Danaher: A compounding machine over four decades

Steven and Mitchell Rales, the two brothers who co-founded Danaher, formed an investment partnership in 1979 when they were still in their 20s. After buying a bankrupt REIT in 1983, they merged all the assets they owned and formed a public company named "Danaher", which is named after a Montana river where the brothers enjoyed a good fishing luck. The bankrupt REIT with its tax-loss carryforwards helped the company shelter profits from the acquired manufacturing businesses. It turns out Danaher wasn't only generous to the Rales brothers with fishing luck; it also enriched the brothers with astounding worldly riches as well.

In 1988, Washington Post ran a piece titled "D.C.'s Rich, Unassuming Rales Brothers": *"This is a story about the swift, invisible rise of Steven and Mitchell Rales, two very young, very rich, very private brothers who are into plastics, tire changers, engine retarders, hand tools, industrial power chucks -- and debt and hostile takeovers…they oversee a sprawling conglomerate built on borrowed money and nurtured by a keen eye for mismanaged, unglamorous industrial companies."*

Rales brothers, who relinquished management roles in 1990 but continues to sit at the board to this day and owns ~11% of Danaher, only got richer over time thanks to Danaher's more than 20% CAGR over four decades, but the texture of Danaher evolved so much that it has transformed itself from a collection of middling industrial businesses to owner of world-class life science, diagnostics, and environmental/applied solutions businesses! At the heart of this compounding machine lies *"Danaher Business System"* or DBS which sounds like the typical corporate jargon at first glance, but hard not to appreciate when you carefully peel through the system.

Here's the outline for this month's deep dive:

Section 1 Sketching the History of Danaher: From the book "Lessons from the Titans", I summarized the story of Danaher's meteoric rise from the days of Rales brothers to George Sherman, Larry Culp, Tom Joyce, and Rainer Blair.

Section 2 Danaher Business System: I discussed DBS, which is perhaps the source of Danaher's persistent outperformance for over four decades, in this section.

Section 3 Danaher's Business Segments: Danaher owns approximately 25 independent businesses which they report in three segments: life sciences, diagnostics, and environmental and applied solutions. These three segments are discussed in this section.

Section 4 Capital allocation and incentives: I elaborated on Danaher's capital allocation and management incentives in this segment.

Section 5 Valuation and model assumptions: Model/implied expectations are discussed here.

Section 6 Final Words: Concluding remarks on Danaher, and disclosure of my overall portfolio.

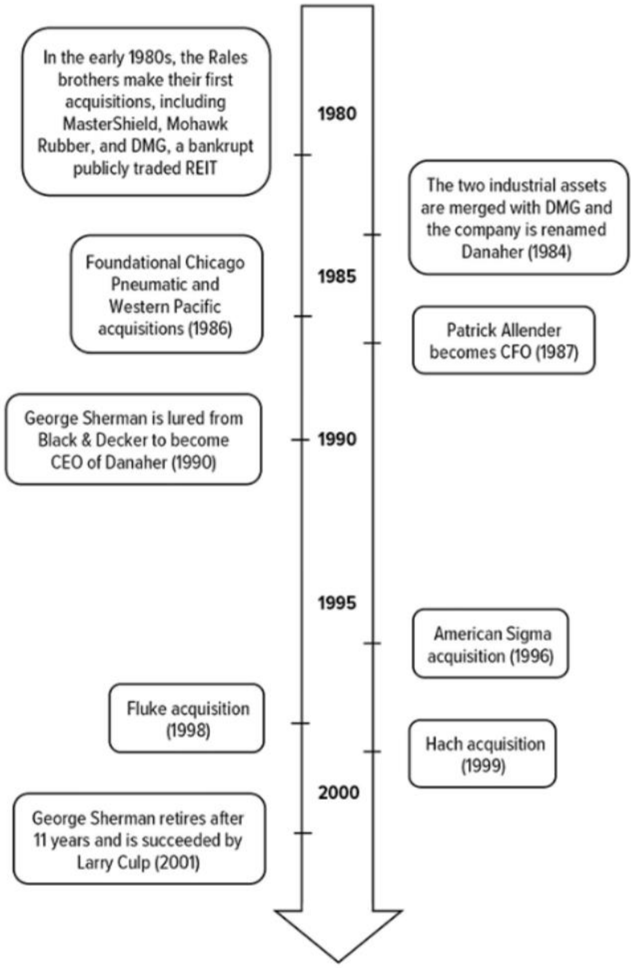
Section 1 Sketching the History of Danaher

To understand Danaher's history, I read the book "Lessons from the Titans" in which the authors covered Danaher's rise from a collection of industrial assets to today's largely a collection of healthcare assets. I encourage subscribers to read "chapter four" from the book to gain a better understanding of Danaher's history. I will summarize some highlights in this section.

In the early years, Rales brothers ran Danaher till 1990. Their initial strategy was aptly summarized by Washington Post in their 1988 piece: *"When the Rales brothers take control of a new firm, they try to reduce the company to its essentials by shedding headquarters staff, selling unprofitable subsidiaries and cutting costs and employment. In most of their acquisitions, the brothers have left management in place and provided powerful incentives, in the form of stock and bonuses, to achieve improved performance."*

From 1984 to 1990, Danaher bought 12 companies, most of which are B2B businesses. This era also coincided with the prominence of Michael Milken, the "Junk Bond King", who developed the market for high-yield bonds. Danaher took full advantage of this interest from investors at that time and kept buying new businesses by issuing more debt. Because of the prevailing high interest rates, there wasn't quite much of a competition for acquiring the industrial businesses Danaher was interested in; therefore, the deal prices were quite attractive, and Danaher made a killing on most of these acquisitions. Despite the availability of credit and appetite from investors, Danaher's then CFO Patrick Allender was mindful of the fact that one bad deal could erode investors trust and jeopardize the system Danaher had built.

Following the stock market crash in late '80s and softening economy in the early 90s, Rales brothers opted to take a backseat from day-to-day operations and made George Sherman, a much more experienced operator, CEO of Danaher. Sherman streamlined Danaher's operations, acquired businesses such as Fluke (electrical testing equipment manufacturer) and Hach (manufacturer and distributor of analytical instruments and reagents used to test water quality), and delivered compelling results for shareholders. During Sherman's 11-year tenure, Danaher's revenue increased from $850 Mn to $3.8 Bn, and the stock generated 26% CAGR (vs 10% for S&P 500) during the same time. At the age of 59, Sherman decided to retire and was succeeded by Larry Culp in 2001.



Source: Danaher Filings, press reports, The book "Lessons from Titans"

Culp joined Danaher right out of Harvard Business School and when he took the reins from Sherman, he was just 38 years old. Culp had to deal with two recessions during his tenure and faced increasing competition from Private Equity (PE) firms for acquisitions as Danaher's strategy became more commonplace by that time. Moreover, given that Danaher was trading at ~25x P/E (vs ~22x of S&P 500) when Culp started, the expectation from investors was also lofty. Even then, by the time Culp decided to call it a day as Danaher CEO in 2014, the stock generated a cumulative 485% return (vs 60% for S&P 500) during his tenure.

Culp was instrumental in diverging Danaher from cyclical businesses to more secular growth businesses. In many cyclical industrial businesses, after streamlining operations and implementing "Danaher Business System" or DBS (will be discussed in next section), Danaher could increase growth by 2-3%, but when Danaher added more capital to improve equipment and/or productivity, they could get to 4-6% growth. However, a lot of this hard work would be undone in a cyclical industry if the business ends up facing recession and it may take years to realize the full benefit of DBS. Culp decided to pivot from the cyclical nature of the businesses Danaher owned:

"Culp's best solution was to focus on businesses with high aftermarket content—selling the installed base equipment that pulled through a steady stream of consumables required to keep

the equipment running. For Danaher, the up-front hardware could be a tad cyclical as long as the aftermarket consumables were steady. The deals under Culp's tenure included Videojet (industrial printers that needed ink), Radiometer (imaging equipment), Vision Systems (medical instruments), ChemTreat (water treatment), AB Sciex (measurement equipment), and Beckman Coulter (testing equipment).

These assets were a bit more expensive than the traditional cyclical deal book, but Culp took on low-cost debt as an offset—not just from lower interest rates, but from the rating agencies' realization that Danaher was a cash flow machine. Another benefit from reducing cyclicality was that the market was willing to pay a premium for a Danaher stock with less variability. Culp saw that trend early—and got the Rales brothers and the board to agree to a strategy of paying more for the right kind of assets.

…Most corporate buyers fixate on either higher-growth game-changing transactions or deals that serve to consolidate their markets. But Culp went after solid assets—healthcare, dental, and testing equipment firms that often flew a bit under the radar—not high growth, and often very niche, which meant they didn't fit well with other strategic buyers. He also avoided low-growth businesses, however attractive the price, as the benefits of DBS would largely be wasted.

*Separately Culp came to understand that DBS worked better with businesses with a high gross margin, especially those with a big spread between gross and operating margins. The wider the spread, the more opportunity for Danaher to take costs out with DBS. Culp had learned through operating experience that it was easier to improve the gross margin of a high-margin company versus a low-margin one. Low margins usually meant that customers saw the product as low value. Culp's judgment ran against the consensus view, as M&A bankers and business schools often presented low-margin businesses as opportunities, particularly for those good at taking out costs." (Excerpt from the book "**Lessons from the Titans**")*

Larry Culp "retired" (using quotes because he came back from his retirement and became CEO of GE in 2018) from Danaher in 2014 at the age of 52. During his tenure (2001-2014), revenue increased from ~$4 Bn to ~$20 Bn, EPS grew by 450%, and stock generated 490% cumulative return. Culp was succeeded by Tom Joyce who undertook some material changes in Danaher's trajectory in the latter half of the last decade.

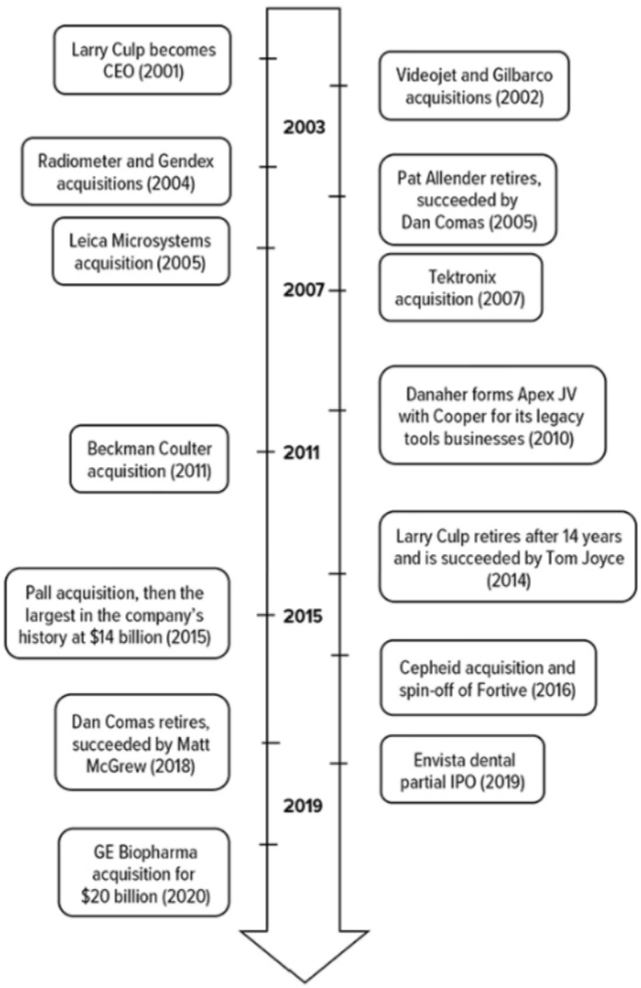
Under Joyce, Danaher decided to divest its industrial assets and double down on their exposure to businesses with razor/razorblade characteristics in healthcare, water quality, and product ID (printing) industries. These were relatively higher growth, higher margin, and far less cyclical than Danaher's industrial assets it historically acquired. The industrial assets of the company were spun off to form a new company called "Fortive". In retrospect, this turned out to be quite a value accretive decision for Danaher shareholders since while Danaher stock generated ~25% CAGR since the spin-off date, Fortive only did ~5% CAGR during the same time. Besides, Danaher spun off Envista (Ticker: NVST), its dental assets with sluggish growth, in 2019 which underperformed Danaher's stock by ~50% since the spin-off.

Source: KoyFin (July 11, 2022)

Apart from the spin-offs, Joyce went on to buy some of the most notable assets Danaher currently owns. Danaher bought Pall Corporation, which makes filtration products for biotech companies, for $14 Bn in 2015. Danaher then bought Cepheid, which was growing revenue at ~15% (but was loss making; Danaher paid ~7x trailing revenue multiple), for $4 Bn in 2016. Finally, Joyce bought GE's Biopharma division for ~$20 Bn (~17x 2019 EBITDA with topline growing ~6-7%) in 2020. A critical driver for these deals was low interest rate and the resultant cheap debt available:

*"…the growth rate and execution of deals seem to support the higher acquisition prices he paid, all of which have been fueled by lower interest rates overall. In Danaher's junk bond days, it would commonly pay 10 percent to finance a deal on which it hoped to earn a minimum of 15 percent. In today's world, financing costs often fall below 3 percent, so to get the same investment impact, the return wouldn't have to be much more than 8 percent. On the GE Biopharma deal, Danaher was able to finance the debt at sub 1 percent—an unprecedented funding cost level. Simple math supports Joyce's more aggressive growth strategy. The deals are earning about the same net return spread as they did two decades ago but with less cyclical risk. An early look at the GE deal points to even higher than the historical average." (Excerpt from the book "**Lessons from the Titans**")*

Tom Joyce retired from Danaher in May 2020 and was succeeded by Rainer Blair who joined Danaher in 2010. Although relatively shorter tenure compared to Sherman and Culp, Joyce too handily beat S&P 500 as Danaher stock enjoyed ~21% CAGR during his tenure (vs ~8.5% CAGR for S&P 500). Joyce and Culp's tenure is summarized below:



Source: Danaher Filings, press reports, The book "Lessons from Titans"

Blair, the current CEO, so far seems to be leaning even more to Joyce's strategy of focusing on secular and high growth industries with razor/razorblade model. Blair already did a significant acquisition of Aldevron, a biotech company producing high-quality plasmid DNA, mRNA and recombinant proteins used in vaccines, gene and cell therapy, gene editing and diagnostic applications, for ~$10 Bn in 2021. Given Aldevron is expected to generate ~$500 Mn revenue in 2022, Danaher paid ~20x forward revenue multiple (mid 40s operating margin, so ~45x EBIT multiple) for this acquisition. Danaher's stock continues to maintain the trend of outperforming S&P 500 under Blair's leadership as well; the stock has so far outperformed S&P 500 by ~23% since Blair became CEO.

As you can see, CEOs came and left over the last four decades, but the story of Danaher outperforming the broader index continues. What really has driven such persistent alpha across different management leadership over multiple decades? Danaher management and board will probably say the answer is quite simple: Danaher Business System (DBS). It's time to understand what exactly DBS is!

Section 2 Danaher Business System (DBS)

Let me start with a confession. When I started studying DBS, I came across the following image on the Investor presentation. It is hard to take statements such as "innovation defines our future" or "our shared purpose: helping realize life's potential" too seriously as this mostly sounds like typical corporate feel-good jargons. It took me a while to appreciate DBS; after going through "Lessons from the Titans" as well as some expert network calls on "In Practise", I started to acknowledge that DBS may be the central theme for Danaher's persistent outperformance over multiple decades.

Source: Danaher

How did DBS start? In 1986, Danaher did a deal with Chicago Pneumatic that included a business named "Jacob Engine Brake" which employed an engineer manager named George Koenigsaecker. George served in Vietnam and following the war, he spent some time in Japan where he became infatuated with Japanese manufacturing philosophies such as Lean, and Kaizen. After coming back to the US and becoming manager at Jacob, he became frustrated with low productivity at the factory. When he learned two architects of the Toyota Production System were nearby for a guest lecture, he met them for dinner and then the two architects ended up going to the factory to understand the nature of the challenges George was dealing with. The Japanese made quite an impression among the factory workers and George formally employed the Japanese experts as consultants. After noticing material improvement in productivity, Rales brothers and the then CFO decided to adopt similar techniques across Danaher's businesses. George presented a full business case in front of all of Danaher executives and "Danaher Production System" was born. Over time, as the system became more refined and Danaher acquired different types of businesses, the initial name was changed to "Danaher Business System" or DBS.

"Lessons from the Titan" explained DBS in the following:

"In simple terms, DBS is a set of constantly updated best practices that functions as a playbook for all employees. It provides day-to-day structure, with clear definitions of what matters and how it will be measured. The tools keep employees focused, but less on a specific goal line and more on ***continuous improvement****, people measuring what matters and improving on those metrics a little bit every single day. At its core DBS comes from Lean manufacturing, and it extends from the factory into all other critical functions, including sales/marketing, procurement, and engineering, up into the corporate office and R&D labs…*

…Because with all the complexity that the Danaher story seems to introduce, the truth is pretty basic: DBS is simple. At its core, it's just a set of tools that remind people what to do: To stay focused on what matters. To use visual tools. To keep meetings short and focused and email only what's necessary. To manage the little details. To measure what matters and improve on those measurements by doing a little every day versus taking big leaps in spurts. To benchmark to the best and be willing to accept the realities that others are getting better too. To hire humble and transparent folks. To develop internal talent so that when you get promoted, "someone is ready to take your role. And to get rid of those who don't live those principles.

None of this is rocket science. There are no new paradigms."

From the above quote, if you want to have one key takeaway about DBS, it should be "continuous improvement". One of the reasons most companies find it difficult to copy Danaher is that the imitators tend to imagine the goals as finish lines whereas for DBS to be successful, there cannot be any finish line; every success is just followed by just another base for further improvement. The fact that these are not just empty words and Danaher takes these simple operating principles damn seriously hit me when I read an interview at In Practise of a very critical former employee:

"it's a machine like the Matrix which has no soul. The system was derived from Toyota where it was designed for manufacturing and problem solving, and they were trying to bring it into healthcare which is a beast, especially in the clinical laboratory business.

If you want to grind yourself to death and be 5% better year over year, then Danaher is for you.

It's a dehumanized machine that, no matter how well you do, eventually you will break down. It is all based on performance metrics and that level of keeping up. Some of my colleagues have aged; I saw 26-year-olds and thought they were 38. I am 51 and feel like I left at the right time. The older generation realized that it had no soul."

Although until 1991, Danaher used to track at least 50 financial metrics for performance appraisal and compensation, it had simplified to focus on just eight metrics across three dimensions (Financial, Customer, and Talent):

Financial	**Customer**	**Talent**
Organic revenue growth	Quality (external parts per million) *	Internal fill rate
Operating margin expansion	On-time delivery	Retention
Cash flow/working capital turns		
Return on invested capital		

**refers to product defect rates*

Source: Danaher, Lessons from the Titans

A natural question that arises is whether there is limit to continuous improvement and whether DBS hits a wall eventually. In Practise asked this question to another former Danaher employee who shared an interesting story in response:

"I don't think there is really a limit. I will tell you why. One major part of the DBS culture is the so-called problem-solving process, the PSP. The PSP is run in two different ways. Across Danaher, they had about 200 PSP trainers for all facilities and all companies. I was also one of them. As I mentioned, you do it in two ways. You can have some cost problems or some creative problems. For example, a cost problem is when you were able to do something and, all of a sudden, you failed. Let's say that you always had an on-time delivery of 95% and, all of a sudden, it drops to 92% or whatever. Then you need to find out why, what's the story, what's the root cause and fix it. This is one issue and this is normally the old Kaizen approach, as we see it in many industries.

The second one is a creative problem. For example, you say, today, I have logistics costs of €6 per pick line. Now my creative problem says, I want to go for cut by half approach. So my target to really cut this by half and get it to €3. Normally, when you reflect about it you would say, this is not possible. The assumption that they were doing that badly before is totally unrealistic. But when you are going for such a fantastic approach, you really need to think out of the box and then you find ways to do it.

I'll give you an example. When I had my first meeting with one 3PL, I was in that situation. I told him, look, we really need the costs to go down by 5%, because everything must go down 5%. He looked at me and smiled and said, I am a 3PL, I am a contract logistics company. I don't have 5% profitability. My profitability is about 4% to 5% and if I give it all to you, I will make zero or even be negative, so this is not how it works. I told him that I understood that, but no matter what, we need to go for this. Now creativity is needed. What did I do? I said, I see your point and I also wanted to benefit from that approach, so we went for a gain share approach. This meant that we agreed on, for example, to have a common program, starting with a VSM workshop and then, later on, some checkpoints and some dynamic pricing. We took a deep look at the complete process, from both the Leica and the 3PL side and what we found, we shared 50:50, but these are the activities we drive together, to bring prices down and to bring costs down. We increased profitability on his side and on our side. We did this. The 3PL was astonished what we could do and also, our people were pretty impressed by what we could do because the 3PL was running on very low costs and had been benchmarked for several years, from a costing perspective and always seemed to be super, super low.

With this VSM, as I mentioned, we identified multiple cost drivers, meaning that we needed to change something on the Leica Biosystems side, but also some things on his side. In the end, we cut the price per line by more than half. It was not that complicated. In the second phase, the year after, we could not do the next 50% approach as it would not work, but we could go for further improvements, such as the next 5%."

Given how demanding DBS is, attracting great talent and retaining them is an important aspect. It should be clear by now, especially thanks to the aforementioned quote about DBS being a "dehumanized machine" that DBS is not suitable for everyone. Many will understandably hate it. As part of the onboarding process, Danaher typically arranges two to three-month immersion program during which the new employees visit factories and facilities, sit in meetings unrelated to their role, and get a taste of how DBS works. During this intensive process, some may infer that it is not for them and for HR, getting rid of people who are not willing to carry out the ethos of DBS is considered "victory". The simple, but persistent nature of DBS can be gauged from the following quote from a former Danaher employee:

"…over time, as this company culture is really very restricted to numbers, it's very simple. You don't make the numbers, you get asked why, you need to undertake a problem-solving process, speak to the action plan and make it happen. Hopefully, you will make it happen, otherwise you will be out pretty quickly. For example, I was in this committee for all the different OpCos. We met twice a year and, in each meeting, I had about 40% of new people on board, because the pressure is super high on the numbers."

Such intense culture can potentially be counterproductive as high turnover can make things challenging. On last year's investor day, Danaher mentioned that in 2018-2020 they experienced less than 5% turnover and 75% of senior leadership roles were internally filled since 2018. Therefore, even though it can be difficult to survive in a rigid environment such as Danaher, their recruiting process seems to be doing a pretty good job. It's not just recruiting; given how incentives are structured for managers in Danaher, retention of employees is one of the key drivers for manager compensation, as explained by the former Danaher employee from the same interview:

"…when you, as a site or a company, have a turnover rate that is too high, you have to explain to your platform and the platform has to explain to the board. I can tell you, when you fail with these seven major indicators, you are in real trouble. Interestingly, they are related to the bonus of the management team, so they are always keen not to fail on one because the bonus is calculated on ***a multiplication****. If something is very bad, it does not matter if the other elements of the equation are really positive."*

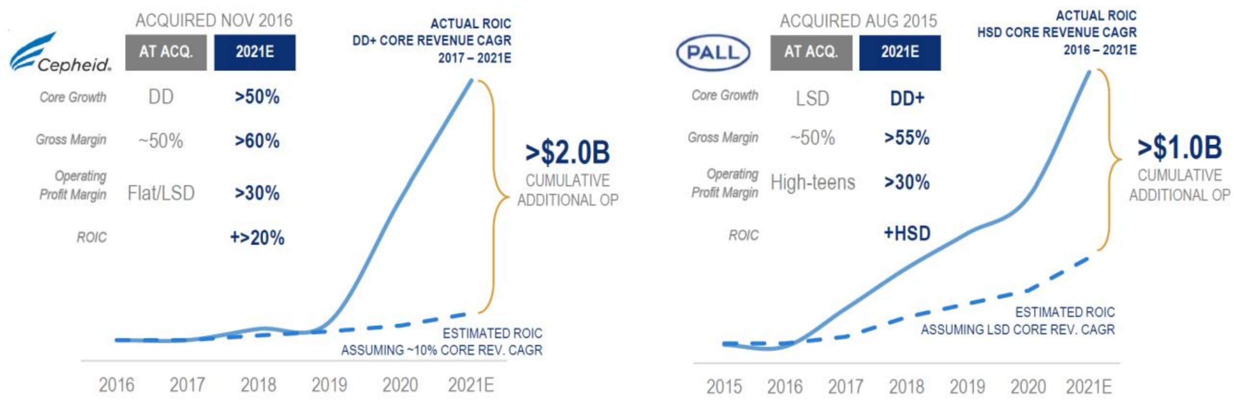
One of the objectives for DBS is to let ordinary people execute at far higher levels which connect to DBS's purpose of "*helping realize life's potential*". Danaher is happy to adopt best practices from anywhere as they think *"DBS isn't good enough, never will be good enough, and will always have to change."* Considering Danaher's collection of assets has changed from industrial assets to primarily healthcare related assets, DBS needed to evolve as well as explained by *"Lessons from the Titans":*

"…as Danaher has sought higher gross margin assets, the cost opportunity has increasingly been outside of manufacturing, and that's where the evolution of DBS has been most pronounced. Driving efficiency in sales and marketing then becomes crucial for the deal model overall—and Danaher has developed matching tools.

In Danaher's earlier days it would describe progress in driving DBS into an acquisition by talking about working capital turns, on-time delivery statistics, and safety. Now it's just as common for the company to comment on sales productivity with an emphasis on funnel management as Danaher converts its sales mentality from "farmer" to "hunter." It can take a while for that difference to sink in. "Hunter" implies greater focus on generating leads and working the sales funnel versus just servicing existing customers. Given the razor/razor blade nature of nearly all Danaher's businesses today, each new customer brings a very high present value calculation."

Finally, if you noticed the "DBS" image, it should be clear that along with customers and employees, shareholders are given paramount importance under DBS principles: "*We compete for shareholders*". This particular point was initially understood by Sherman and Allendar (the then CFO) who realized that without strong stock price, the whole strategy to acquire businesses by issuing debt (and sometimes equity) would be at risk if Danaher doesn't have a loyal shareholder base. On the last year's investor day, Danaher management reiterated their philosophy: *"we compete for shareholders. We compete for investment dollars on the basis of our ability to drive compounding annual returns on a long-term basis."*

Danaher's religious implementation of DBS has historically led to higher revenue growth with higher operating margin after acquiring a company. Management shared several examples from the most recent years on the last investor day, two of which can be seen below:



Source: Danaher Investor Day 2021

Now that we have basic understanding of DBS, let me discuss the businesses Danaher owns today!

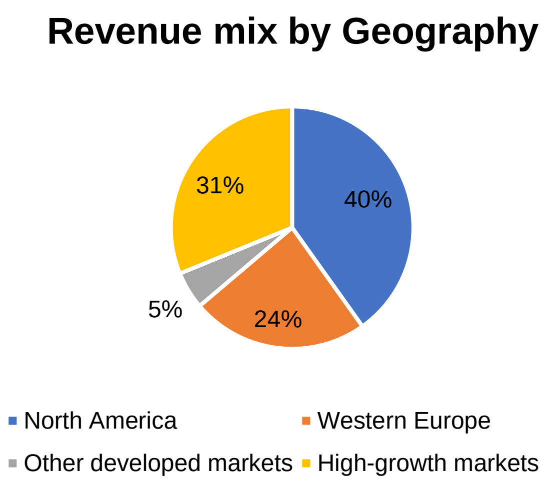
Section 3 Danaher's Business Segments

Danaher today reports its revenue in three broad segments: a) Life Sciences, b) Diagnostics, and c) Environmental & Applied Solutions. Across these three segments, Danaher owns approximately 25 independent operating companies, most of which tend to be #1 or #2 in their respective industries. While Danaher discussed organic growth rate as well as the size of the business sporadically for many of the businesses it owns, it does not do so consistently. Moreover, given Danaher's topline is ~$30 Bn today and there are perhaps ~10 businesses within Danaher generating more than $1 Bn topline, it is difficult to discuss all of these businesses and their competitive dynamics separately. Therefore, I will primarily resort to summarizing the three broad segments. Considering Danaher is a serial acquirer, it is better to understand the broad operating philosophy than to gain in-depth understanding of each of the businesses it owns.

As mentioned earlier, these operating companies have a common business model: razor/razorblade model with recurring revenue. As Danaher divested Fortive (its collection of industrial assets in 2016) and Envista (Dental assets in 2019) and leaned even more aggressively to business with recurring revenue, 75% of its current revenue is recurring in nature vs only 45% in 2015. Since the current assets are also mostly operating in industries with secular growth drivers, organic growth rate increased from Low Single Digit (LSD) in 2015 to Low Double Digit (LDD) in 2019-2021. Moreover, operating margin for the overall company expanded by ~800 bps in 2021 vs 2015. Given the material change in the collection of assets Danaher currently owns vs what it had in 2010-2015, it may not be very prudent to compare the business from longer time-series perspective since it won't be apples-to-apples comparison.

Geographically, more than 60% of revenue comes outside the US. Almost a quarter of overall revenue comes from "High-growth markets" which is defined as developing markets of the world experiencing extended periods of accelerated growth in GDP that include Eastern Europe, the

Middle East, Africa, Latin America and Asia (with the exception of Japan, Australia and New Zealand). Notably, China contributed 13% of overall sales to Danaher in 2021.



Life Sciences (~$15 Bn revenue, ~50% of overall revenue)

Through the acquisition of Leica in 2005, Danaher established its Life Sciences business which was later expanded through more acquisitions over the last decade and a half: AB Sciex and Molecular Devices in 2010, Beckman Coulter in 2011, Pall in 2015, Phenomenex in 2016, IDT in 2018, Cytvia (GE's Biopharma business) in 2018, and Aldevron in 2021. These businesses help their customers to study the basic building blocks of life, including genes, proteins, metabolites and cells, in order to understand the causes of disease, identify new therapies, test, and manufacture new drugs and vaccines. Within Life Sciences segment, Danaher owns business focusing on bioprocess, filtration, Flow Cytometry, Genomics, Lab Automation, Centrifugation, Particle Counting and Characterization, Mass Spectrometry, Microscopy, Genomics Consumables, Gene and Cell Therapy etc. I won't be surprised if most of these are somewhat unintelligible to the readers and I encourage readers to read the links to have basic understanding of what these are, but frankly speaking, it can be hard to gain better than basic understanding for a generalist investor. Considering the breadth of collection of assets, it is perhaps quite challenging for anyone to gain an in-depth understanding of this collection of assets.

~70% of the revenue in this segment is recurring in nature, and over the last decade, the growth profile as well as margin has improved considerably for this segment. In 2017, this segment had 23% EBITA margins which increased to 37.1% in 2021. Some of these businesses such as Beckman Coulter have been around for decades. For example, Beckman was founded in 1935, and Beckman itself was a serial acquirer. It ended up acquiring Coulter in 1998 and was acquired by Danaher in 2011 after ~75 years of operation. Danaher credits its DBS for streamlining operations for these businesses to marginally increase the growth profile and materially expand the margin profile following the acquisition.

AVG. ANNUAL CORE GROWTH IMPROVEMENT

	2012-2016	2017-2021E
Molecular Devices	LSD	HSD
Beckman Coulter Life Sciences	LSD	HSD/LDD
SCIEX	MSD	MSD+
Leica Microsystems	LSD	MSD
IDT Integrated DNA Technologies	*Acquired 2018*	>20%*
Combined Total:	LSD	MSD/HSD

HOW WE DO IT:

"RUNNING THE DHR PLAYBOOK"	Creating long-term value with DBS: increase margins, lower G&A, reinvest for growth
NEW PRODUCT LAUNCHES	Applying DBS rigor to R&D processes to increase our cadence of innovation
STRATEGIC ACQUISITIONS	Enhancing capabilities and expanding presence in attractive end-markets

Source: Danaher Investor Day 2021

Danaher expects the improved growth profile will be sustainable going forward given how their operating businesses are positioned:

"*…in Life Sciences, we're positioned in the middle of the shift towards biologic therapeutics, with 50% more monoclonal antibodies in the development pipeline today versus 5 years ago. We also see the growing focus on genomic medicines, with 10x more cell and gene therapies in development versus 2015. We also expect sustained long-term growth as biologic therapeutics are still early in their potential and their market penetration as they plot their paths towards continued regulatory approval, eventually developing into the new standard of care.*"

The portfolio within Life Sciences segment is not just a bunch of matured, high cash flow margin businesses, but Danaher also bought some relatively smaller business with higher growth potential runway. For example, the $10 Bn acquisition of Aldevron in 2021, which provides high-quality plasmid DNA, proteins, enzymes, and other biologicals to help its customers achieve ground-breaking science throughout a variety of life science applications, only had $400 Mn revenue when Danaher announced the acquisition; Danaher expected Aldevron to post a sustained 20% or higher organic growth over time. While Danaher mentioned they expect Aldevron to post $500 Mn revenue in 2022, in 1Q'22 Aldevron posted ~40% growth.

Danaher's acquisition of Cytvia also has been going better than expected. They have rebranded 32,000 products after acquiring the business from GE and doubled the revenue in three years. Operating margin also expanded by more than 500 bps. While ROIC of High Single Digit (HSD) may not seem quite attractive at first glance, Danaher is more focused on creating value rather than setting a high ROIC bar for M&A deal. Since they fund the deal at LSD rate, even HSD ROIC will create a lot of value for shareholders. Given low capital intensity and potential margin expansion, return on <u>*incremental*</u> invested capital may be much more attractive than today's ROIC.

RECENT FINANCIAL RESULTS

	AT ACQ.	2021E
Revenue	~$3B	~$6B
Core growth	+6-7%*	+>35%
OMX		>500bps
ROIC		+HSD

* Anticipated long-term growth rate

Diagnostics (~$10 Bn revenue, ~33% of overall revenue)

The four major operating companies in Diagnostics segment are Beckman Coulter Diagnostics, Cepheid, Leica Biosystems, and Radiometer, all of which likely generate more than $1 Bn sales each. Danaher got into diagnostics business in 2004 with its acquisition of Radiometer and later expanded the business through more acquisitions, including Vision Systems in 2006, Beckman Coulter (which has both Life Science and Diagnostics products) in 2011, Iris International and Aperio Technologies in 2012, HemoCue in 2013, Devicor Medical Products in 2014, the clinical microbiology business of Siemens Healthcare Diagnostics in 2015 and Cepheid in 2016. This segment offers clinical instruments, reagents, consumables, software and services that hospitals, physicians' offices, reference laboratories and other critical care settings use to diagnose disease and make treatment decisions. ~87% of revenue from this segment was recurring in nature in 2021.

Danaher owned businesses operate in several areas of Diagnostics market:

a) *Core Lab-Clinical* segment manufacture products to evaluate and analyze samples made up of body fluids and cells;
b) *Molecular Diagnostics* enable DNA-based testing for organisms and genetic-based diseases in both clinical and nonclinical markets. Danaher mentioned molecular diagnostics is less than 30% penetrated of existing menus, and many more disease states are in the pipeline which may imply plenty of growth runway left in this segment.
c) *Acute Care Diagnostics* are used in both laboratory and point-of-care environments to rapidly measure critical parameters, including blood gases, electrolytes, metabolites and cardiac markers, as well as for anemia and high-sensitivity glucose testing.
d) *Pathology Diagnostics* are used by pathologists, lab managers, and researchers across the entire workflow of their pathology laboratory.

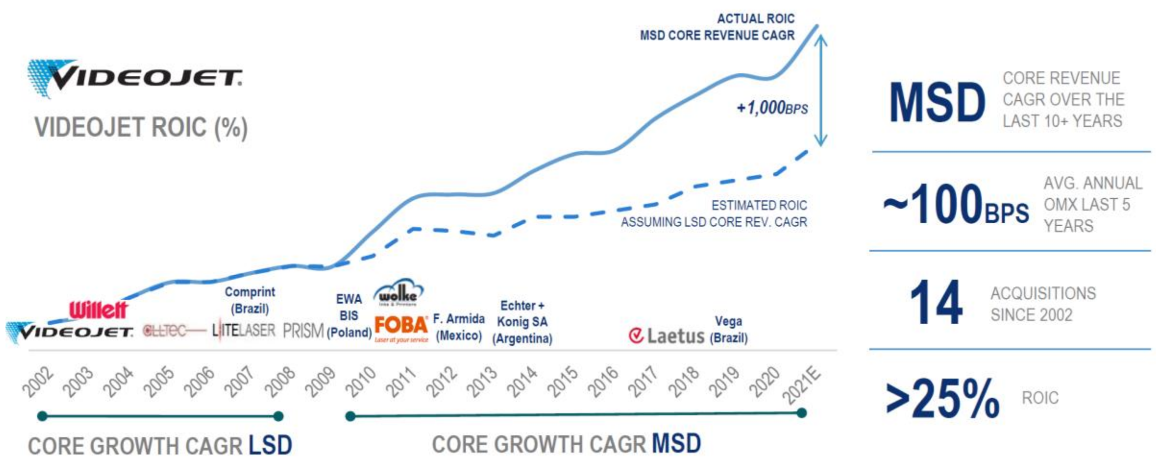
Covid has been a huge accelerant for the diagnostics business, but as Covid wanes further, some of these businesses may face some challenges. Cepheid, Danaher's molecular diagnostics arm, did 70 million tests in 2021, but expects to do 50 million tests in 2022 and just 30 million tests in 2023 as Covid gradually moves from being pandemic to endemic in nature.

One key theme in the Diagnostics business is the decentralization of healthcare i.e. from centralized care settings to the patient at the point of care may become a secular growth driver that also was accelerated during Covid. Even after Covid declines, the installed base in the point of care means Danaher's customers can adopt other menu items such as non-respiratory non-Covid business which is already >$1 Bn business growing at low double digit. Danaher's strategy has been: *"fund menu expansion, add anchor assays that drive share gain, drive adoption, and expand installed base".* Cepheid's installed base, for example, quadrupled in 2021 from what it had in 2016. Moreover, thanks to skilled labor shortages in hospitals, Danaher's automation and software solutions are also likely to be benefited. As a result, despite Danaher's diagnostics business being a major Covid beneficiary which led to revenue being 50% higher in 2021 vs 2019, Danaher mentioned 75% of the Diagnostics portfolio is expected to grow mid-single digit or higher in the medium to long-term.

Environmental & Applied Solutions ($4.7 Bn revenue, ~15% of overall revenue)

This segment can be further segregated in two broad categories: product identification platform (~$2 Bn business), and Water Quality Platform ($2.5 Bn business). ~57% of this segment's revenue is recurring in nature in 2021. Let me discuss these two platforms below:

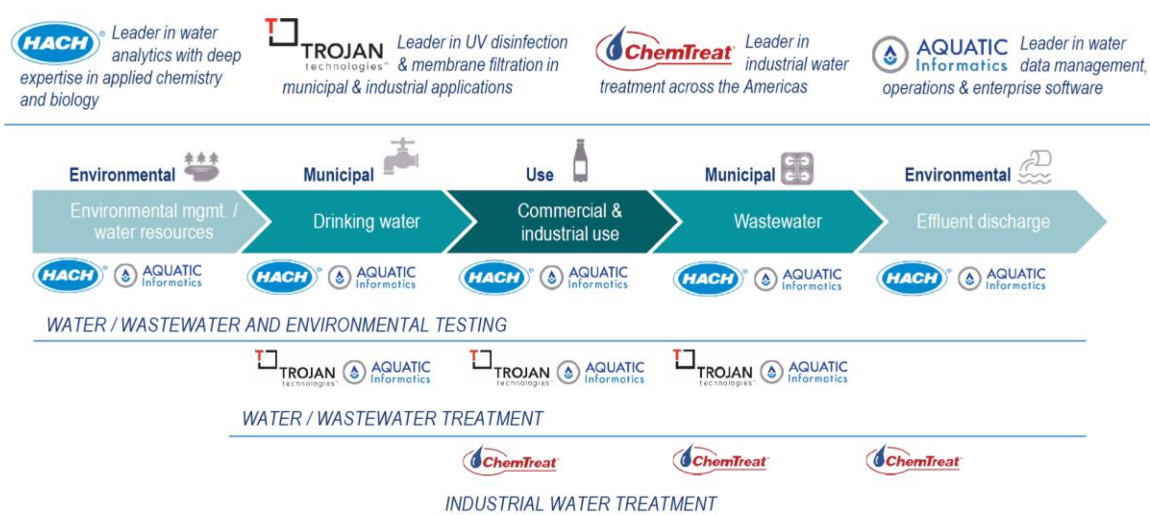
Product identification: Danaher got into product identification with the acquisition of Videojet in 2002. Videojet is in the business of coding, marking, and printing systems, application-specific fluids, and digitally enabled solutions. Companies such as Coca-Cola use unique identities by printing date, lot, and bar codes and other information on primary and secondary packaging, applying high-quality alphanumeric codes on their 10 mn-20 mn cans each day. Danaher acquired Videojet for $400 Mn in 2002 when it had ~$300 Mn revenue. Over the last 20 years, not only the core growth profile improved from LSD CAGR in 2002-2008 to MSD CAGR in 2010-2021, ROIC also expanded to >25%.



Source: Danaher Investor Day 2021

Following Videojet, Danaher expanded their product identification business by acquiring EskoArtwork in 2011 and X-Rite in 2012. Esko is a packaging design software solution that's used by 10 of the top 15 CPG brands worldwide. X-Rite, AVT, and Pantone also provide hardware or/and software solutions to printing, packaging for businesses around the world.

Water quality: Danaher entered Water quality business in the late 1990s with the acquisition of Dr. Lange and Hach company. Just like other segments, Danaher later deepened its presence in water quality with other acquisitions such as Trojan Technologies in 2004 and ChemTreat in 2007. The breadth of Danaher's products in this segment can be seen below:



Source: Danaher Investor Day 2021

~50% of water quality business is recurring revenue. In 2001, water quality segment had ~$350 Mn revenue, +LSD core growth, ~45% gross margin, and low teens EBITDA margin. In contrast, water quality segment generated ~$2.5 Bn revenue, +HSD core growth, ~55% gross margin, ~25% EBITDA margin, and >20% ROIC in 2021. One driver for growth for water quality segment is regulatory mandate, as explained by Danaher: *"Most recently, we've seen certainly some of the regulatory environment taking shape as it relates to some emerging contaminants, notably PFOS here in the U.S. and in other parts of the world, which is driving increased concern and attention specifically around water quality, both municipally but also as it relates to our industrial customers."*

As mentioned earlier, while Danaher discusses specific businesses time to time in more detail, they only report revenue in the three segments discussed. While it may be prudent to understand the competitive dynamics under which these independent businesses operate, there are, unfortunately, two limitations: a) while Danaher doesn't own hundreds of businesses like Constellation Software does, it still owns ~25 independent businesses. The number of businesses is simply too high to follow diligently for analysts/investors to infer anything materially useful for the overall company; and b) some of the competitors of Danaher's operating businesses are also part of other serial acquirers such as Thermo Fisher, Roche etc. which make the task even more onerous than it already is. Ultimately, Danaher's shareholders may need to rely on Danaher's culture derived from DBS and trust the management to maintain, nurture, and grow the businesses management acquired. Moreover, the cash generated from the acquired businesses will again be prudently deployed by Danaher management to buy new businesses, and when a particular business doesn't make sense, it will be divested. I suspect most Danaher investors buy the "capital allocation" system rather than a collection of whatever businesses Danaher happens to own at a particular point of time. If history is any guide, just as Danaher in 1990 has very little resemblance to today's Danaher; Danaher in 2040-2050 may look different from what it is today.

Section 4: Capital allocation and Incentives

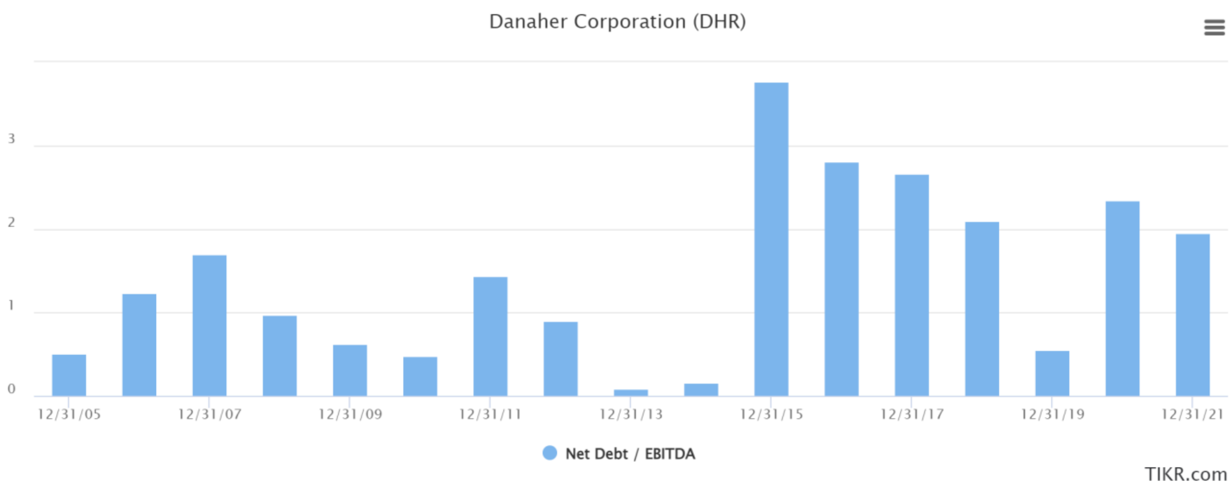
Given the primacy of capital allocation for Danaher, let me discuss how Danaher has historically allocated capital. Danaher generated $18.5 Bn, ~$26 Bn, and ~$44 Bn operating cash flow (OCF) over the last 3, 5, and 10 years respectively. Even though Danaher divested its industrial and dental assets during this time, the overall capital allocation theme has been largely consistent. For every $100 operating cash flow, $15 was spent on capital expenditures, $10 was paid as dividend to shareholders, and hardly any share was repurchased from the market. At the same time, Danaher spent ~$60 Bn, which is 135% of OCF, in last 10 years to acquire new businesses.

DHR (USD Mn, except %)	2019-2021	Mix as % of OCF	2017-2021	Mix as % of OCF	2012-2021	Mix as % of OCF
OCF	18,518	100%	26,018	100%	44,100	100%
Capex	2,721	15%	3,876	15%	6,440	15%
Dividend	1,884	10%	2,695	10%	3,815	9%
Repurchases	0	0%	0	0%	648	1%

Acquisitions	32,263	174%	34,822	134%	59,468	135%

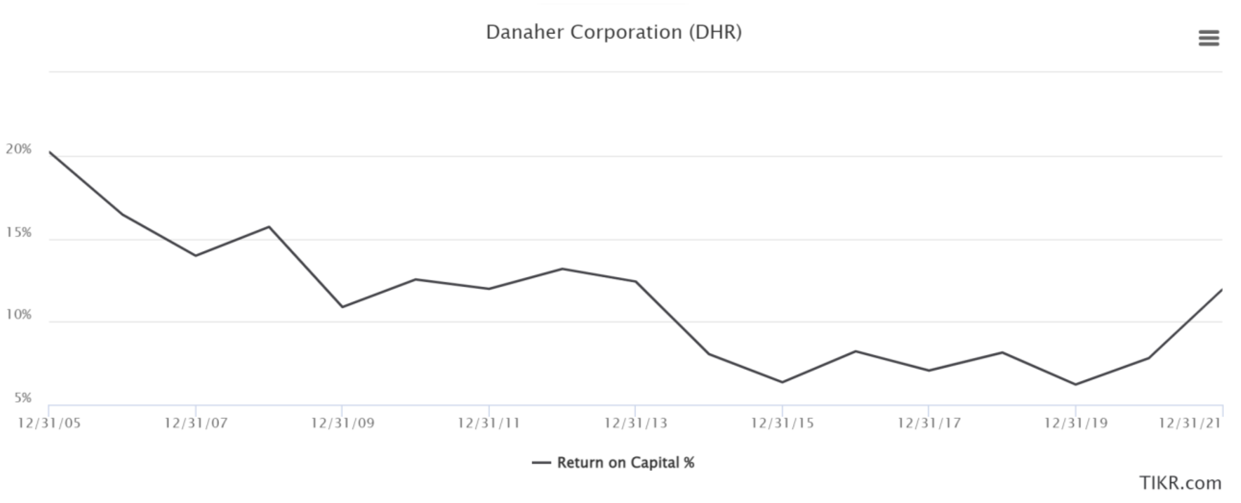
Given acquisitions consistently surpass OCF Danaher generates, it issues debt to finance the acquisitions. Currently, Danaher's leverage or net debt to EBITDA ratio is slightly below 2.0x. There is little indication that Danaher will alter its capital allocation going forward. It is likely Danaher will do more of the same in terms of capital allocation in the next 3, 5, or 10 years. CEO Rainer Blair was asked in a recent sell-side conference whether Danaher may lean more towards buying back stock given the recent ~25% drawdown; this is what he said:

"…our bias for capital allocation has been towards M&A. And that continues to be the case. And as Mike and I were just saying, we see the current market environment as an opportunity for us, which we are watching very closely. Now we -- as it relates to share buybacks, we already have that facility. We already have that authorization. And are we more likely to do something like that when the stock's at $240 than at$330? Sure. But really, our bias is towards M&A and our capital allocation."



From 2022-2030, I estimate Danaher will generate more than $80 Bn cumulative FCF and given that Danaher's net debt to EBITDA is still below 2.0x, Danaher may deploy more than $100 Bn capital in acquisitions in the rest of this decade. Moreover, considering ~75% of Danaher's revenue today is recurring in nature (vs 45% in 2015) and they seemed comfortable with ~3 turns leverage in 2015-2017, the actual deployed capital may be even $120-150 Bn for acquisitions. Please note Danaher's current market cap and enterprise value is ~$180 Bn and ~$200 Bn respectively. Therefore, it is of paramount importance how prudently Danaher management will deploy such capital.

Deploying such large amount of capital naturally raises the question of lower return on invested capital, something Danaher has already experienced. As you can see below, while Danaher used to have ~20% ROIC in 2005, it had come down to as low as ~6-7% in 2015, 2017, and 2019. ROIC did increase from ~6% in 2019 to ~12% in 2021 thanks to Covid tailwind as well as improved business performance. It can be tricky, however, to infer decisive conclusions from looking at these numbers. For example, Danaher spent ~$10 Bn for Aldevron acquisition in 2021 which is expected to generate $500 Mn revenue in 2022. Assuming ~45% operating margin and 20% effective tax, let's say NOPAT is $180 Mn in 2022 which implies less than 2% ROIC for Danaher. But Aldevron is also expected to continue to organically grow ~20% over the medium term (and it grew ~40% in 1Q'22) and like almost all Danaher's businesses it is presumably low capex intensity business, so ROIC after year 1 of the deal may not be the best number to look at and the potential ROIC in out years may be a better yardstick to evaluate management's capital allocation. Ultimately, the math is simple; as long as ROIC is above WACC, it will create value. However, whether the management is indeed creating value may need more time for the numbers to fully reflect, especially if Danaher continues to deploy capital to more high growth companies which mean ROIC after year 1 may not look super attractive. Nonetheless, shareholders probably shouldn't expect a return of ~20% ROIC days in headline numbers if Danaher deploys >$100 Bn capital in this decade. It is very difficult to deploy such amount of capital in acquisitions and maintain ~20% ROIC. Given Danaher's cost of capital was pretty cheap (effective cost for Danaher's $22 Bn debt last year was just 110 bps) and assuming it remains somewhat cheap, even high single digit ROIC can create a lot of value for shareholders. A lengthy recession or rising interest rate may somewhat affect Danaher's business or increase its cost of capital, but it may not even be the worst news for Danaher as that may also lead to some attractive acquisition targets. Think about buying something like Aldevron for 5-10x NTM revenue instead of ~20x NTM revenue multiple that Danaher paid in 2021. As discussed earlier, it is return on incremental capital invested that may be much more attractive than headline ROIC numbers for some of these acquisitions. Buffett's 2007 shareholder letter is a good reading on this topic (read "Businesses – The Great, the Good and the Gruesome" section).



Let's take a look at incentives now. Annual cash incentives are linked with the following metrics: adjusted EPS (60%), adjusted FCF to adjusted EPS ratio (20%), and core revenue growth (20%). It's the medium-term (3-year) incentives that's more interesting. For management to earn 200% payout in the medium-term, Danaher needs to be at or above 75th percentile at S&P 500 index, and if it's below 35th percentile, management doesn't get its Performance Stock Units (PSU) at all. Interestingly, despite the shortcomings of headline ROIC I mentioned above, management's medium-term incentive is partly linked with ROIC. But ROIC is only a modifier, and hence doesn't have as much influence as TSR has. Moreover, management doesn't have a target ROIC number to hit, rather the bonus gets modified positively (or negatively) depending on whether three-year average ROIC is 200 bps higher (or lower) than the preceding period. I think the board does understand it is less helpful to target specific ROIC number, and more important for the management to get the ROIC in the right direction. One other interesting thing that I noticed in the proxy statement is even if Danaher is at or above 75th percentile in the S&P 500 index but TSR is negative, the maximum PSUs that will vest is 100%. Danaher is also lot more stingy when it comes to stock-based compensation (SBC) compared to most tech companies out there. For a ~$200 Bn EV company, Danaher issued just $1.4 Bn SBC in *aggregate* in the last 10 years which is ~3% of aggregate operating cash flow during the same time. Overall, management incentives seem to be carefully constructed, and largely shareholder friendly. Rales brothers are still on the board, so perhaps it's not surprising that the incentives are lot more aligned with shareholders than they typically are in most companies.

RELATIVE TSR

The number of shares of Common Stock that vest pursuant to the PSU award is based primarily on the Company's total shareholder return (TSR) ranking relative to the S&P 500 Index over an approximately three-year performance period. The Committee established threshold, target and maximum relative TSR performance levels and established a payout percentage curve that relates each level of performance to a payout expressed as a percentage of the target PSUs, as illustrated in the table below:

Performance Level (Relative TSR Rank Within S&P 500 Index)	Payout Percentage
Below 35th percentile	0%
35th percentile	50%
55th percentile	100%
75th percentile or above	200%

The payout percentages for performance between the performance levels indicated above are determined by linear interpolation. The Committee selected the S&P 500 Index as the relative TSR comparator group because the index consists of a broad and stable group of companies that represents investors' alternative capital investment opportunities, reinforcing the linkage between our executive compensation program and the long-term interests of our shareholders.

ROIC

The Company's three-year average ROIC performance beginning with the year of grant, compared to the Company's ROIC for the year immediately preceding the year of grant (the "baseline year"), can increase or decrease the number of shares that would otherwise vest by 10% (but cannot cause the payout percentage to exceed 200%), as illustrated in the table below:

Three-Year Average ROIC Change[2] (Compared to Baseline Year ROIC)	ROIC Modifier Factor
At or above + 200 basis points	110%
Below + 200 basis points and above zero basis points	100%
At or below zero basis points	90%

Source: Danaher

Section 5: Valuation and model assumptions

If you are reading my deep dive for the first time, I strongly encourage you to read my piece on "approach to valuation". Please read it at least once so that you understand what I am trying to do here. I follow an "expectations investing" or reverse DCF approach as I try to figure out what I need to assume to generate a decent IRR from an investment which in this case is ~9%. Then I glance through the model and ask myself how comfortable I am with these assumptions. As always, I encourage you to download the model and build your own narrative and forecast as you see fit to come to your own conclusion. None of us have the crystal ball to forecast 5-10 years down the line, but it's always helpful to figure out what we need to assume to generate a decent return.

As already discussed, Danaher reports its operating businesses in three segments: a) Life Sciences, b) Diagnostics, and c) Environmental & Applied Solutions. Danaher not only discloses the segment revenues but also reports profitability for each of these segments.

With these segments, Danaher reports core organic growth, growth from acquisitions, and FX impact. For each of these segments, I assumed ~4% FX headwind in 2022 and then assumed no FX impact going forward to keep things simple. Because of the FX headwind, even though Danaher reiterated last quarter on HSD core revenue growth in 2022, reported revenue may increase at much lower rate given 60% non-US revenue exposure.

One concern in the Life Sciences segment's core growth that may be worth watching beyond the near-term is the funding situation for early-stage biotech companies. Even the whole biotech index (XBI) is flat over the last five years which may lead to lack of appetite for funding for early-stage biotech companies (many of whom are customers of Danaher) in the next few quarters/years, especially during potential recession. CEO Blair was asked on this topic in a recent sell-side conference and he said the following:

"First of all, when you do the analysis of the biotech sector and you look at the balance sheet of the great majority of the players, the average cash with -- given the average burn rates is between 12 and 18 months. Sure, there's some at 6 months, and then there's others at 18 or 24, but let's just say the average is right around 18 months. And we think that that's quite significant and that will continue these innovators to keep driving towards hopefully lifesaving or certainly life-improving therapeutics.

But I think when you step back for a second and you put biotech funding in relation to the bioprocess business, the most important thing to remember is that the bioprocess business is volume-driven. It is volume-driven. It's not the number of projects. It's the volume per project that makes a difference. And with that, that means that commercial drugs and drugs that are really in the Phase III volumes are the ones that drive this business. And the ones that are earlier stage, including those early-stage biotechs, have an impact but only at the margin. It is not a driver of the growth of the business."

So, even if biotech funding may not have material impact on the overall revenue in bioprocesses which is half the revenue of Life Science segment, it may affect core revenue growth. I kept core revenue growth in Life Science segment at MSD+ in the future, but the state of bioprocess business may potentially influence the core revenue growth.

Danaher showed a growth algorithm in last year's investor day which outlined how the overall core revenue growth can be MSD+. As higher growth portfolio companies have become larger contributor to overall revenue mix, there is a natural tailwind for overall core revenue growth.

	PRE-2019 ANTICIPATED CORE REVENUE GROWTH		FUTURE ANTICIPATED CORE GROWTH RATE	
DANAHER	5-6%	Owned Dental (Envista)	MSD+	
cytiva	6-7% expected	DHR did not own	HSD	Now part of DHR Life Sciences Uniquely positioned across bioprocessing
Cepheid.	LDD	~$1B 2019 revenue (5% of DHR)	LDD	~$3B 2021E revenue (>10% of DHR) >40% installed base growth last 18mos Durable testing tailwinds
REST OF DANAHER	MSD		MSD+	Benefit from continued investment spend

Source: Danaher Investor Day 2021

But how about growth from acquisitions? This is a little tricky. Unlike CSU which largely acquired companies at a similar average multiple over two decades (~1-1.5x EV/Sales multiple), we probably should not use such rule of thumb for Danaher. In my model, I did not assume any growth from acquisition. Instead, I utilized the FCF to buyback shares in my model even though we know that's not how Danaher will likely utilize its FCF in the future. The implicit assumption here is as long as Danaher buys new assets at similar quality and valuation compared to what its stock trades at, my approach of assuming no acquisition won't necessarily penalize Danaher since the buybacks are decreasing share count leading to EPS growth. So, if Danaher grows topline at MSD+ and buyback of shares decreases share count ~3-4%/year (depends on valuation), it leads to ~10% EPS growth. However, what is likely to happen is Danaher will use ~120-130% of FCF to acquire more businesses. The end result can be similar. Earnings growth is just multiplication of earnings retention rate and ROIC. If ~120% of earnings is deployed for organic and inorganic investments to generate HSD ROIC, we get to ~10% EPS growth. Modeling acquisitions and deal multiple is likely to be more treacherous path, so I took the former approach for Danaher i.e. assumption of buybacks.

How about margin expansion? In last year's investors day, Danaher mentioned they expect ~50-75 bps of margin expansion each year. But given overall operating margin increased by ~630 bps in 2021 (from 19.0% in 2020 to 25.3% in 2021), I'm slightly skeptical that margins can indeed continue to creep up consistently even from this elevated level. I assumed some margin pressure in the near-term (mostly because of FX) but assumed return of very gradual margin expansion (lower than management guidance of ~50-75 bps) from next year.

Amount in USD Mn, except %	**2017A**	**2018A**	**2019A**	**2020A**	**2021A**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
Net revenue	**15,519**	**17,049**	**17,911**	**22,284**	**29,453**	**30,827**	**33,191**	**35,405**	**37,595**	**39,728**	**41,984**	**44,369**	**46,890**	**49,555**
Growth $		1,530	862	4,373	7,169	1,374	2,364	2,214	2,190	2,134	2,256	2,385	2,521	2,665
Growth %		*9.9%*	*5.1%*	*24.4%*	*32.2%*	*4.7%*	*7.7%*	*6.7%*	*6.2%*	*5.7%*	*5.7%*	*5.7%*	*5.7%*	*5.7%*
Segments														
Life Sciences	**5,710**	**6,471**	**6,951**	**10,576**	**14,958**	**15,706**	**16,962**	**18,150**	**19,420**	**20,585**	**21,821**	**23,130**	**24,518**	**25,989**
Growth		*13%*	*7%*	*52%*	*41%*	*5%*	*8%*	*7%*	*7%*	*6%*	*6%*	*6%*	*6%*	*6%*
Growth breakdown														
Acquisitions/divestitures		*-5%*	*-3%*	*-47%*	*-17%*									
FX		*-1%*	*2%*	*0%*	*-2%*	*4.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Core		*8%*	*7%*	*6%*	*23%*									
Cytiva				*8%*	*5%*									
Core, including Cytiva				*13.0%*	*27.5%*	*9.0%*	*8.0%*	*7.0%*	*7.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
Depreciation	119	127	130	183	258	236	254	272	291	309	327	347	368	390
As % of segment revenue	*2.1%*	*2.0%*	*1.9%*	*1.7%*	*1.7%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*	*1.5%*
Amortization	309	344	357	870	1,183	1,183	1,183	1,183	1,183	1,183	1,183	1,183	1,183	1,183
As % of segment revenue	*5.4%*	*5.3%*	*5.1%*	*8.2%*	*7.9%*	*7.5%*	*7.0%*	*6.5%*	*6.1%*	*5.7%*	*5.4%*	*5.1%*	*4.8%*	*4.6%*
EBIT	1,004	1,229	1,401	2,054	4,367	4,398	4,783	5,155	5,554	5,929	6,328	6,754	7,208	7,693
EBIT margin	*17.6%*	*19.0%*	*20.2%*	*19.4%*	*29.2%*	*28.0%*	*28.2%*	*28.4%*	*28.6%*	*28.8%*	*29.0%*	*29.2%*	*29.4%*	*29.6%*
EBITA	1,313	1,573	1,758	2,924	5,550	5,581	5,966	6,338	6,737	7,112	7,511	7,937	8,391	8,876
EBITA margin	*23.0%*	*24.3%*	*25.3%*	*27.6%*	*37.1%*	*35.5%*	*35.2%*	*34.9%*	*34.7%*	*34.5%*	*34.4%*	*34.3%*	*34.2%*	*34.2%*
Diagnostics	**5,840**	**6,258**	**6,561**	**7,403**	**9,844**	**10,238**	**10,954**	**11,612**	**12,192**	**12,802**	**13,442**	**14,114**	**14,820**	**15,561**
Growth		*7%*	*5%*	*13%*	*33%*	*4%*	*7%*	*6%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*
Growth breakdown														
Acquisitions/divestitures		*7%*		*0%*	*-1%*									
FX		*-1%*	*2%*	*1%*	*-2%*	*4.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Core		*7%*	*7%*	*14%*	*31%*	*8.0%*	*7.0%*	*6.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*
Depreciation	368	379	376	397	409	405	411	413	409	404	397	389	379	366
As % of segment revenue	*6.3%*	*6.1%*	*5.7%*	*5.4%*	*4.2%*	*4.0%*	*3.8%*	*3.6%*	*3.4%*	*3.2%*	*3.0%*	*2.8%*	*2.6%*	*2.4%*
Amortization	213	210	206	205	205	*205*	*205*	*205*	*205*	*205*	*205*	*205*	*205*	*205*
As % of segment revenue	*3.7%*	*3.4%*	*3.1%*	*2.8%*	*2.1%*	*2.0%*	*1.9%*	*1.8%*	*1.7%*	*1.6%*	*1.5%*	*1.5%*	*1.4%*	*1.3%*
EBIT	872	1,074	1,134	1,538	2,313	*2,355*	*2,574*	*2,787*	*2,926*	*3,072*	*3,226*	*3,387*	*3,557*	*3,735*
EBIT margin	*14.9%*	*17.2%*	*17.3%*	*20.8%*	*23.5%*	*23.0%*	*23.5%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*
EBITA	1,085	1,284	1,340	1,743	2,518	2,560	2,779	2,992	3,131	3,277	3,431	3,592	3,762	3,940
EBITA margin	*18.6%*	*20.5%*	*20.4%*	*23.5%*	*25.6%*	*25.0%*	*25.4%*	*25.8%*	*25.7%*	*25.6%*	*25.5%*	*25.5%*	*25.4%*	*25.3%*
Environmental & Applied Solutions	**3,969**	**4,320**	**4,399**	**4,305**	**4,651**	*4,884*	*5,274*	*5,643*	*5,982*	*6,341*	*6,721*	*7,125*	*7,552*	*8,005*
Growth		*9%*	*2%*	*-2%*	*8%*	*5%*	*8%*	*7%*	*6%*	*6%*	*6%*	*6%*	*6%*	*6%*
Growth breakdown														
Acquisitions/divestitures		*-2%*	*-1%*	*0%*	*2%*									
FX		*-1%*	*2%*	*1%*	*-2%*	*4.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*
Core		*6%*	*4%*	*-2%*	*8%*	*9.0%*	*8.0%*	*7.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*	*6.0%*
Depreciation	43	47	49	47	44	*44*	*44*	*44*	*44*	*44*	*44*	*44*	*44*	*44*
As % of segment revenue	*0.7%*	*0.8%*	*0.7%*	*0.6%*	*0.4%*	*0.4%*	*0.4%*	*0.4%*	*0.4%*	*0.3%*	*0.3%*	*0.3%*	*0.3%*	*0.3%*
Amortization	57	62	62	63	62	*62*	*62*	*62*	*62*	*62*	*62*	*62*	*62*	*62*
As % of segment revenue	*1.4%*	*1.4%*	*1.4%*	*1.5%*	*1.3%*	*1.3%*	*1.2%*	*1.1%*	*1.0%*	*1.0%*	*0.9%*	*0.9%*	*0.8%*	*0.8%*
EBIT	915	988	1,052	979	1,054	*1,074*	*1,187*	*1,298*	*1,406*	*1,522*	*1,613*	*1,710*	*1,813*	*1,921*
EBIT margin	*23.0%*	*22.9%*	*23.9%*	*22.7%*	*22.7%*	*22.0%*	*22.5%*	*23.0%*	*23.5%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*	*24.0%*
EBITA	971	1,050	1,114	1,042	1,116	1,136	1,249	1,360	1,468	1,584	1,675	1,772	1,875	1,983
EBITA margin	*24.5%*	*24.3%*	*25.3%*	*24.2%*	*24.0%*	*23.3%*	*23.7%*	*24.1%*	*24.5%*	*25.0%*	*24.9%*	*24.9%*	*24.8%*	*24.8%*
Cost of sales		7,544	7,927	9,809	11,501	12,720	13,711	14,642	15,622	16,592	17,655	18,786	19,988	21,266
As % of revenue		*44%*	*44%*	*44%*	*39%*	*41%*	*41%*	*41%*	*42%*	*42%*	*42%*	*42%*	*43%*	*43%*
SG&A		5,391	5,589	6,896	8,198	8,488	9,039	9,536	10,013	10,462	10,930	11,418	11,926	12,455
As % of revenue		*31.6%*	*31.2%*	*30.9%*	*27.8%*	27.5%	27.2%	26.9%	26.6%	26.3%	26.0%	25.7%	25.4%	25.1%
R&D		1,059	1,126	1,348	1,742	*1,792*	*1,897*	*1,988*	*2,073*	*2,151*	*2,231*	*2,314*	*2,398*	*2,485*
As % of revenue		*6.2%*	*6.3%*	*6.0%*	*5.9%*	5.8%	5.7%	5.6%	5.5%	5.4%	5.3%	5.2%	5.1%	5.0%
Other operating expenses			-	-	547									
As % of revenue		*0%*	*0%*	*0%*	*2%*									
Operating profit	2,791	3,291	3,587	4,571	7,734	7,827	8,544	9,239	9,886	10,523	11,167	11,851	12,577	13,348
Implied corporate overhead	218	236	318	340	269	308	332	354	376	397	420	444	469	496
As % of revenue	*1.4%*	*1.4%*	*1.8%*	*1.5%*	*0.9%*	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Reported Operating profit	2,572	3,055	3,269	4,231	7,465	7,518	8,212	8,885	9,510	10,126	10,747	11,408	12,109	12,853
Operating margin	*16.6%*	*17.9%*	*18.3%*	*19.0%*	*25.3%*	*24.4%*	*24.7%*	*25.1%*	*25.3%*	*25.5%*	*25.6%*	*25.7%*	*25.8%*	*25.9%*

Valuation: To generate ~9% IRR, I had to assume 25x FCF multiple in 2030. From 2017-2021, Danaher's EPS grew by ~30% CAGR. But two things happened in the last 5 years that are unlikely to sustain in the next 5-10 years: Danaher's EBIT margin expanded by almost 1,000 bps, and Covid turbocharged its core organic revenue growth. I would be surprised if EPS grows even at mid-teen rate in the next 5-10 years (assuming 2021 as base year). If that's true, entry point will be very important driver for investors IRR going forward since EPS growth to the upside may not materialize.

Items			**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**
FCF											
OCF			6,614	8,479	9,001	9,514	10,017	10,508	11,031	11,585	12,171
Capex			(821)	(852)	(875)	(893)	(908)	(922)	(936)	(948)	(960)
FCF			**5,792**	**7,628**	**8,126**	**8,620**	**9,109**	**9,586**	**10,095**	**10,637**	**10,839**
FCF/share			8.1	11.0	12.2	13.4	14.7	16.0	17.5	19.1	20.2
Terminal FCF multiple											**25.0x**
Terminal Stock price											**505**
Current price*	**247.1**										
Dividend/share		-	1	2	2	2	2	2	3	3	3
Cash flow		(247)	1	2	2	2	2	2	3	3	508
IRR	**8.9%**										
#diluted shares outstanding		737	716	691	667	643	620	598	577	556	536
**Closing price of June 17, 2022*											

When I looked at last 5 years NTM FCF multiples and compared it to Thermo Fisher (TMO), perhaps Danaher's closest comp, Danaher does seem cheaper, especially since they usually traded at similar yields or multiples in the last 5 years. While the falling yield may be partly influenced by falling interest rates (and the recent uptick can similarly be due to higher rates this year), the quality profile for these businesses may have improved too which should also elevate multiples. Just as Danaher's recurring revenue mix increased from ~45% in 2015 to 75% in 2021, TMO's recurring revenue mix also increased from ~65% in 2008 to ~82% in 2021. Like Danaher, TMO's operating margin also expanded by more than 1,000 bps in 2021 vs 2017. As these businesses become more scaled, more profitable, and less cyclical, higher multiple naturally follows and they may not come down to multiples seen during prior recessions or market drawdowns.

Source: Tikr

Section 6: Final words

While Danaher is a compounding machine, I am wary of buying a company that may require me to rely on multiple expansion (or at least not contraction) for to make ~10% IRR. Although interest rates can be an important function of multiple Danaher may trade in 2025 or 2030, my *guess* is it will be somewhere between 20x and 30x FCF multiple in 5-10 years. If the earnings grow at ~10% and the terminal multiple in 10 years is ~20x (from current ~25x), today's shareholders will make 7.6% IRR. Personally, a company such as Danaher is attractive at ~20x NTM FCF multiple. In such case, my IRR has a high probability of matching the EPS growth (and higher if terminal multiple ends up being higher than 20x). Of course, if rates end up being structurally higher, terminal multiple can be lower than 20x, but that's a risk I am willing to underwrite. Some may even wonder why investors may even bother buying companies for ~10% IRR in a bear market. Personally speaking, given my highly concentrated bets on some tech stocks, I would welcome some diversified exposure to compounders that can grow my portfolio for potentially multiple decades without interruption. It is hard to buy well known compounders at a bargain price unless, of course, there's blood in the street. Looking at the current multiples, it does not quite seem blood has penetrated in the compounder land for me to get excited about!

Portfolio Discussion: Please note that these are **NOT** my recommendation to buy/sell these securities, but just disclosure from my end so that you can assess potential biases that I may have because of my own personal portfolio holdings. Always consider my write-up as my personal investing journal and never forget my objectives, risk tolerance, and constraints may have no resemblance to yours.

There is not much to talk about my portfolio companies this month. Since we are heading towards the earnings season, I am sure I will have a lot to talk about next month. Unlike earlier months, I will email my thoughts post-earnings of META, GOOG, AMZN, IAC/ANGI, SPOT, SHOP, SQ, and TRUP to the subscribers in the next three weeks. If you follow me on twitter, you are probably already familiar with my recap of earnings. Some of you requested to send these as emails as you may not be active on twitter. You will receive the earnings recap threads on your inbox going forward. *My current portfolio is disclosed below:*

Ticker	Avg. Cost	Current Weight*	Unrealized Gain (loss) %	First Bought	First Buy Price	Last Bought	Last Buy Price
META	204.9	18.5%	-14.2%	Aug'18	172.8	Jun'22	165.6
GOOG	120.1	17.4%	-4.6%	May'19	57.5	May'22	106.8
AMZN	128.5	14.1%	-8.0%	Feb'20	91.0	May'22	102.2
ADSK	230.8	12.5%	-19.9%	Feb'21	301.3	July'22	168.0
IAC	99.2	12.2%	-26.8%	Jul'20	83.0	July'22	69.4
SPOT	143.3	10.5%	-24.1%	Dec'21	239.6	Jun'22	97.7
BRK.B	202.3	8.0%	40.1%	Aug'19	199.7	Nov'21	285.2
TRUP	72.1	6.2%	-8.1%	Oct'21	80.0	Jun'22	53.7
CNSWF	1,733.8	4.9%	-12.4%	Mar'22	1,733.8	Mar'22	1,733.8
SQ	163.1	3.2%	-57.5%	Sep'21	271.3	May'22	76.4
SHOP	60.6	2.8%	-43.3%	Jan'22	82.6	Apr'22	46.2
ANGI	11.7	0.8%	-55.4%	Nov'20	11.7	Nov'20	11.7
Cash		-11.0%					
Total		100%					

**Based on closing prices as of July 19, 2022 (time-weighted YTD: -33.1%); Since inception (August 24, 2018) time-weighted annualized return +7.6%*

If someone forwarded this piece to you, please consider subscribing to MBI Deep Dives. Your support is deeply appreciated. Thank you so much.

Recommended readings

1. Book: Lessons from the Titans (Chapter four discusses Danaher)
2. Mark DeLuzio, one of the principal architects of Danaher Business System, discusses DBS on this podcast (December 2020)
3. WaPo piece on early days of Danaher
4. In Practise interviews: October 30, 2020 and May 15, 2022

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