unit volume purchases, and the impact of the COVID-19 pandemic

Notable Events

OSI SYSTEMS, INC.

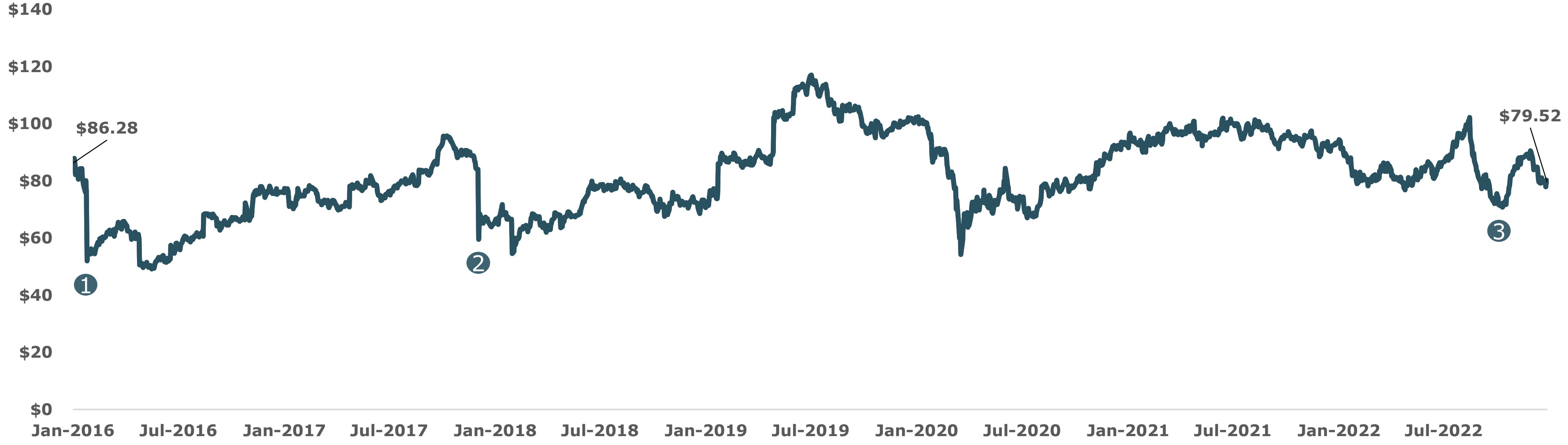
Notable Events

❶ • **Q2 2016 Earnings Miss (Jan. 2016):** Revenues were down 23% YoY and net income was down nearly 100%. Management claimed that the quarter had a difficult comparison, given the ~$39 million of revenue in the prior year associated with the contract with the US DoD. Excluding the contract, sales were down 10% due to weak sales in the healthcare division and revenue recognition in the security segment.

❷ • **Short-Seller's Report (Dec. 2017):** Muddy Waters Research released a report that stated OSI Systems was "rotten to the core". They claimed OSI obtained a major turnkey contract in Albania through corruption and that they were overly reliant on a certain Mexico turnkey contract that was up for renewal in 2018.

❸ • **Weak Healthcare Sales and Margin Contraction (Oct. 2022):** OSI saw a slower start to FY2022 due to the timing of planned deliveries from significant backlog in the prior fiscal year. Coming off headwinds from the COVID-19 pandemic, OSI struggled with supply chain delays and increased cost, as well as rising interest rates. The quarter saw a ~4% YoY revenue decrease and a 500bps decrease in EBIT margin. The revenue decrease was largely due to a 14% decrease in sales, as last year's quarter had heightened sales due to a spike in COVID-19 pandemic delta variant cases. The decrease in margin can be attributed to a different product mix for the security division and lower revenues.

# of 20%+ Drawdowns	10
Max Drawdown	-54%



Competitive Landscape

Competition

- **L3Harris Technologies (LHX ~$39.0B market cap):** L3Harris Technologies is a globally recognized technology company that specializes in delivering advanced solutions and services primarily in the areas of defense, aerospace, and public safety. They offer a wide range of capabilities, including communication systems, electronic warfare, sensors, and aviation security.
- **Smiths Group (SMIN.L ~$7.3B market cap):** Smiths Group plc is a multinational technology company operating in healthcare, detection and security, energy, and industrial sectors. They specialize in providing innovative solutions and products, including medical devices for patient monitoring and drug delivery, advanced detection systems for threat screening, and technologies for process automation and control in the energy and industrial markets.
- **Boston Scientific: Preventice Solutions (BSX ~$66.3B market cap):** Preventice Solutions is a healthcare technology company specializing in remote patient monitoring and cardiac diagnostics that competes with OSI in their healthcare segment. The company's mobile cardiac telemetry technology provides comprehensive and continuous monitoring of heart rhythm, aiding in the detection and diagnosis of cardiac conditions. Preventice Solutions also offers data management and analytics platforms that assist in the interpretation and analysis of cardiac data. They were acquired by Boston Scientific in 2021.

In 2016, OSI Systems faced several potential challenges that could have impacted its competitive standing. These included delays related to the award of domestic and international contracts, delays in customer programs, and delays in revenue recognition related to the timing of customer acceptance. They also faced potential impacts from changes in domestic and foreign government spending, budgetary, procurement, and trade policies, global economic uncertainty, and unfavorable currency exchange rate fluctuations. Fast forward to 2022, and many of these challenges persisted. In addition, the company had to navigate the impacts of the COVID-19 pandemic, which introduced issues such as material delays and cancellations of orders, supply chain disruptions, and plant closures.

Perceived Moat (2016) – Process Power

Rationale: OSI Systems has a vertically integrated operation, designing and manufacturing specialized electronic systems and components for critical applications. The company leverages its electronics and contract manufacturing capabilities into selective end-product markets through organic growth and acquisitions. This suggested that OSI Systems may have had a unique process power in the form of its vertically integrated operations and its ability to effectively integrate acquisitions to expand its product offerings and market reach.

Reason for Erosion of Moat: OSI Systems possessed a relatively weak process power moat at the beginning of the period. This moat began to erode due to OSI's inability to maintain consistent revenues, which can primarily be attributed to delays in revenue recognition. OSI's primary customers are airports and security systems. Although they are in constant need of OSI's products, their purchase timing is dependent on other aspects of the airport and security system, as well as changes in government rules and regulations. Thus, OSI struggled with changes in customer timing and regulations, which impacted their revenues and earnings. Although they stayed vertically integrated, investors were cautious with OSI's dependency on their highly-regulated customers.

Conclusion - What drove shareholder underperformance?

1. **Delays in Revenue Recognition:** Delays in customer programs and revenue recognition can significantly impact a company's financial performance, as was the case with OSI Systems during the time period. These delays can occur due to a variety of reasons, such as changes in customer requirements, project timelines, or unforeseen challenges in the execution of contracts. In the case of OSI Systems, these delays were a primary reason for their inconsistent revenues and earnings. The company's revenue recognition was affected due to changes in customer timing and requirements, which led to delays in the recognition of revenue from their contracts. This means that even though the company had secured contracts and completed the work, the revenue from these contracts could not be recognized in their financial statements until the customers accepted the work. This delay in revenue recognition could have disrupted the company's cash flow and financial planning, leading to underperformance during the period.

2. **Changes in Government Policies and Global Economic Uncertainty:** For OSI Systems, changes in domestic and foreign government spending, budgetary, procurement, and trade policies that were adverse to the company's businesses were key factors in their underperformance from 2016 to 2022. Because the government and airports (internationally) are some of OSI's largest customers, changes in government policies directly affected the company's revenue. Changes in these policies can lead to delays or cancellations of contracts, which can disrupt the company's revenue stream and financial planning. Global economic uncertainty, including the impact of the COVID-19 pandemic, led to material delays and cancellations of orders or deliveries, supply chain disruptions, and other adverse impacts on the company's ability to execute business plans. With the temporary shutdown of nearly all airports around the world, OSI lost a significant portion of its customers during the pandemic. Furthermore, because OSI is largely exposed to numerous countries, changes in exchange rates affected the value of the company's foreign revenue and expenses, leading to financial losses.

3. **Failure to Secure Contracts:** OSI Systems' stock price was negatively impacted due to issues with their contracts. The company had faced challenges with the Transportation Security Administration (TSA), one of its customers, which led to allegations that caused significant drops in its stock price. Although the company managed to recover from these allegations, the stock price did not fully recover to its previous levels. In addition, the company had to impair assets related to their contracts due to changes in customer operational requirements. This led to a significant charge, further impacting the company's financial performance and stock price. Furthermore, the expiration of contracts and the uncertainty of renewals also contributed to the drop in the stock price. The company's inability to secure the renewal of key customer contracts and delays in customer programs led to a reduction in its revenue guidance, further affecting the stock price. In January 2018, OSI Systems signed a two-year contract with Mexico's tax and customs authority, Servicio de Administración Tributaria (SAT), for a value of up to $130 million to provide security inspection services. However, the contract renewal resulted in a lower rate, which affected the company's revenue and subsequently its stock price. Furthermore, the company had to impair assets related to the Mexican turnkey program due to changes in customer operational requirements. This led to a significant charge, further impacting the company's financial performance and stock price. By the time the contract expired in June 2020, a path forward had not materialized, leading to further uncertainty. The company decided to move on from the operation, which led to a reduction in its revenue guidance, further affecting the stock price.

ScanSource Inc. (SCSC)

Company Overview

ScanSource, Inc. is a leading hybrid distributor that connects devices to the cloud and accelerates growth for partners across hardware, Software as a Service (SaaS), connectivity, and cloud. The company provides technology solutions and services from more than 500 leading suppliers of mobility, barcode, point-of-sale (POS), payments, physical security, networking, unified communications, collaboration (UCaaS, CCaaS), connectivity, and cloud services. ScanSource was incorporated in South Carolina in 1992 and serves approximately 30,000 sales partners.

	1/1/2016	12/31/2022	
Stock Price*	$31.67	$29.22	
Market Cap	$847.6	$740.7	
Enterprise Value	$935.9	$1,072.5	
Shares Outstanding	26.8	25.4	1
Net Debt	$88.3	$331.8	
Debt/Equity	16.9%	46.2%	2
Dividend Yield	N/A	N/A	
P/E	12.6x	8.2x	
EV/Sales	0.3x	0.3x	
EV/EBITDA	7.9x	6.3x	
FCF/Share	$1.2	-$5.3	3
Gross Margin	10.1%	11.4%	4
EBITDA Margin	3.4%	4.5%	
Trailing 3yr Rev CAGR	6.7%	8.5%	
Trailing 7yr Rev CAGR		1.1%	5
Analyst Buy %	80.0%		
Analyst Hold %	20.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Mike Baur (2000-Present), Co-Founder of ScanSource

CFO: Charlie Mathis (2012-2016), Gerry Lyons (2017-2020), Steve Jones (2020-Present), Former CFO of Blackbaud Inc.

COO: N/A

Analysis

1. Slight decrease in shares outstanding, 5.2% decrease, as SCSC repurchased shares to attempt to boost EPS and in turn boost share price
2. Large 173% increase in debt to equity as the company took on debt to fund 4 major acquisitions over the period
3. Decrease in FCF/Share due to slowing revenue growth and increases in capex due to increased competition in the cloud software sector
4. Slight margin expansion of 130bps due to the Intelisys acquisition, and shift to recurring revenues, and new value-added services
5. 1.1% trailing seven-year revenue CAGR indicative of very slow and at times negative revenue growth over the period, compared with the higher trailing three-year revenue growth CAGRs; revenue growth was -21.3% for FY2020

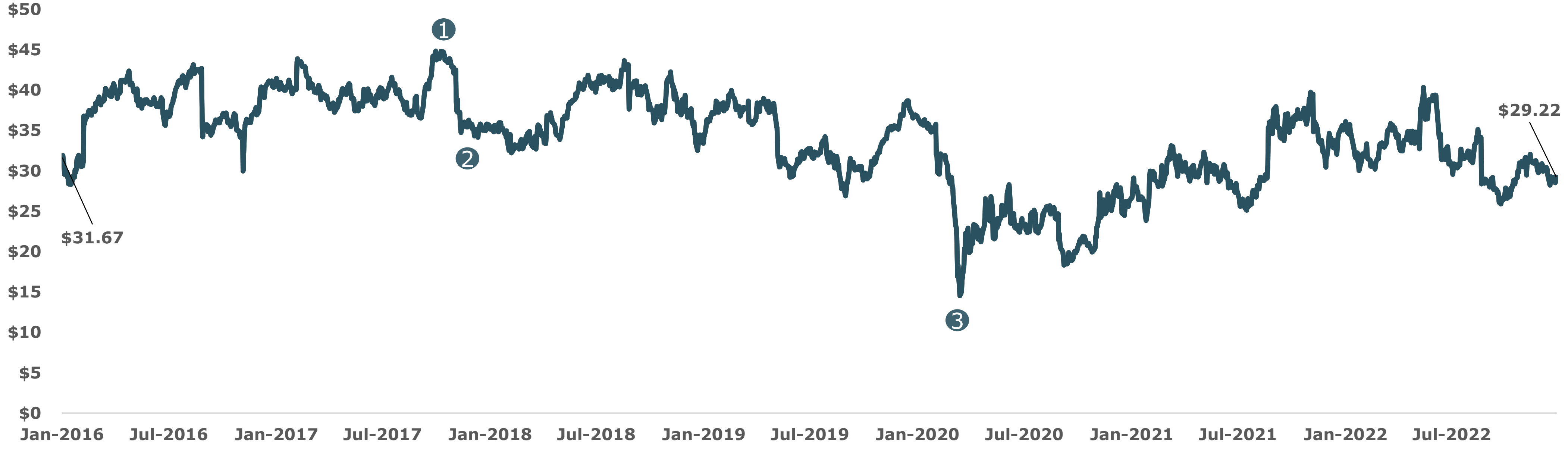
Notable Events

1. **Acquisition of POS Portal (Jun. 2017):** ScanSource announced in June 2017 that it would acquire POS Portal, a leading distributor of payment devices and services, for $144.9 million plus an earnout payment up to $13.2 million - the acquisition expands ScanSource's capabilities and market reach across all payment's channels.

2. **M&A Integration Challenges (Nov. 2017):** When ScanSource acquired POS Portal in 2017 to expand its payments capabilities, the merger faced integration challenges - combining operations, systems and cultures was difficult as expected, and problems like retaining talent and realizing synergies emerged when joining POS Portal's SMB focus with ScanSource's different enterprise and mid-market business. These post-acquisition integration issues that materialized after the deal closed in late 2017 clearly contributed to ScanSource's slowing growth and weaker cash generation in the 2018-2022 period.

3. **COVID-19 Pandemic Challenges (Mar. 2020):** The COVID-19 pandemic had a substantial impact on ScanSource's business, suppliers' businesses, and sales partners' businesses. The company experienced declines in customer demand and supply chain disruptions, which were most pronounced during the fourth quarter of the fiscal year 2020. SCSC has not fully returned to pre-COVID-19 pandemic highs, and continues to face challenges such as labor shortages, heightened supply chain challenges, and increased employee-related healthcare and prevention costs.

# of 20%+ Drawdowns	6
Max Drawdown	-67%



Competitive Landscape

Competition

- **Ingram Micro (Private):** Ingram Micro is a global technology distributor and a major competitor of ScanSource. Ingram Micro offers a wide range of products and services, including hardware, software, cloud solutions, mobility, and logistics services, catering to various technology vendors and resellers. They serve as an intermediary between technology manufacturers and resellers, providing supply chain services and support to help businesses efficiently distribute and sell technology products to end customers.
- **SYNNEX Corporation (SNX ~$9.1B market cap):** SYNNEX Corporation is a global technology solutions company founded in 1980, specializing in IT distribution, logistics, and services. The company offers a wide range of technology products, including hardware, software, cloud solutions, networking equipment, and consumer electronics. SYNNEX operates as a middleman between technology vendors and resellers, providing a broad portfolio of products and services to help businesses efficiently distribute and sell technology solutions to end customers.
- **Bluestar (Private):** Bluestar is a global distributor of technology solutions, specializing in providing distribution services for electronic components, IT products, and solutions. Bluestar operates as a trusted partner connecting technology manufacturers and vendors with resellers and system integrators. The company's product portfolio includes a wide range of products, including electronic components, displays, printers, barcode scanners, mobility solutions, and more.

In 2016, ScanSource was a leading specialty distributor, providing value-added solutions to resellers in niche technology markets, competing with broadlines like Ingram Micro and SYNNEX. However, by 2022 competition increased as rivals entered specialty markets, and ScanSource lost ground after struggling to integrate acquisitions. Though still a significant player in its segments, ScanSource faced pricing pressure and potential share loss to broadlines and smaller private competitors in digital distribution. The increased competition, coupled with ScanSource's stalled growth and execution issues, resulted in its declining competitive position compared to resilient broadlines like Ingram and SYNNEX. ScanSource failed to adapt its strategy nimbly to expand into higher growth segments in the face of evolving market dynamics.

Perceived Moat (2016) – Switching Costs

Rationale: In 2016, ScanSource's large supplier and customer base meant customers faced high switching costs in terms of time, effort, disruption and lost opportunities if they changed suppliers. ScanSource's value-add model and acquisition strategy also increased switching costs by providing unique solutions and growth benefits. These high switching costs created a competitive advantage by securing ScanSource's customer base and revenue.

Reason for Erosion of Moat: ScanSource's competitive advantage eroded from 2016-2022 due to increased competition, market uncertainty, and the shift to digital distribution. More competitors due to vendor consolidation gave customers more supplier options, reducing switching costs. Uncertainty from key vendor bankruptcies and the transition to digital/cloud solutions also enabled easier supplier switching for customers, diminishing ScanSource's advantage.

Conclusion - What drove shareholder underperformance?

1. **Shift to Digital Distribution and Cloud Services:** The transition to digital distribution and cloud-based services fundamentally changed ScanSource's markets, as customers rapidly adopted new solutions for procurement, provisioning, billing, and support. ScanSource was slow to adapt and expand its digital capabilities, both organically and through acquisitions. The shift to the cloud reduced demand for ScanSource's legacy on-premise offerings while new digital/cloud competitors entered the space. Margins compressed as cloud solutions required less value-add from distributors. Despite deals to augment capabilities, ScanSource struggled to reshape its business at the pace necessary during this disruptive transition. The inability to pivot successfully to higher-growth digital and cloud solutions led to market share losses, compressed margins, and declining revenue growth. This deteriorating competitive position and financial performance driven by the secular industry shift ultimately resulted in ScanSource's shareholder underperformance between 2016-2022.

2. **Increased Competition:** Vendor consolidation in ScanSource's markets resulted in fewer suppliers and more large distributors competing for their business. With mega-mergers shrinking the supplier base, these vendors increasingly sought to consolidate their own distribution channels. ScanSource confronted larger, more diversified rivals as competition intensified. This dynamic gave customers more options to switch between distributors, significantly reducing ScanSource's once-high switching costs. With its competitive moats eroding, ScanSource struggled to defend margins and retain market share against low-cost broadline distributors and more nimble specialty competitors. The intensifying competition compounded ScanSource's challenges in adapting to market shifts. The erosion of the company's competitive position from this rising competitive environment was a key factor behind its stagnating growth, compressed margins, and shareholder underperformance between 2016-2022.

3. **Market Uncertainty:** The bankruptcy of Avaya, one of ScanSource's largest vendors, created significant market uncertainty that hurt sales and profits. Avaya's financial turmoil led some customers to delay network upgrade and expansion projects. ScanSource saw reduced demand as organizations paused investments given the vendor's uncertain future. Avaya's struggles also enabled competitors to target its uncertain customer base more aggressively. The sales decline from this major vendor's woes posed a financial headwind ScanSource did not sufficiently plan for. Its concentrated vendor relationships magnified the impact of the Avaya bankruptcy. The resulting declines in revenue growth and profitability from this period of heightened market uncertainty were detrimental to ScanSource's performance. Had the company's vendor portfolio been more diversified, the financial consequences may have been more mitigated.

Granite Construction (GVA)

GRANITE

Company Overview

Founded in 1922, Granite Construction Incorporated is a civil contractor that focuses on infrastructure projects. The company operates on a vertically integrated business model, investing organically and through mergers and acquisitions to strengthen and expand existing home markets and establish new ones. GVA's strategic plan includes four themes: developing their people, raising the bar, growing market share, and maximizing Granite Value Add (GVA). The company is also in the process of divesting its former Water and Mineral Services group businesses to support strategic investments and new opportunities for growth.

	1/1/2016	12/31/2022	
Stock Price*	$41.62	$38.93	
Market Cap	$1,639.1	$1,533.6	
Enterprise Value	$1,570.6	$1,545.0	
Shares Outstanding	39.4	43.7	
Net Debt	-$99.4	-$20.8	1
Debt/Equity	29.8%	34.4%	1
Dividend Yield	0.9%	2.0%	
P/E	32.6x	27.2x	
EV/Sales	0.7x	0.5x	
EV/EBITDA	9.0x	10.4x	2
FCF/Share	$0.6	-$1.4	3
Gross Margin	16.0%	12.3%	4
EBITDA Margin	7.4%	4.6%	
Trailing 3yr Rev CAGR	4.4%	-1.4%	5
Trailing 7yr Rev CAGR		4.8%	
Analyst Buy %	75.0%		
Analyst Hold %	25.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: James Roberts (2010-2021), Kyle Larkin (2021-Present), Former VP of Construction Materials Operations at Granite Construction

CFO: Laurel Krzeminski (2010-2021), Lisa Curtis (2021-Present), Former CAO at Granite Construction

COO: Christopher Miller (2014-2017), Jim Radich (2020-Present), Former Senior VP at Granite Construction

Analysis

1. Increased debt to fund acquisitions but paid off significant debt with returns from divestitures; increased leverage position by 15.4%
2. EV/EBITDA increased due to decreased EBITDA from additional costs and lower operating efficiency
3. FCF/Share became negative due to additional operating costs and lower productivity
4. Gross margins compressed 370bps due to cost overruns, write-downs, and rising input costs
5. Revenue CAGR dropped to -1.4% in 2022 due to project cost overruns, delays, and lower volumes due to a more competitive market

Notable Events

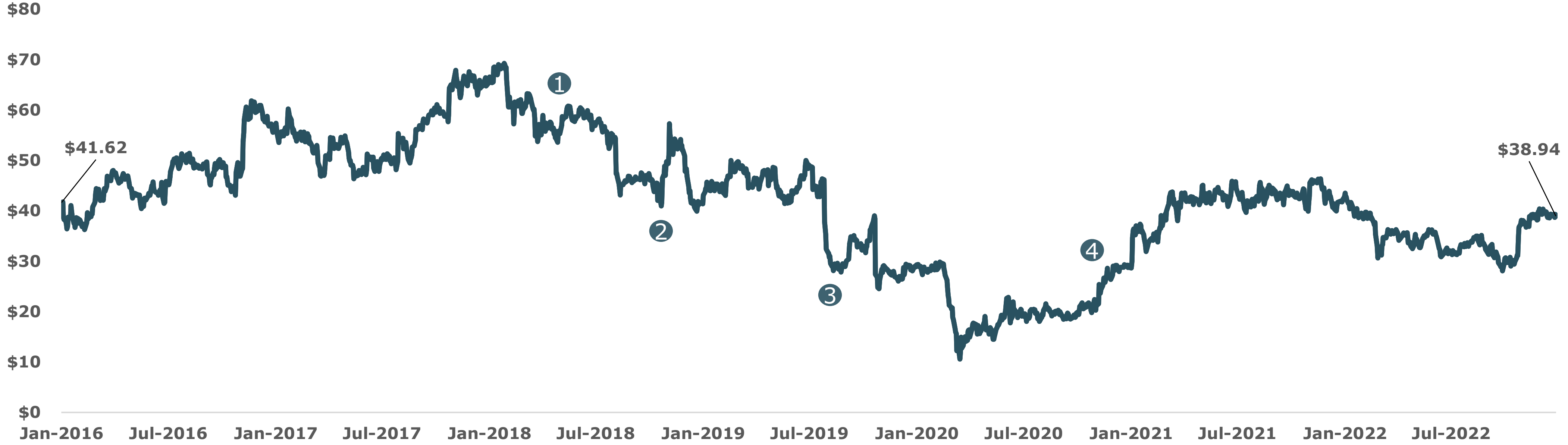
1. • **Acquisition of Layne Christensen Company (Jun. 2018):** Granite acquired a leading water management, construction, and drilling company for $565 million which expanded Granite's capabilities in the water infrastructure market, positioning them as a leader across the transportation and water infrastructure markets.

2. • **Project Cost Overruns (Oct. 2018):** Granite reduced its FY2018 forecast due to project cost overruns, primarily due to additional costs and lower productivity than anticipated, as well as weather-related costs. The company also faced challenges with extended overhead and other costs due to delays.

3. • **Key Large Project Charges (Jul. 2019):** Shares fell 18% after Granite announced that it will take a charge between $2.20 and $2.30 per share in Q2 2019 related to issues at key large projects. The CEO Jim Roberts said that the company was facing a recent unfavorable court ruling on a project dispute.

4. • **Divestiture of Australian Construction Business (Nov. 2020):** Granite divested its Australia construction business as part of the company's plan to focus on its core business capabilities and leverage its current geographic-based home markets in the civil construction and materials business. The sale of the Australia construction business allowed Granite to reduce its debt and concentrate on its U.S. operations.

# of 20%+ Drawdowns	8
Max Drawdown	-85%



Competitive Landscape

Competition

- **Astec Industries (ASTE ~$1.6B market cap):** Astec Industries is an American manufacturing company that designs and manufactures a diverse range of equipment used in the construction, infrastructure, and mining industries. Founded in 1972 and headquartered in Chattanooga, Tennessee, Astec has grown into a global leader with multiple subsidiaries and manufacturing facilities across the world. The company's product portfolio includes asphalt mixing plants, concrete batch plants, material handling equipment, and crushing and screening systems.
- **Jacobs Solutions (J ~$18.0B market cap):** Jacobs is a multinational engineering and construction firm headquartered in Dallas, Texas. With a history dating back to 1947, Jacobs has established itself as a leading player in the engineering and consulting services industry. The company offers a comprehensive range of solutions across various sectors, including aerospace, infrastructure, environmental, water, and transportation.
- **Vulcan Materials Company (VMC ~$23.3B market cap):** Vulcan Materials, headquartered in the United States, is a leading producer of construction aggregates, including crushed stone, sand, and gravel and directly competes with Granite’s construction materials business. With an extensive network of quarries and distribution facilities, Vulcan serves various markets, including construction, infrastructure, and transportation.

In the early part of the period around 2016, Granite was benefiting from private non-residential activity and growing revenue and profit synergies from its diversified markets. However, by 2022, the company had to take strategic steps to maintain its competitive position. Granite completed the acquisition of Layne Christensen Company in June 2018 to expand its capabilities in the water infrastructure market. In November 2020, the company divested its Australian construction business to focus on its U.S. operations and reduce its debt. Despite these strategic moves, the company faced challenges such as project cost overruns and delays, which led to a reduction in its full-year 2018 forecast and a significant drop in its stock price from 2018-2020.

Perceived Moat (2016) – Scale Economies

Rationale: Granite Construction's large-scale and diversified market presence were significant competitive advantages in 2016. The company was operating in various markets and was benefiting from private non-residential activity. This scale allowed Granite Construction to spread its fixed costs over a larger volume of work, leading to lower average costs and higher profitability. It also provided the company with the ability to undertake large projects that smaller competitors might not have been able to manage. Furthermore, the company's size and presence across different markets could have made it a preferred choice for clients looking for a single contractor to manage large or complex projects.

Reason for Erosion of Moat : Granite Construction's scale economies, a significant competitive advantage in 2016, appeared to erode over the period up to 2022. This erosion was due to several factors. Firstly, the company faced challenges with project efficiency and profitability, with instances of additional costs and lower productivity than initially anticipated. Secondly, the construction industry remained highly competitive throughout this period, making it more difficult for Granite Construction to leverage its scale to win contracts and maintain profitability. Lastly, strategic decisions to acquire and divest certain businesses, such as the acquisition of Layne Christensen Company in 2018 and the divestiture of its Australia construction business in 2020, impacted its scale economies by either adding complexity to its operations or reducing its scale.

Conclusion - What drove shareholder underperformance?

1. **Project Cost Overruns:** Granite experienced significant cost overruns on fixed-price projects between 2017-2019, primarily in its Heavy Civil division. These overruns were caused by inaccurate cost estimations, scope changes, and productivity issues. The overruns resulted in write-downs and losses of over $200 million during those years, hurting profitability. Attempts to improve bid estimations and project controls were not sufficient to prevent additional overruns on a few large projects in 2020-2021. These execution issues were Granite-specific and damaged investor confidence. More specifically, Granite took on several large joint venture highway and infrastructure projects where they underestimated the costs during bidding. These projects encountered major delays and rework that led to cost overruns. Granite's projections on labor, materials, and subcontractor pricing were overly optimistic. They also failed to account for potential productivity losses from weather or other delays. The company did not have strong enough project management to control costs and keep the projects on schedule.

2. **Reduced Focus on High-Margin Work:** Granite historically generated strong margins in its specialty construction business focused on water, wastewater, and tunnel projects. However, the company aggressively pursued bigger heavy civil infrastructure projects with lower margins between 2016-2019. This shift reduced overall profitability as heavy civil work outpaced the specialty construction division. Granite admitted its strategic imbalance and has tried to re-emphasize higher margin work. For instance, Granite sought large highway and bridge contracts as those projects ramped up in the late 2010s. However, these heavy civil projects had margins in the low-to-mid single digits, well below the company average. The higher mix of low-margin work diluted overall margins.

3. **Weather and Wildfire Impacts:** As a construction company operating primarily in the Western U.S., Granite was negatively impacted by wildfires and severe weather events. Wildfires in California and heavy snow in the mountains caused project delays and disruptions in 2017-2019. Some of Granite's projects were suspended for weeks during wildfire season. The weather issues contributed to cost overruns that hurt profit margins. Being geographically concentrated in the West exposed Granite to these risks. Specifically, the wildfires prevented construction activity during peak times in Northern California. Winter snowstorms made transportation routes impassable for weeks, delaying projects in the mountains. These external issues lowered the number of workable days, decreasing productivity. Projects had to be extended longer than planned, increasing costs for labor, materials, and equipment rental. Granite did not properly factor in these environmental risks when bidding and planning certain projects.

4. **High Fixed Cost Structure:** Granite maintains a high fixed cost base including management, equipment, facilities, and an owned vertically integrated supply chain. This fixed cost structure makes Granite's profits highly sensitive to changes in revenue. Even small revenue declines drive larger declines in margins due to the difficulty of flexing costs. Keeping crews and equipment busy is key, but was a challenge when projects were delayed or canceled. The high fixed costs magnified the impacts of other issues. Granite's vertically integrated model and significant equipment assets increase break-even points on projects. With lower volumes, the company could not adequately absorb fixed overhead. Attempts to reduce fixed costs through layoffs and selling underutilized assets took time. Margin compression persisted until Granite right-sized expenses, which was difficult while trying to maintain capabilities.

Intel Corporation (INTC)

Company Overview

Intel is an American multinational technology corporation that designs and manufactures semiconductor chips and related technology. Founded in 1968 by Gordon Moore and Robert Noyce, Intel has grown to become one of the world's largest semiconductor chip manufacturer. Intel's core products include microprocessors, motherboard chipsets, integrated circuits (ICs), and graphics processing units (GPUs) that power computers, servers, Internet of Things (IoT) devices and other technology. The company operates with a vertically integrated business model, designing and developing its semiconductor chips and operating chip manufacturing foundries. Intel has maintained its position as the leading producer of x86 architecture microprocessors found in most personal computers for decades.

	1/1/2016	12/31/2022	
Stock Price*	$33.99	$32.22	
Market Cap	$160,398.8	$109,076.6	
Enterprise Value	$151,795.8	$119,149.6	
Shares Outstanding	4,719.0	4,127.0	1
Net Debt	-$8,603.0	$8,210.0	2
Debt/Equity	37.1%	41.1%	
Dividend Yield	3.3%	3.4%	
P/E	14.5x	33.8x	
EV/Sales	2.7x	1.9x	
EV/EBITDA	6.7x	7.8x	
FCF/Share	$2.5	-$2.3	3
Gross Margin	64.3%	39.2%	4
EBITDA Margin	41.0%	24.4%	
Trailing 3yr Rev CAGR	1.2%	-4.3%	5
Trailing 7yr Rev CAGR		4.4%	
Analyst Buy %	52.1%		
Analyst Hold %	39.7%		
Analyst Sell %	8.2%		

*Numbers in millions excluding stock price

Management

CEO: Brian Krzanich (2013-2018), Bob Swan (2018-2021), Patrick Gelsinger (2021-Present), Former CEO of VMware

CFO: Brian Krzanich (2012-2018), George Davis (2019-2022), David Zinsner (2022-Present), Former CFO of Micron Technology

COO: N/A

Analysis

1. 12.5% decrease in shares outstanding as management has attempted to boost share price through higher EPS results by buying back shares
2. Increased net debt by 195.4% to fund shareholder buybacks and 23 acquisitions over the 7-year period
3. FCF/Share became negative as Intel struggled to generate meaningful revenue growth due to technological sophistication of semiconductor industry and increasing competition
4. Gross margin compression by 39%; Intel’s vertically integrated business model could not maintain high-margins as chip development became increasingly decentralized and they struggled to keep up without decreasing margins
5. Decrease in trailing 3-year revenue CAGR due to Intel’s products becoming inferior to its competition; difficult to maintain revenue growth at such a large company

Notable Events

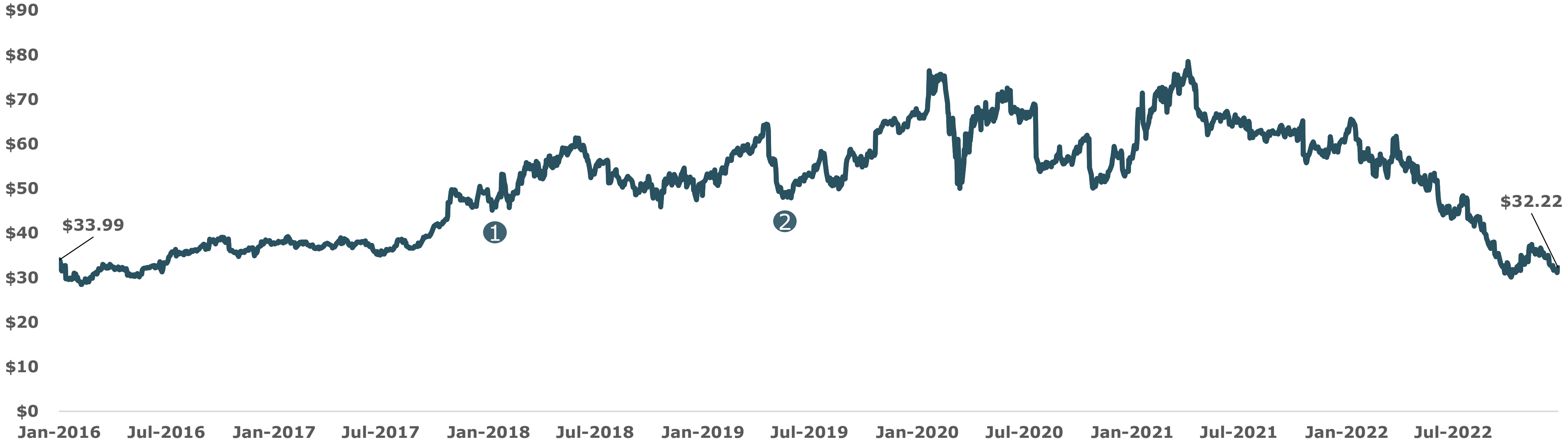
Notable Events

1 • **Security Exploit (Jan. 2018):** In January of 2018, two related side-channel attacks against Intel x86 CPU microprocessors were discovered. These vulnerabilities were named Meltdown and Spectre and prompted concerns surrounding the security of Intel's products. Customers and investors viewed Intel's once impenetrable cybersecurity surrounding its products as fading, as hackers could now access the data on Intel chips though these exploits.

2 • **Heightened Competition (2019):** The market for chips rapidly became one of the most sophisticated markets in the world. Apart from Intel, the industry was fragmented, with various companies specializing in a specific step in the process of chip design or development. Intel repeatedly began facing delays in transitioning to smaller, more advanced chip manufacturing. Intel has struggled with the development of its 7nm chip while competitors like AMD and TSMC have released the 7nm chip in May 2019. Intel is yet to begin sales of its 7nm chip as of July 2023, years behind its competitors.

- **Shifting Market Dynamics (2017-2020):** Intel has historically specialized in chips for PC computers. PC chip sales, Intel's primary source of revenue and long-time specialty boomed during the early 2000s. A shift to cell phones and cloud-computing has seen Intel's PC notebook sales dop by over 30% throughout the period.

# of 20%+ Drawdowns	5
Max Drawdown	-61%



Competitive Landscape

Competition

- **Taiwan Semiconductor Manufacturing Company (TSM ~$376.4B market cap):** TSMC is the world's largest semiconductor foundry, manufacturing chips for fabless semiconductor companies. Founded in 1987 and headquartered in Taiwan, TSMC pioneered the pure-play foundry model by focusing solely on manufacturing rather than design. TSMC manufactures chips for major companies like Apple, Qualcomm, Nvidia and AMD, leveraging advanced semiconductor fabrication technologies and high-volume manufacturing capabilities.
- **Advanced Micro Devices (AMD ~$104.4B market cap):** AMD is an American multinational semiconductor company that develops computer processors and related technologies for business and consumer markets. Founded in 1969 and headquartered in Santa Clara, California, AMD designs and markets x86-architecture microprocessors, GPUs, chipsets and other components. AMD has transitioned from just a CPU maker to a technology platform company, providing microprocessors, GPUs, server CPUs and semi-custom chips for major companies like Sony, Microsoft and Samsung.
- **Nvidia (NVDA ~$359.7B market cap):** Nvidia is an American technology company that designs graphics processing units (GPUs) and system-on-a-chip units (SoCs) for the gaming, professional visualization, data center, and automotive markets. Founded in 1993 and headquartered in Santa Clara, California, Nvidia pioneered the GPU to improve graphics and parallel computing capabilities. Leveraging its expertise in high-performance computing and AI acceleration, Nvidia has become a leader in GPUs for gaming, autonomous vehicles, supercomputers and cryptocurrency mining.

In 2016, Intel dominated the semiconductor industry with over 90% CPU market share and a substantial lead in manufacturing technology. However, Intel has since ceded ground to competitors AMD, Nvidia, and TSMC due to manufacturing delays. AMD made a comeback with new CPU architectures manufactured using TSMC's advanced fabrication techniques, allowing it to gain a significant CPU market share. Nvidia capitalized on growth in AI and gaming to become the discrete GPU leader. TSMC invested heavily in leading-edge manufacturing, which AMD leveraged to make cheaper, better-performing chips than Intel. In 2022, Intel lags in advanced manufacturing and has lost CPU market share to a resurgent AMD, while Nvidia rules discrete GPUs. Intel now faces significant challenges to regain its former dominance in the semiconductor industry after falling behind its competitors.

Perceived Moat (2016) – Process Power

Rationale: In 2016, Intel had a strong process power in the design and manufacturing of its semiconductor chips and CPUs for computers among other solutions. Intel had an extremely sophisticated supply chain as it was the only company in the chip sector to be vertically integrated, from the design of its chips to the production and sales. This process required numerous acquisitions, totaling 23 through the period, and complicated proprietary knowledge of each element of the chip-making process, extremely difficult to compete with. Intel was at an advantage, dominating the CPU market with its vertical integration while its closest competitors were fragmented, controlling only various steps of the design and production process.

Reason for Erosion of Moat: Intel's strong moat in its process power has been eroded due to the rapid innovation and sophistication of the semiconductor design and manufacturing process. The company, being vertically integrated, was much slower to develop and react to new changes in technology and consumer preferences, like the switch to GPUs. Competitors who were far more specialized were able to develop specific technological solutions faster than Intel, and thus the company's once strong moat was eroded as Intel could not keep up.

Conclusion - What drove shareholder underperformance?

1. **Vertical Integration:** Intel's high degree of vertical integration, which once gave it advantages in controlling quality and optimizing operations, eventually became a key reason for its declining competitiveness from 2016-2022. Being locked into its own proprietary manufacturing caused inflexibility as fabrication grew more complex, allowed rivals utilizing third-party foundries like TSMC to gain time-to-market advantages, burdened Intel with huge capital costs as onshore fabrication expenses soared, and created organizational silos and bureaucracy. With its CPU designs dependent on its own factories, Intel struggled to keep pace with more agile competitors leveraging external foundry capacity. The cost and innovation limitations of its internal supply chain led to delays that crippled new product introductions and caused Intel to lose significant market share to rivals - AMD gained over 20% of the CPU market by 2022 compared to just 1% in 2016. Ultimately, Intel's high degree of vertical integration was a major contributor to its underperformance, as its competitors capitalized on the flexibility and cost structure of third-party foundries.

2. **Security Breaches:** The high-profile Meltdown and Spectre security vulnerabilities in Intel's chips were another key factor in its declining competitiveness from 2016-2022. These flaws, which required redesigns to properly fix, exposed 20 years of Intel hardware to potential data theft and shook trust in the security of its products. Disclosing and patching the vulnerabilities substantially reduced Intel CPU performance benchmarks by up to 30%, opening the door to competitors like AMD touting faster and more secure chips. Intel lost sales opportunities and committed over $10 billion to factory reconfigurations for hardware-level fixes. The massive costs and reputational damage from Meltdown and Spectre undermined Intel's security reputation, accelerated the loss of market share, and contributed to its shareholder underperformance as competitors capitalized on superior security as a competitive edge. These security issues and breach of trust destroyed Intel’s brand name and reputation, causing the company to return ~-5% while the S&P index returned 115% and a semiconductor index, comprised of Intel’s competitors, returned over 320%.

3. **Industry Sophistication:** The increasing sophistication of the semiconductor industry was a key reason for Intel's declining competitiveness and underperformance from 2016-2022. As manufacturing complexity increased exponentially below the 10nm chip size, and rivals like TSMC invested tens of billions in leading-edge foundries, Intel lost its historic fabrication advantage, just reaching 10nm in 2022 while TSMC hit 3nm. The capital intensity of new fabs exceeded $20 billion, burdening Intel's integrated model while benefiting fabless competitors. Chip design also grew more complex with multicore and AI chips, favoring nimble rivals less tied to legacy x86 models. Overall, the rising semiconductor sophistication exposed Intel's weaknesses, allowed TSMC and others to capture over 50% of the foundry market by 2022, and enabled rivals to seize share in Intel's core CPU and other markets. The size of chips is critical to what consumers demand. Any large-scale consumer, like Apple for instance, uses the most advanced chips for its products. This was especially evident when Apple became a fabless chip maker in 2020, switching away from Intel’s chips, of which Apple had been one of the company’s largest customers since 2005. Apple allowed TSMC to manufacture the company’s chips, taking millions in revenue away from Intel and providing evidence that Intel has been unable to keep up with the rapid technological development in recent years. The sophistication of the semiconductor industry has seen Intel fall behind its highly specialized competitors, leading to a large decline in shareholder return when compared to competitors. While Intel fell by only 5% over the seven-year time period, competitors like AMD and Nvidia returned over 1,700%.

Blackbaud (BLKB)

blackbaud

Company Overview

Blackbaud, Inc. was originally incorporated in New York in 1982 and later reincorporated as a South Carolina corporation in 1991 and as a Delaware corporation in 2004. The company supports its customers by replacing their aging, mission-critical systems of record, and adding advanced digital services. The company provides a portfolio of solutions tailored to the unique needs of these vertical markets, including fundraising and CRM, marketing, advocacy, peer-to-peer fundraising, corporate social responsibility, school management, ticketing, grantmaking, financial management, payment processing, and analytics. Some of its core products include Blackbaud CRM, Blackbaud Altru, and Blackbaud TeamRaiser Good Move.

	1/1/2016	12/31/2022	
Stock Price*	$63.74	$60.43	
Market Cap	$2,989.4	$3,125.3	
Enterprise Value	$3,382.1	$4,005.3	
Shares Outstanding	46.9	53.1	
Net Debt	$392.7	$879.9	1
Debt/Equity	193.8%	122.5%	
Dividend Yield	0.8%	N/A	
P/E	77.1x	N/A	2
EV/Sales	5.3x	3.8x	
EV/EBITDA	32.9x	49.7x	
FCF/Share	$2.4	$2.6	
Gross Margin	51.5%	50.7%	
EBITDA Margin	16.1%	7.6%	3
Trailing 3yr Rev CAGR	12.6%	5.5%	4
Trailing 7yr Rev CAGR		7.5%	
Analyst Buy %	71.4%		5
Analyst Hold %	28.6%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Michael Gianoni (2014-Present), former president at Fiserv

CFO: Anthony Boor (2011-Present), prior CFO of Brightpoint

COO: Kevin P Gregoire (2022-Present), Former President of US Markets at Blackbaud

Analysis

1. Net debt increased 124% over the period as Blackbaud took on debt to fund seven acquisitions
2. The market viewed BLKB as a high growth stock in 2016, yet in 2022 the company was no longer profitable
3. EBITDA Margin decreased by ~53% highlighting the company's slowdown in profitability and eventually becoming unprofitable in 2022
4. 56% decline in trailing three-year revenue CAGR due to a shortfall in bookings and increased costs over the seven-year time period
5. 71.4% of sell-side analysts placed a "buy" rating on Blackbaud before the stock underperformed the S&P 500 index by 122%.

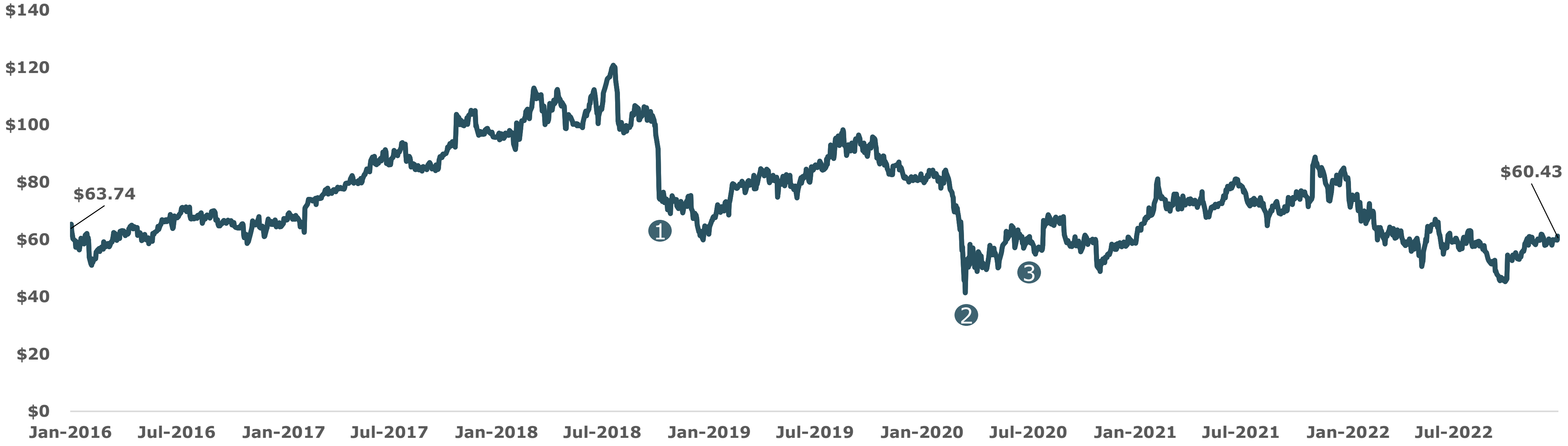
Notable Events

blackbaud

Notable Events

- ❶ **Q4 2018 Earnings Miss (Oct. 2018):** The company missed Q4 2018 earnings due to a large revenue shortfall led by a drop in sales. BLKB management acknowledge the issues and revised future guidance to reflect. The company also acknowledged the changing market environment creating short-term challenges for customers. Blackbaud's stock has never fully recovered to its pre-earnings highs. (Oct. 2018)
- ❷ **Ransomware Attack (Mar. 2020):** Blackbaud suffered a ransomware attack in early 2020 where cybercriminals exfiltrated data on millions of people from the company's nonprofit, education and healthcare clients; in July 2021, a federal judge allowed class action lawsuits from customers against Blackbaud over the major 2020 data breach to move forward after determining the plaintiffs had standing, a decision negatively impacting the brand. (Mar. 2020)
- ❸ **Settlement with the SEC (Jul. 2020):** Blackbaud agreed to pay $3 million to settle SEC charges that it failed to fully disclose the impact of a ransomware attack in 2020 that exposed sensitive customer data; the SEC alleged Blackbaud misled investors by initially claiming only basic personal information was stolen when its staff knew financial data was also compromised.

# of 20%+ Drawdowns	2
Max Drawdown	-66%



Competitive Landscape

blackbaud

Competition

- **Salesforce (CRM ~$131.4B market cap):** Salesforce is a leading global provider of cloud-based Customer Relationship Management (CRM) software solutions, known for its innovative software-as-a-service (SaaS) business model. Its comprehensive suite of products includes sales automation, customer service, marketing automation, analytics, application development, and other business process services. These products, delivered primarily through its flagship platform, Salesforce Customer 360, empower companies to connect with their customers in a whole new way, fostering improved customer relationships and business growth.
- **Oracle (ORCL ~$220.4B market cap):** Oracle Corporation is a multinational technology company that specializes in developing and marketing database software technology, cloud engineered systems, and enterprise software products. Its core offerings include a fully integrated stack of cloud applications, platform services, and engineered systems that cater to a variety of business needs such as data management, ERP, CRM, and SCM.
- **GoFundMe (Private):** GoFundMe is a leading crowdfunding platform that allows individuals, groups, and organizations to raise funds for various causes, from personal emergencies to community projects. It operates on a donation-based business model, where users create fundraising campaigns and share them with their network to solicit donations. While it's free to create and share your online fundraising campaign, GoFundMe charges a processing fee on each donation to cover operational costs and ensure the platform remains a reliable resource for those in need.

At the start of the period, Blackbaud was outpacing many of its competitors in the nonprofit software industry, enjoying strong double-digit revenue growth of around 12-13% and profitability measures like 16% EBITDA margins. However, by the end of the 2022 period, metrics showed the company struggling with weaker 5% revenue growth, declining profitability with EBITDA margins falling to 7.6%, and increasing debt levels. While the entire industry faced growth headwinds later in the pandemic, Blackbaud underperformed with slower growth and weaker profitability compared to competitors like Salesforce. Its market position deteriorated over the period as growth stalled and financial risks increased relative to the rest of the industry. Major data breaches in 2020 also severely damaged customer and public confidence in the Blackbaud brand.

Perceived Moat (2016) – Switching Costs

Rationale: In 2016, Blackbaud benefited from high customer switching costs due to deep integration of its software like CRM tailored to nonprofits' needs; this comprehensive suite of solutions was central to customers' operations so switching providers would be very disruptive. This created high exit barriers that helped retain customers despite competitors.

Reason for Erosion of Moat: Blackbaud's competitive position weakened due to data breaches damaging its reputation and lowering switching costs. New competition from larger tech firms with more innovative nonprofit solutions increased and stagnant growth allowed rivals to steal customers from the declining Blackbaud brand. Many of the company’s clients who once saw the cost of switching away from Blackbaud as insurmountable were now willing to incur a cost to switch to a better and more reliable product.

Conclusion - What drove shareholder underperformance?

1. **Data Breaches:** Blackbaud experienced high-profile security incidents that resulted in numerous legal claims, regulatory inquiries, and increased operational costs for the company. More critically, the data breaches severely tarnished Blackbaud's reputation as customers lost confidence in the brand's ability to protect sensitive data. This loss of trust among Blackbaud's core nonprofit customer base led to reduced demand and an erosion of the company's competitive position in the market. As a result of the reputational damage, Blackbaud struggled to grow revenues and earnings over the period. The stunted financial performance and bleak business outlook stemming from the breaches hurt Blackbaud's stock price and shareholder returns. Investors suffered as the data breaches weighed on the company's growth prospects, profitability, competitive positioning, and overall viability in the changing software landscape. The breaches were a key factor behind Blackbaud's decline and shareholders' underperformance.

2. **Integration of Acquired Companies:** Blackbaud grew in part through acquiring companies but struggled to effectively integrate these acquisitions. The complex process of merging teams, products, and systems carried high execution risks that proved challenging for management. Blackbaud likely saw increased costs and operational inefficiencies as integrations dragged on, hampering the performance of newly acquired businesses. These integration difficulties prevented Blackbaud from fully realizing expected synergies and growth opportunities from its M&A strategy. The inability to smoothly integrate acquisitions was a headwind that weighed on Blackbaud's revenue growth, profitability, and cash flows. As acquisition benefits fell short of expectations, Blackbaud's business prospects and stock price suffered. The risks and poor execution around integrating acquired companies was a contributor to Blackbaud's weakening competitive position and underperformance for shareholders.

3. **Increased Competition:** The market for cloud-based software tailored to the nonprofit sector became much more competitive during the period, with deep-pocketed tech companies increasingly targeting the space. Well-resourced rivals like Salesforce, Oracle, and Microsoft leveraged their technical capabilities and marketing muscle to offer innovative solutions purpose-built for nonprofits. This mounting competition made it harder for Blackbaud to retain and grow its customer base. The new competitive pressures likely forced Blackbaud to lower prices while increasing its own R&D and sales/marketing costs to try to match rival offerings. This squeeze on pricing and margins, along with the loss of customers to competitors, resulted in Blackbaud's weakening revenue growth and profitability over the period. With Blackbaud's competitive moat deteriorating in the face of larger tech rivals, the company's growth stalled, and its business outlook darkened, weighing on stock returns for shareholders.

NCR Corporation (NCR)

Company Overview

NCR Corporation, originally incorporated in 1884, is a software- and services-led enterprise technology provider that operates stores, restaurants, and self-directed banking for businesses of all sizes. The company's software platform runs in the cloud and includes microservices and APIs that integrate with customers' systems, and its NCR-as-a-Service solutions bring together all the capabilities and competencies of NCR to power the technology to run customers' operations. NCR's portfolio includes digital first software and services offerings for banking, retailers and restaurants, as well as payments processing and networks, multi-vendor connected device services, automated teller machines (ATMs), self-checkout (SCO) kiosks and related technologies, and point of sale (POS) terminals.

	1/1/2016	12/31/2022	
Stock Price*	$24.33	$23.41	
Market Cap	$3,223.7	$3,216.5	
Enterprise Value	$6,993.7	$9,370.5	
Shares Outstanding	132.5	137.4	1
Net Debt	$2,924.0	$5,879.0	2
Debt/Equity	211.2%	364.0%	
Dividend Yield	N/A	N/A	
P/E	9.5x	11.9x	
EV/Sales	1.1x	1.2x	
EV/EBITDA	15.8x	5.6x	
FCF/Share	$3.7	$3.9	
Gross Margin	28.3%	24.1%	
EBITDA Margin	7.0%	21.2%	3
Trailing 3yr Rev CAGR	3.6%	4.3%	
Trailing 7yr Rev CAGR		3.0%	4
Analyst Buy %	75.0%		
Analyst Hold %	25.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Bill Nuti (2005-2018), Mike Hayford (2018-Present), Former CFO of Fidelity National

CFO: Bob Fishman (2009-2018), Andre Fernandez (2018-2020), Tim Oliver (2020-Present), Former CFO at Springs Window Fashions

COO: Mark Benjamin (2016-2018), Owen Sullivan (2018-Present), Former Chairman at Marquette University

Analysis

1. 3.7% dilution in shares outstanding due to NCR offering millions of shares to raise more capital in funding acquisitions
2. Significant 101% increase in net debt to fund 15 acquisitions throughout the time period, such as NCR acquisition of Cardtronics for $2.5 billion in 2021
3. 3x increase in EBITDA margin as the company became more profitable due to acquisition and integration of businesses with higher EBITDA margins
4. Slow revenue growth as the company has struggled to find organic ways to grow revenue that are not fueled by largescale acquisitions

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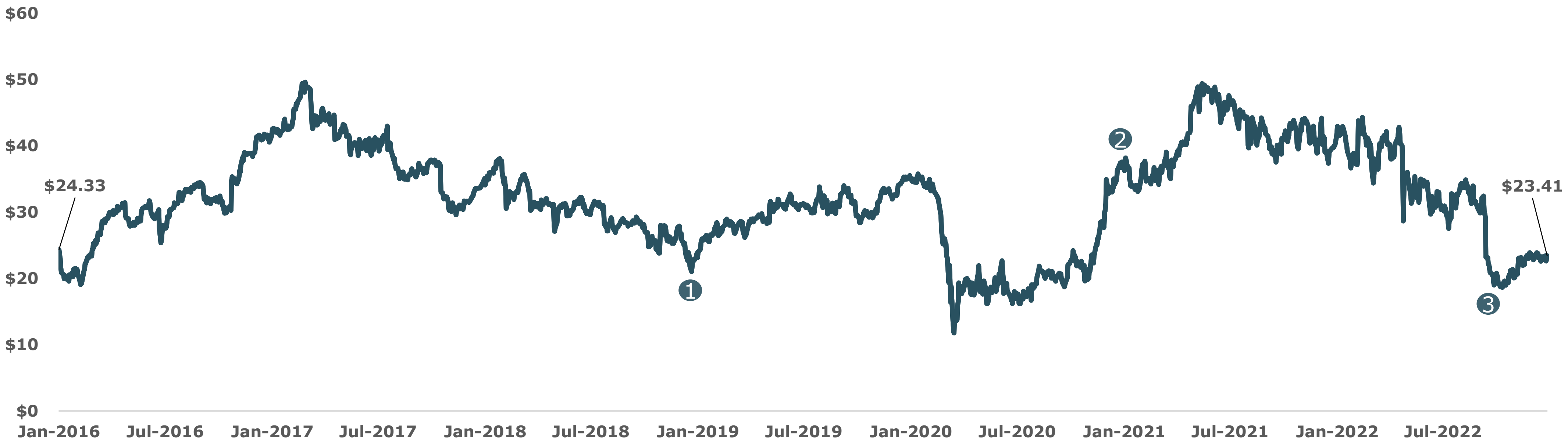
Notable Events

1. **401(k) Lawsuit (Dec. 2022):** Current and former participants in the NCR Corp. 401(k) plan filed a lawsuit alleging the plan charged excessive recordkeeping fees to Fidelity Investments, the plan's recordkeeper since at least 2009, and that NCR failed to properly monitor and control these fees through periodic requests for proposals or leveraging the plan's long-term relationship and increasing assets.

2. **Acquisition of Cardtronics (Jun. 2021)**: In January 2021, NCR announced it would acquire Cardtronics, one of the world's largest ATM operators, for $2.5 billion to expand its services and software offerings for banks and retailers. The market responded favorably to the deal since it accelerated NCR's strategy into high-growth areas like managed services and expanded its customer reach, especially in the unattended retail market.

3. **Splitting of Business Operations (Sep. 2022):** The company announced it would split itself into two independent companies rather than sell itself outright, contrary to expectations; this decision, meant to unlock value by allowing each company to execute its own growth strategy, displeased investors and caused NCR's stock to plummet 24% in September 2022 as the spinoff is seen as less beneficial than an acquisition.

# of 20%+ Drawdowns	3
Max Drawdown	-76%



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Competitive Landscape

Competition

- **Fidelity National (FIS ~$40.3B market cap):** Fidelity National Information Services, Inc. (FIS) is a leading provider of technology solutions for merchants, banks, and capital markets firms globally. It offers a broad range of software, services, and outsourcing solutions that drive business growth for its clients, including banking and payments technologies, digital enablement, and wealth and retirement solutions. The company's business model is centered around providing these technology-based services and solutions on a subscription or transactional basis, generating revenue from the fees charged to clients.
- **Fiserv (FI ~$64.2B market cap):** Fiserv, Inc. is a leading global provider of financial services technology solutions, offering services to banks, thrifts, credit unions, securities broker dealers, leasing and finance companies, and retailers. Its product portfolio includes digital banking solutions, payment processing services, risk and compliance solutions, and cloud-based software applications. The company's business model is primarily based on providing these software and services on a subscription or transactional basis, generating revenue from the fees charged to clients.
- **Block (SQ ~$37.6B market cap):** Block Inc., formerly known as Square, is a financial services and digital payments company that provides a range of solutions for small to large businesses and individuals. Its key offerings include point-of-sale software and hardware to manage and facilitate payment transactions, Cash App for money transfer, and BNPL software Afterpay. The company's business model involves transaction-based revenue, subscription services, and hardware sales, with most revenue coming from transaction fees from its payment processing services.

At the start of the 2016-2022 period, NCR was well-positioned against competitors like Fidelity National, Fiserv, and Block (Square) in the retail point-of-sale and ATM technology space. NCR leveraged its long-standing customer relationships, global footprint, and wide product portfolio to maintain a leading industry position. However, by the end of 2022, NCR struggled to keep pace as shifts to digital payments and e-commerce accelerated. Competitors like Block capitalized on these industry changes much faster than NCR with innovative new software and payment offerings. While the overall industry faced challenges, NCR failed to adapt its business model and offerings resulting in a loss of market share and competitive positioning by the end of the period.

Perceived Moat (2016) – Process Power

Rationale: NCR established process power through long-standing industry expertise and consulting that allowed it to understand customers' needs, as well as internal collaboration across divisions and investments in employees to drive innovative solutions aligned to technological and consumer preference changes; this process enabled NCR to more efficiently develop and deliver products tailored to customers versus competitors. The moat was centered around close communication and relationships with customers and staying ahead of customer needs.

Reason for Erosion of Moat: Though NCR had a strategy in place to anticipate customer needs and drive innovation, the company failed to adapt quickly enough to major industry shifts like digital payments and e-commerce; competitors capitalized faster on these changes with new offerings as NCR struggled to alter its business model, lose long-term customers, and lose competitive positioning.

Conclusion - What drove shareholder underperformance?

1. **Rapid Technological Changes:** NCR struggled to keep pace with major shifts like the rise of digital payments, e-commerce, and new software/payment offerings from competitors. While these changes required agility and ongoing investments in new capabilities, NCR remained tied to legacy business lines like ATMs and on-premise hardware. Competitors like Square were able to react faster to capture growth opportunities in digital commerce and payments. NCR's inability to rapidly adapt its business model, product portfolio, and internal processes led to the loss of market share and competitive positioning over the 7-year period. Ultimately, NCR failed to adequately transform itself in response to rapid innovation in the industry. This resulted in poor financial performance, loss of customers, and shareholder returns that lagged both the overall technology sector and competitors nimbler to market changes.

2. **Shift in Consumer Behavior:** Over 2016-2022, there were major shifts in what banks, retailers, and consumers demanded: a growing preference for digital, mobile, and online experiences. NCR acknowledged the need to react in a timely manner to these changes toward digital-first platforms and cashless payments. However, the company failed to adapt quickly enough during this period. Competitors like Fiserv and Square rapidly capitalized on these trends with new software, payment processing, and e-commerce capabilities. But NCR remained overly focused on its legacy hardware and physical retail solutions like ATMs and on-premise point-of-sale systems, which were becoming outdated. As consumers and businesses accelerated the adoption of digital payments, mobile technology, and online shopping, NCR was left behind with an antiquated product lineup. Its inability to transition its solutions and business model to meet changing market demands resulted in the loss of customers, market share declines, and deterioration of its once strong competitive position.

3. **COVID-19 Pandemic-Era Shift to Online Payment Systems:** The COVID-19 pandemic presented significant challenges for NCR Corporation, as it did for many businesses. The shift to online payment systems like Stripe and Adyen, driven by the pandemic, likely exacerbated these challenges. NCR, traditionally strong in providing hardware for physical stores, restaurants, and self-directed banking, faced a decline in demand for these services as businesses and consumers rapidly shifted to online transactions and digital services due to lockdowns and social distancing measures. Moreover, NCR's customer base, particularly in the retail and hospitality sectors, faced significant adverse impacts, including temporary closures of physical stores. This likely led to a decrease in revenue from these sectors, further impacting shareholder returns. Additionally, NCR faced supply chain challenges and product quality issues, which impacted the timely delivery of hardware products to its customers. These operational issues could have further contributed to the underperformance of shareholders.

Acco Brands (ACCO)

Company Overview

ACCO Brands Corporation, incorporated in 2005, is a global provider of consumer, school, technology, and office products. Their portfolio includes globally recognized brands such as AT-A-GLANCE, Barrilito, Derwent, Esselte, Five Star, and more. The company distributes its products through various channels including mass retailers, e-tailers, and office superstores, primarily in the U.S., Europe, Australia, Canada, Brazil, and Mexico. ACCO Brands's business model revolves around designing, marketing, and manufacturing these products for use in businesses, schools, and homes.

	1/1/2016	12/31/2022	
Stock Price*	$6.84	$6.60	
Market Cap	$727.7	$526.9	
Enterprise Value	$1,392.8	$1,557.6	
Shares Outstanding	106.4	94.3	1
Net Debt	$665.1	$1,030.7	2
Debt/Equity	124.0%	134.9%	
Dividend Yield	N/A	5.3%	3
P/E	8.6x	6.6x	
EV/Sales	0.9x	0.8x	
EV/EBITDA	6.5x	11.0x	
FCF/Share	$1.8	$0.7	
Gross Margin	33.4%	29.1%	4
EBITDA Margin	14.3%	7.3%	
Trailing 3yr Rev CAGR	-4.9%	-0.1%	
Trailing 7yr Rev CAGR		3.7%	
Analyst Buy %	40.0%		
Analyst Hold %	60.0%		
Analyst Sell %	0.0%		

*Numbers in millions excluding stock price

Management

CEO: Boris Elisman (2013-Present), former President and COO at ACCO since 2008

CFO: Neal V. Fenwick (2005-2022), Deborah O'Connor (2022-Present), former CFO of True Value Company

COO: Thomas Tedford (2021-Present), former executive VP at ACCO since 2010, no listed COO before Tedford during the period

Analysis

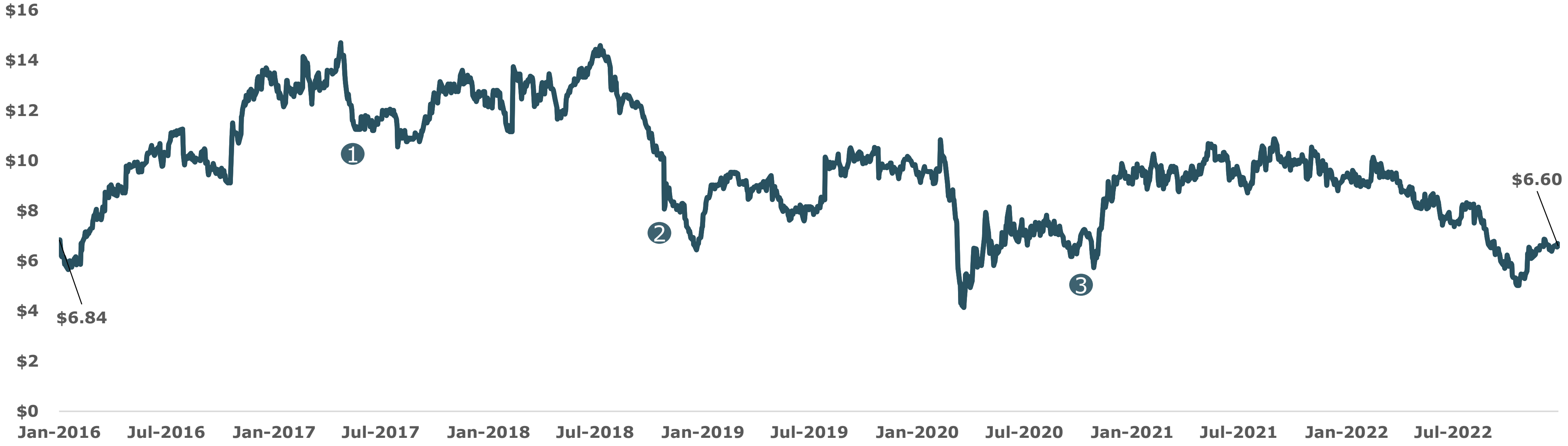
1. 11.4% decrease in shares outstanding as ACCO Brands attempted to boost its EPS through consistent buybacks
2. ACCO's 54.9% increase in net debt can be attributed to strategic acquisitions despite ongoing efforts to reduce existing debt
3. The company began paying a dividend in 2018 to return capital back to shareholders and attract new investors
4. ACCO Brand's gross margin fell by 12.9% due to an unfavorable product and customer mix, supply chain disruptions, and impact of tariffs

Notable Events

Notable Events

- ❶ **Integration Challenges (Feb. 2017):** ACCO faced significant challenges in integrating Esselte Group into its operations, including cultural integration, retaining key employees and customers, and managing financial aspects such as a large purchase price and assuming substantial unfunded pension liabilities. Additionally, the acquisition increased ACCO's exposure to emerging markets, introducing risks such as economic volatility and political instability.
- ❷ **Q3 2018 Earnings (Oct. 2018):** ACCO's share price crashed following disappointing Q3 2018 results and guidance. The company reported lower EPS and sales YoY and issued weak full-year guidance. ACCO raised prices to protect its margins from higher input costs, but this left investors concerned that this could drive customers to competitors.
- ❸ **Decline in Product Use (Nov. 2020):** The company has faced challenges due to the continued decline in the use of certain of its products, particularly paper-based dated time management and productivity tools. ACCO has significant exposure to the office products and traditional printing/imaging markets. Declines in paper usage and growth of digital documentation have steadily eroded demand in these segments. This was exasperated post-pandemic with workers and schools going remote.

# of 20%+ Drawdowns	3
Max Drawdown	-70%



Competitive Landscape

Competition

- **3M (MMM ~$69.5B market cap):** 3M is a global conglomerate that operates in industry, worker safety, healthcare, and consumer goods, providing a wide range of products and services. 3M, like ACCO, focuses on creating and maintaining leading brands and differentiated products that deliver superior value, performance, and benefits to consumers, and they both strive to meet consumer needs by developing, producing, and procuring products at a competitive cost, enabling them to be sold at attractive selling prices.
- **Blue Sky (Private):** Blue Sky is a well-known company that specializes in designing and producing innovative, high-quality paper planning and organizational products. Their product range includes planners, calendars, notebooks, and business accessories. Blue Sky products are known for their aesthetically pleasing designs and functionality, catering to a wide range of consumer needs in the organizational and planning space.
- **Newell Brands (NWL ~$5.4B market cap):** Newell Brands is a global consumer goods company with a broad portfolio of well-known brands across multiple categories, including household goods, commercial products, and outdoor solutions. The company's diverse brand lineup includes names such as Rubbermaid, Sharpie, Graco, Coleman, and many others.

At the beginning of the period, ACCO Brands was one of the world's largest designers, marketers, and manufacturers of branded business, academic, and consumer products, with a strong presence in the U.S., Northern Europe, Australia, Canada, Brazil, and Mexico, and over 80% of sales from leading brands in their markets; the company grew sales through market share gains, channel expansion, and new products. However, by the end of 2022, ACCO faced challenges affecting its performance: declining net sales driven by weakness in EMEA from COVID-19 pandemic closures and forex impacts; headwinds in the U.S. from customer consolidation leading to lower wholesaler sales; forex impacts hurting operating income and margins. These factors, along with the declining use of some products and the increase in more "trendy" products popularized by celebrities or social media networks like TikTok saw ACCO's products become relatively antiquated.

Perceived Moat (2016) – Branding

Rationale: The company had strong market positions, with over 80% of its sales coming from brands that occupied the number one or number two positions in the select markets in which it competed. This indicates a high level of brand recognition and loyalty among customers, which can serve as a significant barrier to entry for competitors and provide a sustainable competitive advantage.

Reason for Erosion of Moat: ACCO Brands' once-strong branding moat deteriorated due to declining brand loyalty and increased competition. Ongoing customer consolidation reduced ACCO's wholesaler sales and market presence. Competitors expanded production and undercut pricing, while consumers opted for cheaper substitutes. ACCO also suffered from decreased use of some dated paper products and economic uncertainty impacting consumer spending. Furthermore, the shift to e-commerce likely affected product visibility and reach.

Conclusion - What drove shareholder underperformance?

1. **Declining Sales and Profits:** ACCO Brands suffered from declining sales and profitability over 2016-2022 - net sales dropped over 5% from $1.8 billion to $1.7 billion driven by loss of market share as competitors like 3M and private labels gained share across most categories, reduced demand for dated paper planners with sales falling 10% from 2016-2019, ongoing customer and wholesaler consolidation reducing orders and volumes, and price competition forcing ACCO to lower prices to unprofitable levels. On the profitability side, operating income plunged 42% from $196 million to $114 million stemming from gross margin compression due to lower sales prices needed to compete, rising input and manufacturing costs that could not be fully passed on, increased investment needed in marketing and product development to defend market share, and the impact of unfavorable foreign exchange rates on international profits. This combination of declining sales and falling gross margins led to ACCO's shrinking profits as a lack of pricing power and the competitive landscape severely hampered financial performance.

2. **Loss of Market Share:** ACCO lost market share in many product categories as competitors like 3M, Avery, Newell Brands, and private label brands expanded production. ACCO saw reduced demand for dated paper-based planners, with sales of these products falling 10% from $201 million in 2016 to $181 million in 2019. This coincided with the rise of digital planning tools. Overall, ACCO's global market share declined from 9.2% in 2016 to 8.1% in 2022, allowing rivals to grab larger portions of the pie.

3. **Pricing Pressures:** The increased use of lower-priced substitute products, especially cheaper imported options, and the rapid growth of private-label office product brands severely squeezed ACCO's pricing power. For example, the average selling price of ACCO's planners declined by over 15% from 2016-2020. This pricing pressure was exacerbated by ongoing commercial customer consolidation which reduced ACCO's wholesaler volumes. To try to stay competitive, ACCO raised prices across its portfolio, but likely lost many cost-conscious customers in doing so.

4. **Acceleration of E-Commerce:** The COVID-19 pandemic dramatically accelerated the ongoing shift from brick-and-mortar to online shopping, which likely disadvantaged ACCO Brands - reduced retail shelf space meant loss of prominent in-store displays and endcaps that had advertised ACCO products, while online ACCO faced more competition for search visibility; the pricing transparency and constant competition of e-commerce forced ACCO into a price battle against other office brands, squeezing margins; private label competition expanded as retailers like Amazon Basics grew cheaper store brand lines, taking further share from ACCO; the endless product aisles of e-commerce also made it harder for ACCO's products to stand out, especially as consumers prioritized price over brands for commoditized products; these e-commerce trends likely contributed significantly to ACCO's market share declines, pricing pressures, and margin erosion over 2016-2022, exacerbating the company's underperformance as adapting to the rapid acceleration proved challenging.

Heartland Express (HTLD)

Company Overview

Heartland Express, Inc., founded by Russell A. Gerdin in 1978, is a prominent asset-based truckload carrier in the United States. The company offers long-haul, regional, and dedicated truckload services, catering primarily to the retail and manufacturing industries. Its business model is based on delivering high-quality, cost-effective, and timely transportation services using its extensive fleet of trucks and trailers. As of 2021, the company's corporate headquarters were in North Liberty, Iowa, and its operations are mainly within the United States.

	1/1/2016	12/31/2022	
Stock Price*	$16.7	$15.3	
Market Cap	$1,417.8	$1,210.9	
Enterprise Value	$1,384.6	$1,595.4	
Shares Outstanding	85.2	78.9	1
Net Debt	-$33.2	$384.5	2
Debt/Equity	0.0%	50.7%	2
Dividend Yield	0.4%	0.5%	
P/E	29.0x	21.1x	
EV/Sales	1.9x	1.6x	
EV/EBITDA	6.1x	5.0x	
FCF/Share	-$0.3	$0.4	3
Gross Margin	21.0%	17.3%	4
EBITDA Margin	31.0%	33.2%	4
Trailing 3yr Rev CAGR	10.5%	17.5%	5
Trailing 7yr Rev CAGR		4.0%	
Analyst Buy %	18.8%		
Analyst Hold %	56.3%		
Analyst Sell %	25.0%		

*Numbers in millions excluding stock price

Management

CEO: Michael Gerdin (2011-Present), Former VP of Regional Operations at Heartland Express

CFO: John Cosaert (1996-2017), Christopher Strain (2017-Present), Former Controller at Heartland Express

COO: Kent D Rigdon (2022-Present), Former VP of Sales at Heartland Express

Analysis

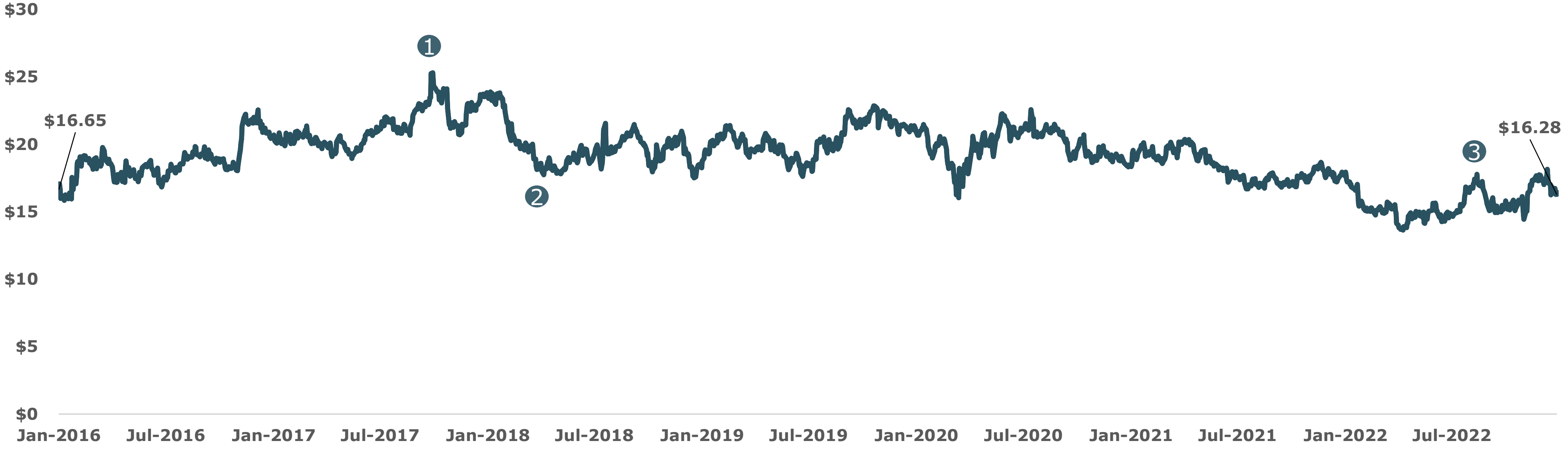
1. Heartland has continuously bought back shares each year to return capital back to shareholders; retired 7.4% of shares during period
2. Net debt increased significantly from a net cash position to $384 million in debt and debt/equity surged from 0% to 50.7%; raised $413 million in debt in 2022 to fund CFI and Smith Transport acquisitions
3. FCF/Share increased due to CFI and Smith Transport acquisitions boosting revenues
4. Gross margin declined from 21% to 17.3% indicating potential pricing pressure or cost issues; EBITDA margin significantly higher than gross margin due to large D&A charges; D&A was 13-17% of revenue compared to industry average of 7%
5. Trailing 3-year revenue CAGR increased to 17.5% in 2022 due to acquisition of CFI and Smith Transport boosting revenue growth to 59.4% in 2022

Notable Events

Notable Events

- ❶ **Acquisition of Interstate Distributor Co. (Jun. 2017):** Heartland Express acquired IDC for approximately $113 million. Heartland planned to integrate IDC into its existing operations and consolidate IDC and Heartland facilities over the next 18 months. The acquisition was expected to be accretive to Heartland's earnings in the first full quarter of operations. After recording -20.2% and -19.4% revenue growth in the prior quarters due to unfavorable weather conditions and freight environment challenges, the acquisition boosted revenues to 22.0% in Q3 2017.
- ❷ **Weak Financial Guidance (Mar. 2018):** Heartland management projected revenue growth of just 1-3% for Q1 2018 and 4-8% for the full year, which was significantly lower than the double-digit growth in the prior years. Additionally, they projected lower profit margins (200 bps lower) after seeing margin contraction in 2017 due to higher costs.
- ❸ **Smith Transport and CFI Acquisitions (Jun. and Aug. 2022):** Heartland Express acquired Smith Transport, Inc. in June 2022 for approximately $170 million, adding Smith's dry van transportation and specialized services primarily in the eastern United States to its portfolio. In August 2022, Heartland further expanded by acquiring Contract Freighters' non-dedicated U.S. dry van and temperature-controlled truckload business and CFI Logistica operations in Mexico from TFI International, Inc. for $525 million, making it the 8th largest truckload fleet in the U.S.

# of 20%+ Drawdowns	15
Max Drawdown	-50%



Competitive Landscape

Competition

- **Schneider National (SNDR ~$4.2B market cap):** Schneider National, Inc. is a major transportation and logistics company based in the United States. Founded in 1935, Schneider is one of the largest truckload carriers in North America, providing a wide range of transportation and logistics services. The company's offerings include truckload, intermodal, brokerage, warehousing, and supply chain management solutions. Schneider operates an extensive fleet of trucks and trailers, serving customers in various industries, including retail, manufacturing, automotive, and consumer goods.
- **Knight-Swift Transportation Holdings (KNX ~$8.4B market cap):** Knight-Swift Transportation Holdings Inc. is a major transportation and logistics company formed as a result of the merger between Knight Transportation and Swift Transportation in 2017. Knight-Swift offers a comprehensive range of transportation services, including truckload, intermodal, dedicated contract carriage, and logistics solutions. With an extensive fleet of trucks and trailers, Knight-Swift serves a diverse customer base across various industries, providing efficient and reliable transportation services.
- **J.B. Hunt Transport Services (JBHT ~$18.1B market cap):** J.B. Hunt Transport Services, Inc. is a prominent transportation and logistics company based in the United States. Founded in 1961, J.B. Hunt is one of the largest truckload carriers and intermodal transportation providers in North America. The company offers a wide range of transportation services, including truckload, intermodal, dedicated contract carriage, and final mile delivery solutions. J.B. Hunt operates an extensive fleet of trucks, containers, and trailers, providing transportation and logistics services to customers in various industries.

From 2016 to 2022, Heartland Express underwent several significant changes and made key management decisions that impacted its performance. In 2016, the company's management made strategic decisions to navigate the challenges in the trucking industry, such as softer freight volumes and pricing pressures. However, these decisions may not have been sufficient to overcome the industry-wide challenges, leading to a decrease in operating revenues. In the following years, Heartland Express made significant acquisitions. Despite these strategic moves, Heartland Express faced ongoing challenges in the industry, such as volatile freight demand and difficulties in hiring and retaining professional drivers. These industry-wide issues, coupled with company-specific challenges, may have contributed to the company's underperformance towards the end of the period in 2022.

Perceived Moat (2016) – Process Power

Rationale: In 2016, the company demonstrated a strong ability to manage costs and improve margins, even in a challenging industry environment. Despite facing softer freight volumes and pricing pressures in 2016, Heartland Express was able to improve its margins while other truckload carriers reduced rates. Heartland leveraged excellent process execution across operations, driver retention, equipment maintenance, and safety to maintain a cost-competitive position despite lacking major innovation or scale. Their operational excellence, combined with a terminal network keeping drivers close to home, allowed Heartland to operate efficiently and reliably serve customers.

Reason for Erosion of Moat: Heartland Express' cost-driven moat weakened after 2016 as declining margins indicated it lost pricing power and cost control in an increasingly competitive trucking industry. Heartland did not sufficiently invest to widen its moat through branding, innovation, or network advantages while rivals modernized. Treading water operationally as competitors raised the bar, Heartland saw its cost position deteriorate as evidenced by compressed margins, acquisition issues, and underperformance versus peers. By 2022, Heartland's moat centered on cost efficiency had narrowed considerably from its peak in 2016.

Conclusion - What drove shareholder underperformance?

1. **Cost Control:** Heartland struggled to contain rising costs across salary, maintenance, fuel, and equipment over the 2016-2022 period. On the salary front, the tight driver market forced double-digit pay increases to attract and retain drivers, made worse by driver turnover issues at Heartland. Maintenance and parts costs climbed as Heartland's aging fleet required more repairs and replacements. Fuel was a mounting headwind as hedging strategies failed to sufficiently offset diesel inflation. Unlike nimble competitors, Heartland was slow to react to cost spikes through better driver retention programs, fleet upgrade initiatives, asset utilization gains, and more effective fuel hedging. Their operating ratio increased from 81.9% in 2016 to 84.8% in 2022. The COVID-19 pandemic magnified these cost control challenges. Dramatic freight demand shifts, equipment shortages, and labor disruptions caused costs to skyrocket industry-wide. Heartland saw driver turnover spike further, which forced more pay hikes and hiring bonuses. Maintenance costs also rose with parts shortages and supply chain turmoil. Heartland's weak cost control discipline and slow adaptation left it especially vulnerable to the cost surge during the COVID-19 pandemic, accelerating the erosion of its competitive position.

2. **Poor Capital Allocation:** Heartland made imprudent investments in fleet expansions and terminal builds in the late 2010s that ended up over-extending the network as freight demand softened post-pandemic. The aggressive growth stretched Heartland’s balance sheet, which was once financially strong in 2016 and carried no debt and failed to deliver expected returns. Acquisitions also proved ineffective, such as the Intermodal deal in 2017 that struggled with integration and underdelivered on synergy goals. Heartland leadership did not thoroughly assess risks, validate assumptions, or plan post-merger integration. The debt-funded spending on unchecked growth initiatives represents poor stewardship of shareholder capital. A more prudent approach to organic growth and maintaining flexibility may have served shareholders better during an uncertain period. This reckless allocation of shareholder capital set the company back versus competitors who more judiciously invested within their means. Heartland misread industry trends and funded ill-advised initiatives.

3. **Lack of Innovation:** Heartland was slow to adopt transportation management systems for load planning, network optimization, and dynamic routing compared to leading competitors. This led to inefficient asset utilization, empty miles, and higher costs. Heartland also lagged in utilizing predictive data analytics for things like conditional-based equipment maintenance and driver retention modeling. The lack of sophistication in leveraging data and analytics resulted in missed opportunities to improve safety, maintenance, hiring, and network efficiency. Legacy processes and cultural resistance to change delayed technology modernization investments that could have helped Heartland respond to rising competitive and cost pressures.

Yelp Inc. (YELP)

Company Overview

Yelp Inc. is a platform that connects people with local businesses. It provides a comprehensive local business information, photos, and review content, making it a one-stop platform for consumers to discover, connect, and transact with local businesses of all sizes. The platform facilitates various actions such as requesting a quote, joining a waitlist, and making a reservation, appointment, or purchase. Yelp was founded in San Francisco in July 2004.

	1/1/2016	12/31/2022	
Stock Price*	$27.60	$27.34	
Market Cap	$2,083.2	$1,905.7	1
Enterprise Value	$1,712.3	$1,631.4	
Shares Outstanding	66.0	69.7	
Net Debt	-$370.8	-$274.3	
Debt/Equity	0.0%	17.8%	
Dividend Yield	N/A	N/A	
P/E	N/A	43.8x	2
EV/Sales	3.1x	1.4x	
EV/EBITDA	206.8x	12.7x	
FCF/Share	$0.2	$2.3	
Gross Margin	90.2%	90.8%	
EBITDA Margin	1.5%	10.8%	
Trailing 3yr Rev CAGR	58.7%	2.6%	3
Trailing 7yr Rev CAGR		11.7%	
Analyst Buy %	31.6%		
Analyst Hold %	63.2%		
Analyst Sell %	5.3%		

*Numbers in millions excluding stock price

Management

CEO: Jeremey Stoppelman (2004-Present), Co-Founder of Yelp

CFO: Rob Krolik (2011-2016), Lanny Baker (2016-2019), David Schwarzbach (2020-Present), Former CEO of Ziprealty

COO: Geoff Donaker (2006-2016), Jed Nachman (2016-Present), Former CRO of Yelp

Analysis

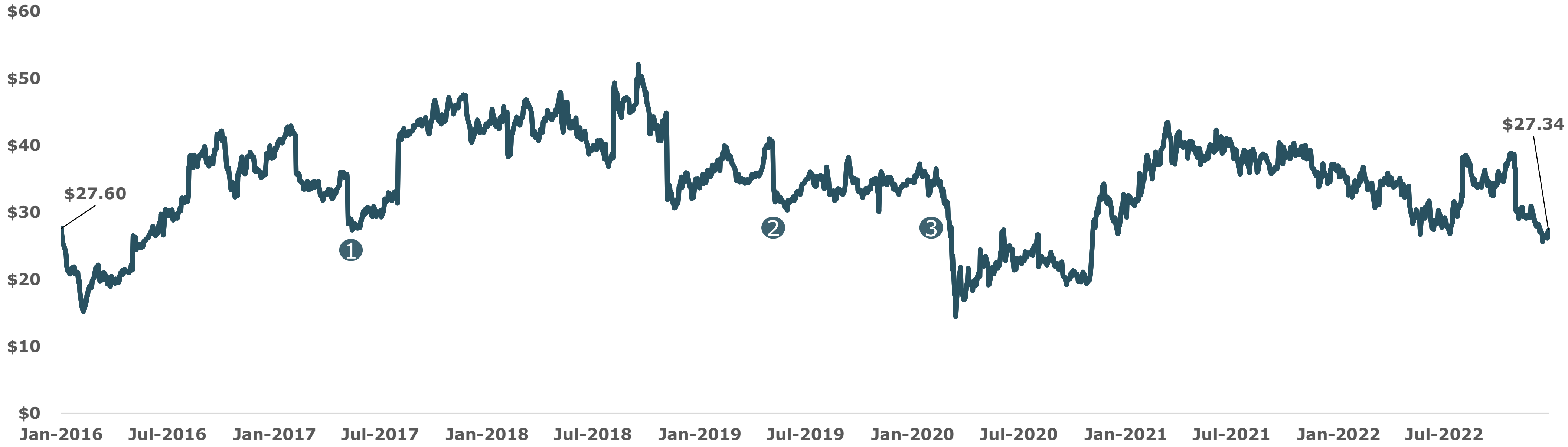
1. Market cap decreased ~8% due to increased competition, a challenging transition to mobile, branding, and failure to monetize
2. During the period, Yelp became a profitable company but failed to keep healthy revenue growth
3. Revenue growth slowed due to repositioning and challenges in advertising revenue

Notable Events

Notable Events

- ❶ **Q1'17 Earnings Miss and Downward Guidance (May 2017):** Yelp's stock value had experienced a disappointing Q1 and a bleak outlook for the remainder of 2017. Advertising, which formed the bulk of Yelp's revenue, is a sector where tech giants like Google and Facebook were gaining a larger market share. Moreover, the consumer behavior shift towards using social media platforms for posting and reading reviews had intensified competition for Yelp, challenging its traditional business model. These factors had led Yelp to reduce its sales and adjusted earnings outlooks, signaling a challenging period ahead for the company.
- ❷ **Q1'19 Earnings Miss and Downward Guidance (May 2019):** Yelp experienced increased competition in the advertising sector from tech giants like Google and Facebook, and a continued shift in consumer behavior towards using social media platforms for reviews. These challenges led Yelp to lower its sales and earnings outlooks for the rest of the year, indicating a potentially difficult period ahead.
- ❸ **Q4'22 Earnings Forecast and Downward Guidance (Feb. 2022):** The company's revenue growth decelerated, falling short of previous quarters. Yelp attributed this to the company now comparing against the reopening surge from late 2021, which saw a sharp rebound in business and consumer confidence. Moreover, Yelp noted increased caution among some multi-location advertisers due to heightened macro uncertainties, leading to a more muted holiday season.

# of 20%+ Drawdowns	5
Max Drawdown	-68%



Competitive Landscape

Competition

- **Tripadvisor (TRIP ~$2.5B market cap):** Tripadvisor, Inc. is one of the world's largest travel platforms, providing users with a wide array of travel choices along with millions of reviews and opinions from travelers worldwide. The platform offers a comprehensive selection of accommodations, restaurants, experiences, airlines, and cruises, allowing travelers to plan and book their perfect trip. Tripadvisor, available in 49 markets and 28 languages, also includes Tripadvisor Plus, a travel subscription service offering members exclusive benefits and savings.
- **Foursquare (Private):** Foursquare is a technology company specializing in location data, offering marketing, advertising, and enterprise solutions. Its business model involves providing proprietary location-based products to businesses and developers for consumer understanding and engagement. Foursquare's platform supports data-driven decisions and personalized customer experiences.
- **Alphabet (GOOG ~$1,145.0B market cap):** Alphabet Inc. is a multinational conglomerate, best known as the parent company of Google, which includes a vast range of businesses in sectors such as technology, life sciences, and investment. Its business model is primarily based on advertising through its various digital platforms, but also includes areas like cloud computing, hardware, and software. A segment of Google is its restaurant comparison and review segment, offered through Google, which allows users to discover, rate, and review restaurants directly on its platforms, enhancing user experience and providing valuable insights to consumers and businesses.

Yelp's underperformance relative to its peers was due to several factors. The company faced challenges in maintaining sufficient high-quality user content and managing its brand amidst negative publicity. Its reliance on traffic from search engines like Google and Bing also posed difficulties. Additionally, Yelp's significant ongoing sales and marketing expenses, coupled with the need for timely upgrades and development of its systems, infrastructure, and customer service capabilities, impacted its performance.

Perceived Moat (2016) – N/A

Conclusion - What drove shareholder underperformance?

1. **Increased Competition:** Yelp faced intense competition from both online and offline local business guides and directories, internet search engines like Google and Bing, review and social media websites, and other online service providers. This competition was not only for consumer traffic but also for the content of contributors. Yelp had to deal with the challenge of maintaining and expanding its base of advertisers in the face of this competition. The company also had to compete with regional review websites that may have had strong positions in particular countries. If Yelp's offerings were not perceived as more compelling than those of its competitors, traffic and user engagement could have declined.

2. **Challenging Transition to Mobile:** Yelp faced challenges in transitioning to mobile, particularly with its Android app. The Android app lagged behind its iOS counterpart in terms of features and attention from the product and engineering team. This could have contributed to a less-than-optimal user experience for Android users, potentially affecting Yelp's overall performance. Yelp also faced challenges in effectively monetizing its mobile products as usage continued to migrate toward mobile devices.

3. **Branding and Negative Publicity:** Yelp had to manage negative publicity and maintain a strong brand. Any negative publicity could have affected the company's reputation and user engagement, leading to underperformance. For instance, certain media outlets reported allegations that Yelp manipulated its reviews, rankings, and ratings in favor of its advertisers and against non-advertisers. Despite Yelp's efforts to combat this perception, its reputation and brand could have suffered if negative publicity about the company persisted or if users perceived that its content was manipulated or biased.

4. **Failure to Monetize:** Yelp faced challenges in monetizing certain features and services. For instance, while the company was still in the experimental stages of Request-A-Quote monetization, it was learning about consumer needs and business center preferences. By 2022, Yelp was still working on advancing its strategic initiatives to drive sustainable and profitable growth. The company also faced potentially lower levels of advertiser demand and user engagement, which could have affected its ability to monetize its offerings effectively.

Appendix

Top 35 Companies – Medians	2016	2022	% Change
% Change Shares Outstanding	109.3	125.7	15.0%
Debt to Equity	32%	57%	78.1%
P/E	24.1x	43.0x	78.4%
EV/Sales	3.4x	7.7x	126.5%
EV/EBITDA	15.1x	21.5x	42.4%
Gross Margin	54.0%	58.2%	7.8%
EBITDA Margin	19.5%	26.4%	35.4%
FCF Per Share	$ 0.72	$3.21	345.8%
7-Year Revenue CAGR	-	17.3%	-

Bottom 35 Companies - Medians	2016	2022	% Change
Shares Outstanding	106.4	127.3	16.4%
Debt to Equity	42%	67%	59.5%
P/E	23.2x	15.6x	-32.8%
EV/Sales	2.2x	1.6x	-27.3%
EV/EBITDA	14.0x	10.8x	-22.9%
Gross Margin	34.1%	34.0%	-0.3%
EBITDA Margin	14.0%	13.0%	-7.1%
FCF Per Share	$1.89	$0.58	-69.3%
7-Year Revenue CAGR	-	4.0%	-

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