D|F

Disruption | Fund

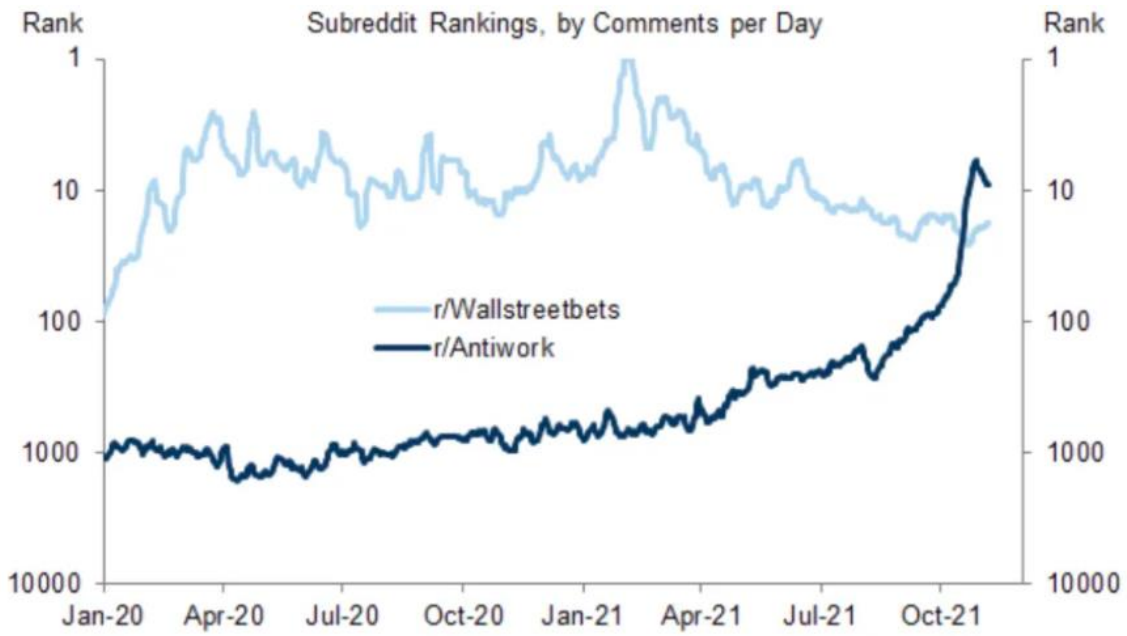
31 January 2022

"If I am worth nothing today, I won't be worth much more tomorrow, but if I am worth anything later, then I am also worth something now. For wheat is wheat, even if people at first see grass."

— Vincent van Gogh

r/Antiwork

Dry Jan. I'm sober all right. It's been a while since that last YOLO trade. Lost my Robinhood login on the last app refresh in Dec. Too many passwords. Last time I checked, I was long Tesla. Pass the Moon on this one and go straight to Mars. Stick to the plan. Can't be sure about the rest though. GameStop and Bitcoin trade like driftwood in Iguazu these days, where's the bottom? Coins all locked up in DeFi, no sell button! What now? Real as Covid, it was a fun ride, but this going back to work business just has no juice. Utility bills through the roof, what next? The NFTs or the rent? Time to choose what's right for me. I'm moving out. For good. Quitting time. For me. Keep the NFTs and walk the dog, my dog, your dog, any dog will do, for small change. Lay flat. Live like every day is the last.



Source: Subreddit stats; Goldman Sachs

Antiwork is the new gig. With 1.65m members, "idlers" (as they call themselves) are the fastest growing group on Reddit, tailgating WallStreetBets, the mega trend of the pandemic. Many are in both. What's a career when you can be FIRE : financially independent, retire early. Another one for inflation.

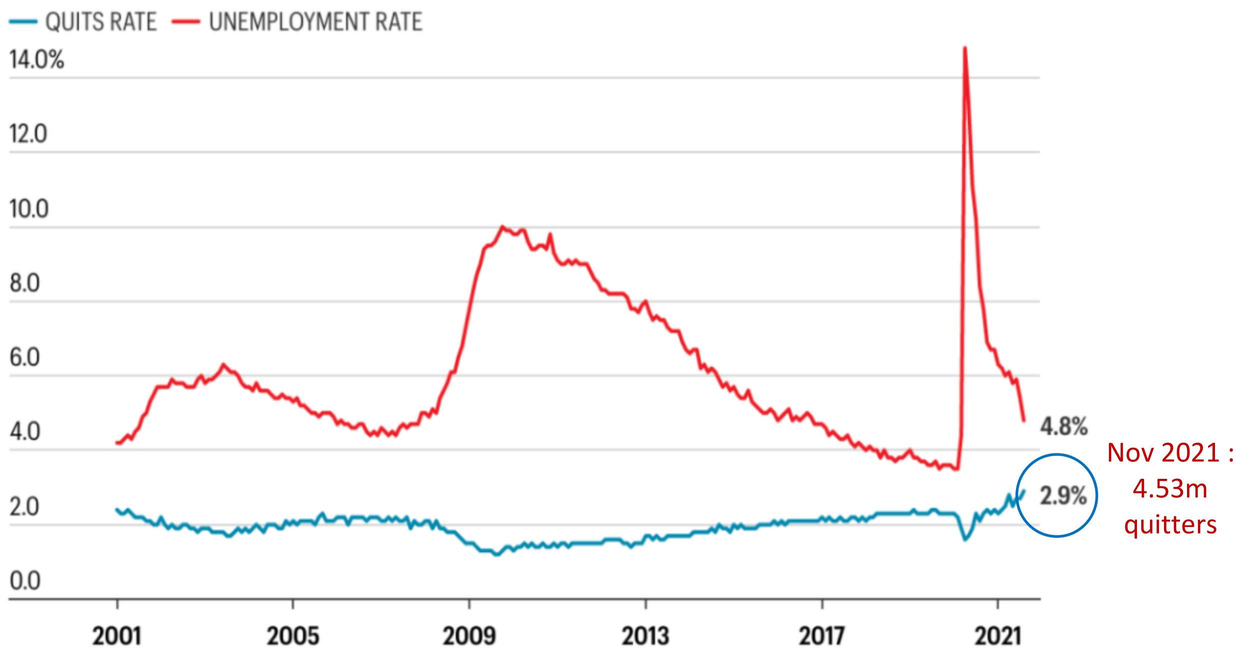
The US "quit rate" is the highest it's been since 2000 when the statisticians started counting the number of workers quitting separately from those getting fired. Conversely, labor force participation is the lowest it's been since 1977. Never have workers quit so much. Quitting is a good thing of course, a sign of a strong economy and social mobility. But Antiwork is more ambitious, more subversive.

With the quitting celebration comes some rage against the machine. Both bosses and workers are upset, with plenty of blame to go round: meme stocks and crypto wealth, home prices through the roof, broken supply chains, shortages and price gauging, WFH depression and broken work culture. All of it inflationary. Not just in America, in China as well, the Lay Flat movement, like Antiwork, is part of the motivation behind the “common prosperity” policy to take some pressure off the rent-paying class. High-priced day-care centers and after school tutors are pressuring families so much that despite abolishing the single child policy in 2015, the birth rate hit an all-time low in 2021. In Europe, the unemployment reservoir is bigger and wages remain flat-lined, but skills shortages are rampant and structural unemployment is high, suggesting a similar crisis is in the making.

In the US, more than 4m workers have left the labor force since the start of the pandemic and the “participation rate” is still stubbornly 1.7 percentage points below its level in early 2020. In the UK, the number is close to 1m. (FT.com). In YOLO culture, winners quit to retire, losers quit to get a raise.

Where have all the workers gone?

In November 2021, 4.53 million US workers quit their jobs

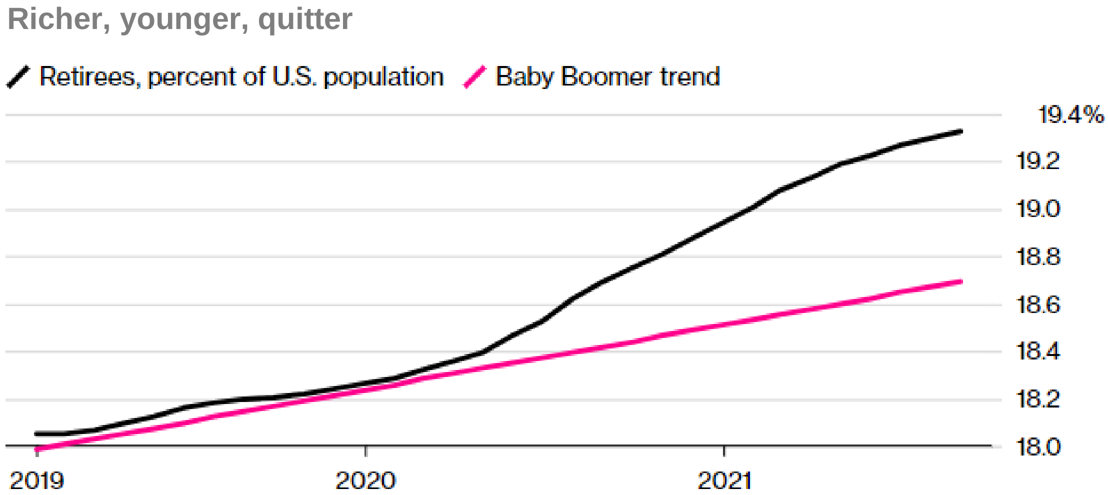


Source: Fortune; US Bureau of Labor Statistics; “quitters” data is a SAAR

Of course, the US economy is doing well. Red hot in fact. Looking for a job in 2022 is like being single at 30: you only have to ask. Fed tightening and a crypto crash might puncture the quit rate bubble, but it’s not happening now:

- Record savings from fiscal transfers: 300+ million crypto users worldwide (https://triple-a.io/crypto-ownership/); still worth $1.5 trillion in the middle of its ongoing winter crash.
- Early retirement surge : 3m Americans retired early during the pandemic (Bloomberg 22/10/2021)
- Demographic time bomb: China recorded its lowest birthrate since the famine of the Great Leap in 1960.
- Job obsolescence & displacement: estimates range between 400,000 and 2.1m lost jobs in the US alone (https://www.bls.gov/news.release/pdf/empsit.pdf).

> ***We’ve really met a once-in-a-generation ‘take this job and shove it’ moment.***
>
> —Lawrence Katz, Harvard economist



Source: Bloomberg ; St. Louis Fed ; 12-month moving average.

There is little relief in sight for this social and demographic trend. Post-recession economies are known to leave redundant skills behind, pushing older workers to quit permanently.

In a Dec 2021 survey of CEOs, **McKinsey reports that business leaders expect 50% of their companies' revenues in 5 years to come from products, services, or businesses that do not yet exist.** According to the World Economic Forum, 50% of OECD workers will need re-skilling by 2025. Automation will grow from 33% to 47% of tasks. Can you feel the disruption?

What jobs are most needed, which have been lost permanently, where is the reservoir of workers?

A global capex boom is now underway, the first since the financial crisis of 2008-09, driven by both clean tech and a revival of shale tech in energy, green metals in mining, EVs in autos, onshoring in semis, with ever more automation, robotics, additive manufacturing and IoT ramping up their adoption curves.

The cyborgs are coming

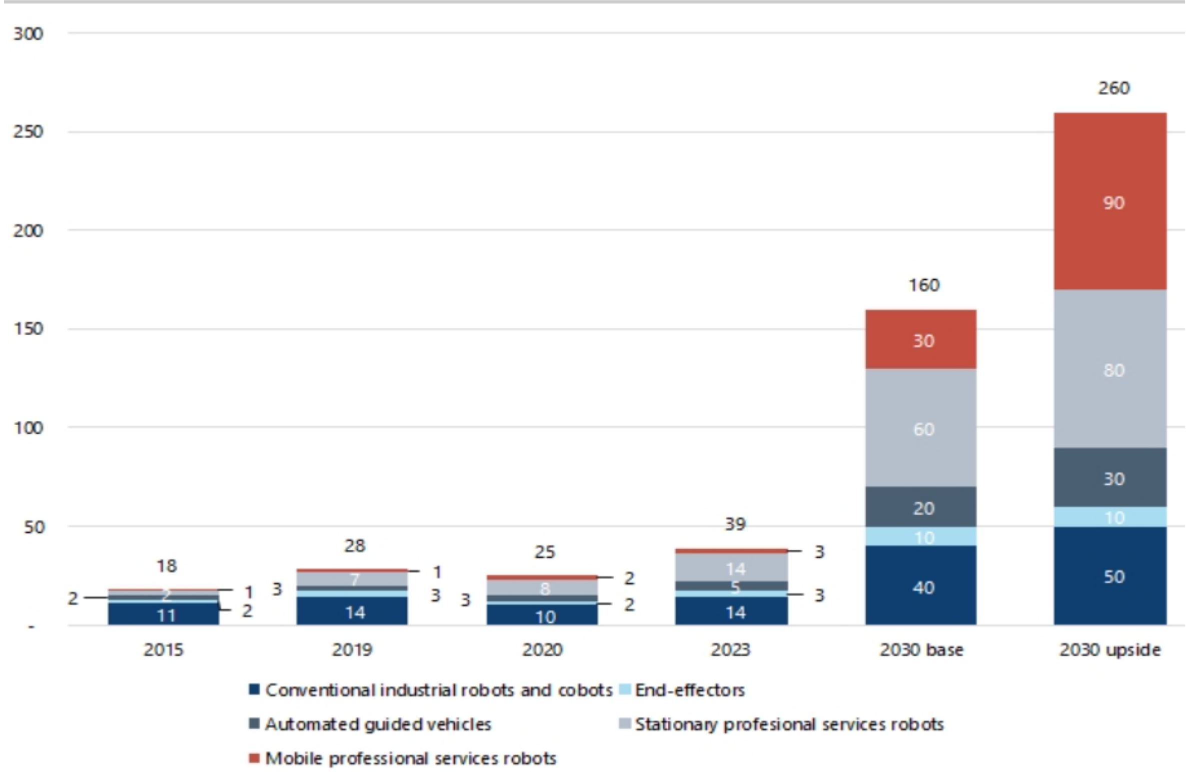
If you can't hire them, make them.

Shenzhen based eHang announced an order for 50 flying robotaxis—pilotless electric choppers—to serve during the Tokyo 2025 World Expo. The city of Paris is also reviewing air taxi contenders for their 2024 Olympics. In retail, self-check-out cashier installations grew 25% in both 2020 and 2021. Amazon Go self-checkout and employee-free stores are rolling out across the US and UK. Autonomous trucking startup TuSimple completed its first open road run in Dec 2021; DHL and VW have placed orders. Alphabet's Waymo has a running robotaxi operation in Phoenix, Arizona, since Oct 2020; GM's Cruise launched a robotaxi service in three San Francisco neighborhoods last Nov. Elon Musk claims Telsa Full Self-Driving suite, which already has 60,000 beta users, will be ready for launch by the end of 2022. Hype or real, he is confident enough to have raised the price from $10k to $12k effective Jan 17th for US customers; he even launched a licensing program for competitor OEMs.

Tech is pervasive in this capex wave, but automation isn't just about heavy industry. The rise of professional service robots is a new trend spurred by the labor shortages, especially to alleviate supply chain stresses. Robots in grocery stores and pharmacies, self-check-out counters, automated warehouses, automated public transport, large scale sanitization in hospitals, hotels, and restaurants.

Robots can be over-hyped, but behind the inflationary turmoil of labor shortages lurks the acceleration of Industry 4.0.

Global robotics market, 2015-2030, in billion USD



Source : BCG; Jefferies

Semiconductors arms race

Semiconductors are the oil of artificial intelligence. They've never been more critical to industrial efficiency and power, and they've never been more scarce. Even the makers of semi-making machines are short semis.

In their quarterly reports released this month, **ASM Lithography, Lam Research** and **KLA Corp**, the world's leading semiconductor capital equipment vendors, reported shipment delays to fab customers due to—what else—semiconductor shortages from their own suppliers. Semiconductor scarcity is affecting the production of everything from automobiles, white goods, computers, telecom equipment, and most ironically, semiconductor capital equipment itself. **The very machines needed to make chips can't be built fast enough because of the chip shortage.**

To make things worse, the industry is very capital intensive and has a history of deep boom and bust cycles, forcing investors to make cyclical bets with uncertain returns. To address this, the industry went mostly fabless after the great financial crisis, leading to spectacular returns for Nvidia, Qualcomm and AMD, while Intel's decision to remain an integrated designer/manufacturer cost shareholders dearly, with a stock price today still 36% below its all-time high from March 2000. Only three companies today can master the extreme nano scale of transistor sizes, Samsung, Micron and TSMC, with the later the only one focused on logic (CPUs, GPUs, and PLDs) rather than memory. **With foundry customer concentration came wafer fab equipment supplier consolidation. As a result, every semiconductor manufacturing equipment vertical is in a monopoly or duopoly structure. If one of them falls behind, the entire industry is late.**

Throwing money at the industry won't hurt, but it will take time. Wafer Fab Equipment—WFE—is extraordinarily complex. For the most part, it is at the forefront of particle physics and advanced material science. Mastering Deep Ultra Violet lithography, Gates All Around Transistors or Atomic Layer Deposition, is akin to the challenges of the nuclear arms race. The power and ownership of artificial intelligence is at stake. **There will be plenty of intermediate edge fabs built in the next few years, but we shouldn't expect new ultra-leading edge fabs—5-2 nanometers—any faster than we should expect new nuclear power plants.** It's very hard, expensive and political.

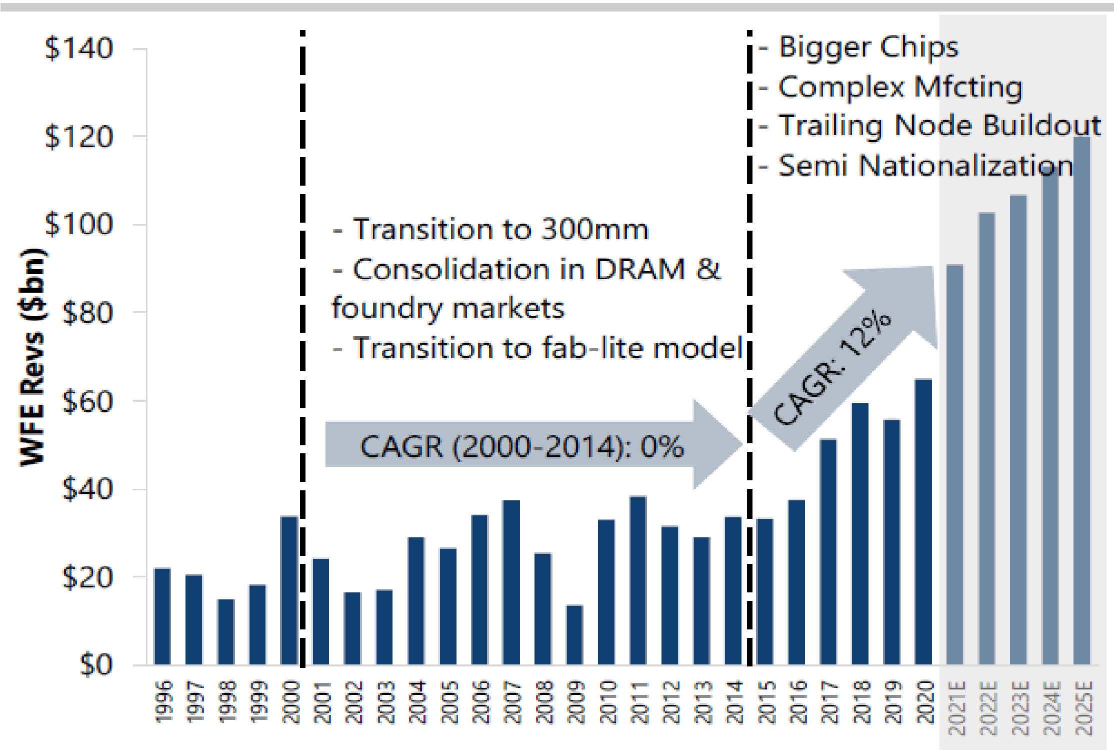
In the near term, **while there is ample evidence of double/triple ordering and egregious book/bill ratios in the channel, there is also extraordinary discipline at the fab level.** Texas Instrument is reported to have required proof of real billings before putting distribution customers on allocation. **We should expect two more years of semiconductor price gouging.**

Enter the subsidies.

Aggregate global semiconductor manufacturer capex plans announced so far add up to $109b per year until 2032, of which government incentives already approved add up to $84b (Source: Jefferies). **Semiconductor nationalization is a mega trend which is likely to last far beyond the decade.**

This sector remains our biggest overweight.

Semis are the new oil; equipment makers are the drill bit



Source : Jefferies

Mandelbrot

At high altitude or in the weeds, zoom in, zoom out, the picture stays the same. **Trend acceleration is commonplace; it's not a tech or innovation privilege.**

In 2020, we were quick to see how the Covid pandemic accelerated the technological and energy future, but we were focused on the good news. We brushed aside how the more problematic trends in the economy might get accelerated as well.

Digital transformation, eCommerce, Cryptocurrencies, ESG investing, these are the popular stories of the recovery. But resource scarcity, broken supply chains, economic balkanization,

territorial tensions, climate change and polarized politics are the collateral damage of the same Disruption. They are increasingly interdependent, intensifying, and accelerating.

Imbalances that were years in the making are at their tipping points, with real economic relevance, especially when they are inflationary. The brutal January correction serves as a reminder that technology disruption provokes policy choices and disrupts political power.

- **Broken supply chains** have yet to improve. Industrial onshoring is expensive, inflationary, and mostly in planning stages. Two years into the pandemic, European and US imports from China are at record highs, with few solutions other than automation and robotics.
- **Energy security** is at a crisis point. Decarbonization and ESG mandates have given OPEC+ the upper hand in energy markets, especially Russia, holding Europe and Asia to ransom, awakening dormant territorial claims. Hydrogen, offshore wind and nuclear are 10 years away from building independence.
- **Semiconductor shortages** are increasingly structural. The Digital Age needs chips like the Industrial Age needed oil. 80% of chips are made in Asia, and Taiwan alone has become the epicenter of high-performance semiconductors, especially for AI.
- **The US, Europe and China are decoupling**. The US are overheating, Europe is only just getting warm, while China is clearly cooling. Conflicting policy needs risk policy mistake.
- **Policy mistake risk.** The Fed and the ECB have inherited—and supported—inflated monetarist economies. With inflation ramping, they face a policy dilemma: stoke interest rate fear to restore credibility without raising rates above inflation, or stick to gradualism to avoid the pain and a risk a recession.
- **Wage earners are quitting in record numbers and asking for more pay.** Bloomberg News reported that blue collar workers are migrating en masse to service sector jobs with flexible hours and locations. The US oil patch is booming with the oil price recovery, but there are no rig workers to hire.

When innovation is slowed down or limited by policy or trade barriers, this inflationary impact to growth can be high and costly. **An industrial, semiconductor and energy capex boom has begun to address these pressure points, but an inflationary transition is inevitable, and central bank uncertainty means valuation matters now more than ever.**

This brings us to revisit the Growth-Value debate to explain how we invest.

Value meets price

Value is a principle; price is a reality. In the stock market, prices change fast; in the mind of investors, value evolves gradually, morphing from one paradigm to the next. **It takes two to settle on price; it takes a community of shared beliefs to agree on value.** The bigger the community, the greater the impact of its value narrative and its impact on prices. **Growth and Value investing are communities, churches filled with faithful.**

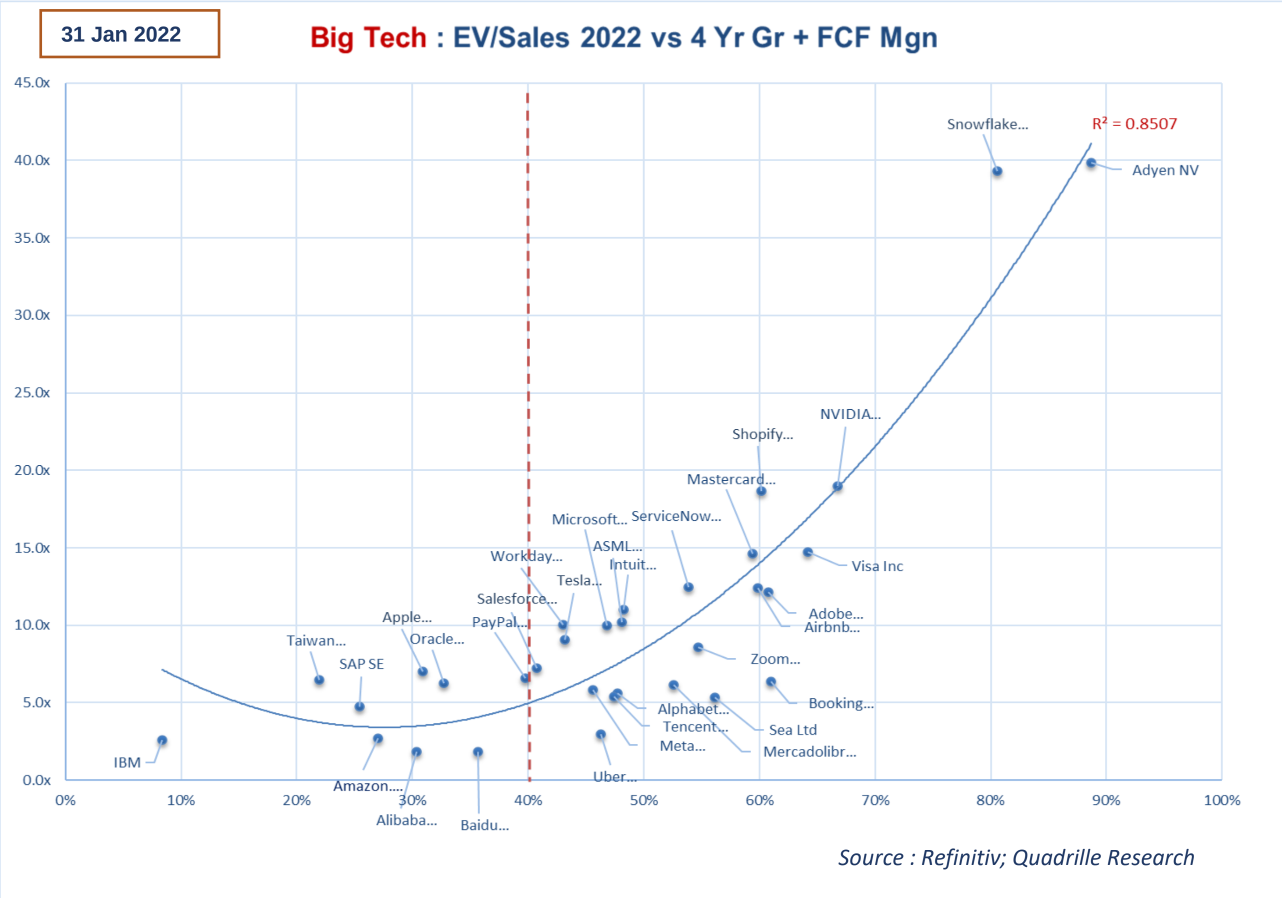
Value stocks have reliable near term cashflows with questionable longer term sustainability, while Growth companies often invest more than they earn to build market share that should lead to large cash flows in a more distant future. Value stocks attract bargain hunters and skeptics ; growth stocks attract visionaries and optimists. They rarely meet. Successful growth stocks are never cheap to the value investor; if and when they do, they are considered ex-growth by the Growth investor.

Value stocks rarely return to growth because they need to radically restructure their assets and R&D, and reinvent their corporate culture. They need to sacrifice their cash cows and bet heavily on the future.

We are growth investors and we are optimists, but our church is open to all faiths. Indeed, the way we see it, both sets of companies should be valued with the same yardstick: how fast are they growing AND how much cash flow can they generate.

Today's growth companies are managed like start-ups for as long as investors will take it, and the success of Amazon, Netflix and Tesla running on deficits for 10-15 years before turning a profit at a dominant scale encourages the speed paradigm. **Our valuation metrics are derived from early stage investing, when a company's ability to grow exponentially, to sustain an acceleration for as long as possible, and to achieve market dominance as fast as possible.**

We grade companies on their ability to both grow and be profitable.



The value of 40

We measure companies on the ratio between price (Y axis: Enterprise Value) and the combination of their growth rate and their medium-term cash generation (X axis: 4 year CAGR + FCF margin in year N+2). We apply the **"Rule of 40"** commonly used by our colleagues in venture capital to determine intrinsically attractive companies, and try to invest in those that score distinctly above 40.

When ranking companies by the sum of their growth rate and FCF margin (x axis), we find that each point above the 40% benchmark is worth exponentially more than the previous increment. The high end of that curve is expensive and volatile.

The core thesis behind this method is that high incremental growth is exponentially more expensive because if it contributes high incremental free cash flow.

At the high end of this profitable growth scale, scarcity value is extremely high, especially with large companies generating revenues above $1b.

We try to invest to the right side of 40, where self-funding growth is of the essence.

In the charts below, comparing valuations of large tech companies in January 2022, we can see that the growth/margin function is rewarding companies with a highly sloping curve. The higher the Rule of 40 score, the more expensive the equity, with a significant premium paid for the highest scores of **Snowflake** and **Adyen**. **Uber** and **Booking** are attractive due to decent Ro40 scores at a valuation discount which can be explained by the uncertainty of the travel recovery; we own Uber and are monitoring Booking. **MercadoLibre** and **Sea Ltd** are also "cheap", this time due to their emerging market profiles. Interestingly, **Tesla** appears fairly valued among large cap peers.

By these calculations, the stock market continues to value companies appropriately. There are opportunities but no mad inconsistencies.

Performance Update & Portfolio Outlook

Jan 2022 opened with a crash of sorts. For Nasdaq watchers it may have looked like a minor skirmish, but for trench soldiers like us the front line tells a story of many casualties. Below the mega cap resistance lurk a 40%+ correction on 50% of Nasdaq member stocks (BoA data, 31 Jan 2022). The US inflation data and interest rate scare are blamed for the damage, but to be fair, the issue had been with us throughout 2021.

For 10 years, Growth had the upper hand. The SP500 Growth Index rose +499% from 31 Jan 2009 to 31 Jan 2022, while the SP500 Value Index rose "only" 218%, but from Jan 31, 2021 to Jan 31, 2022, despite a lot of hype on Value trouncing Growth, both paradigms delivered fairly close returns: +16.4% for Growth and 19.4% for Value.

Growth vs Value trailing 12 months returns look quite similar

Looking out to the rest of 2022, with our valuation framework in mind, we are not worried that rising interest rates might significantly alter the value of high incremental and profitable growth. In fact, **we think the ongoing cyclical shake out will sort out the wheat from the shaft, truly profitable self-funded growth from capital market funded land grabs.**

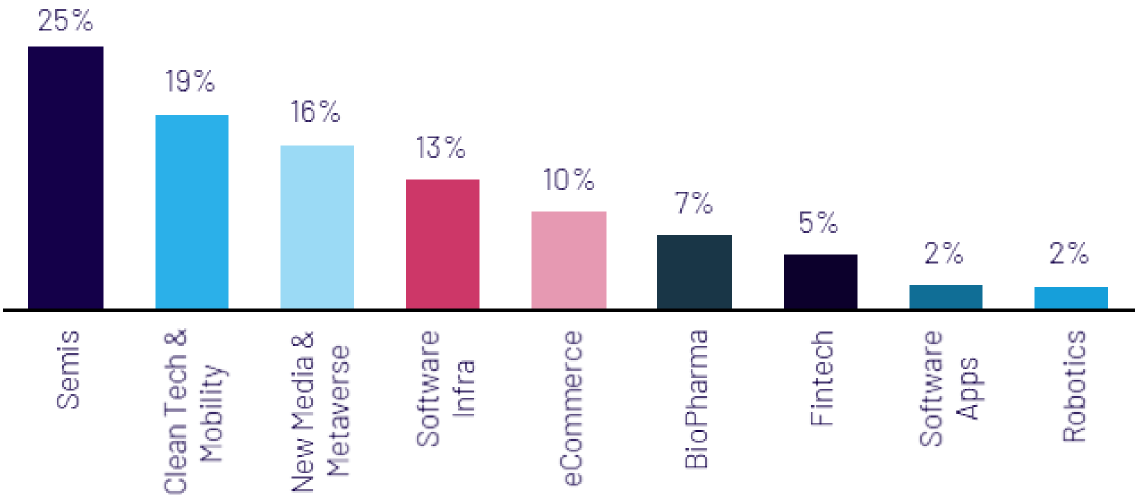
DF continues to invest across several themes of Tech, Clean Tech and Biotech.

Our top themes in 2022 remain familiar:

- Semiconductor arms race
- Clean tech and decarbonization
- Metaverse and avatar consumer
- Cyber security
- Gene medicine

With the Fed and ECB intent on containing inflation, we are monitoring macro data for signs of a slowdown, but for now, the more industrial among our sectors, namely Semis and CleanTech, are scrambling, with excess demand still outstripping supply. We are more cautious on consumer spending as pandemic support subsides, even though employment figures remain extremely strong suggesting a return of the service economy, especially travel. **In short, we favour capex over consumption.**

Portfolio sector allocations as of 31 Jan 2022



The January earnings season so far has been strong, with impressive growth at bellwethers **Microsoft, Apple, Alphabet** and **Tesla**. In Cloud software services, **ServiceNow**, **Qualtrics** and **Atlassian** also delivered impressive growth and robust outlooks. Even **Visa** and **Mastercard** showed impressive resilience to the Omicron travel slowdown. Disappointingly, the semiconductor capital equipment industry is suffering from its own semiconductor shortages, leading to some production challenges, but the backlogs are a record highs and keep growing; **Advanced Micro Devices** blew right through the most bullish estimates, and both **TSMC** and **Intel** raised the bar again for capex. There are lingering eCommerce slowdown worries, exacerbated by the very poor **PayPal** guidance, but **Amazon**'s retail division is now modeled to grow 3-4% in 2022, pretty much in line with US total retail. The private savings pool remains deep; we see more of a year-on-year comp challenge than real consumer spending weakness. **The real disappointments we have seen so far in 2022 are mostly due to the ongoing supply chain issues and labor tightness.** We tread carefully as this is pressuring margins in the physical economy.

We continue to anticipate a capex intensive 2022 across Clean Tech, Cloud related Software and Semis, while anticipating a consumer slowdown.

Invisible Tech : Cloud, Infrastructure Software & Semis

At the center of the Cloud and its fast growing Metaverse is our group of "invisible tech" companies. Cloud infrastructure remains the heart of the digital economy and **2022 will be a monster year for both semiconductor and data center capex**, driven by manufacturing nationalisation and data independence. We see h**yperscale deployments** by the US Big 4 cloud providers reaching **$140b+ in 2022 capex,** up 117% since pre-Covid 2019, and a Semiconductor industry capex boom modelled at $100b+/year for the next 10 years.

Cybersecurity remains the top priority in CIO/CTO surveys of late 2021, yet with few reliable investment opportunities. The emergence of Crowdstrike, Sentinel One and Zscaler alongside Palo Alto and Fortinet, as well as Okta, Cloudflare, Fastly and Akamai suggests the opportunity is finally uncoupling from IT Service VARs and consultants, creating valuable brands and direct sales reach. We own **SentinelOne** and **PaloAlto Networks** and believe the latter will sustain its ongoing rerating to a leadership multiple. Our investments in the "invisible" Cloud continue unabated.

Infrastructure blockchain leader **Ethereum** remains in the portfolio.

DF owns Semis, Cloud Infrastructure Software and Services, grouped here across all verticals:

- Cloud : ***SentinelOne, Palo Alto Networks, Microsoft, Splunk***
- Semis: ***ASML, SOITEC, AMD, Lam Research, KLA Corp, Intel, Global Foundries***
- Watch list Semis: ***Nvidia, STM, NXP Semi, Broadcom, Wolfspeed, Texas Instruments, Qualcomm, Analog Devices, Aehr Systems, BE Semi, Applied Materials, Teradyne***
- Watch list Cloud: ***Okta, CrowdStrike, Cloudflare, Zscaler, Agora, Elastic, MongoDB, CyberArk, Wallix, Tenable, Rapid7, DataDog, New Relic, Dynatrace, Fastly***
- Private company watch: ***Databricks***

Visible Tech: Fintech

We continue to believe that **digital wallets are like social networks.** Every new user bring an exponential increase in possible P2P transactions, and better still, they are instantly monetizable from day one with trading.

2021 however, has been a disappointment for Fintech. Despite having all the individual parts on hand, **PayPal** seems to have failed to convert their users to a "super app" bringing together universal wallet features such as payments, stock trading, crypto and BNPL. The reported interest in buying Pinterest struck us as an alarm bell and we exited the stock. Rival payment platform **Square (renamed Block)** seemed to have a better grasp of the opportunity for universal wallet and SMB payment platforms but we have grown weary of Jack Dorsey's obsession with Bitcoin, his renaming of the company to Block, and the missed opportunity to catch consumer wallet leader **Revolut**. We are big believers in the crypto revolution but we expect Bitcoin to become marginalised for its lack of scalabilty, speed and programmability; bringing the entire management team of Square to focus on Bitcoin is a mistake.

Our biggest pure play conviction in Fintech is now **Wise plc**, the UK based cross border payments platform and wallet app. We note its super-efficient cross border payment system with API integrations across all major currencies and a fast growing number of emerging markets. Fees are the lowest in the space, and both SMEs and young consumers have begun adopting it as an everyday payment wallet. The ever elusive but still hoped for post-Covid reopening should boost cross border travel and Wise consumer volumes.

We continue to watch **Coinbase** which, despite high fees, remains the most politically agile and regulatorily "clean" provider of crypto service. Anecdotal evidence suggests large institutional investors have begun trading crypto assets and derivatives, and we expect Coinbase to emerge as the leading broker in the field.

The payment space has been frustrating lately, with PayPal's poor performance hurting the comps including Wise. We think some key players need to come public in order to bring more options to listed investors. In particular we await the IPOs of **Klarna, Stripe** and **Revolut.**

We've discussed at length our interest in the crypto ecosystem, and our belief that Ethereum remains the pre-eminent blockchain for both DeFi and NFTs. We continue to hold Ether via a Frankfurt listed ETN.

DF has a temporarily reduced exposure to Fintech:

- ***Wise plc, VanEck Bitcoin ETN***
- ***Amazon/AWS*** and ***Microsoft/Azure*** as sellers of crypto blockchain runtime capacity
- Watch list : ***Silvergate Capital, Signature Bank, Square/Block, Coinbase, PayPal, Equonex***
- Private company watch list : ***Kraken, Binance, FTX***

Visible Tech: eCommerce, Apps and the Metaverse

e-Commerce continues to face difficult comps vs the pandemic surge. Among the challenges is the supply chain crisis. Onshoring takes time, but it is in motion. As discussed earlier, we believe Industry 4.0 is on the march, with a particular focus on Automobiles, Transportation and Logistics. Politics plays a role, with subsidies coming to manufacturing in Semis, Green Energy, and Autos. IoT and additive manufacturing (3D printing), machine floor robotics and supply chain software play a role. We own **Stratasys**, world leader in 3D printing for polymers.

DF attempts to own digital app companies that have the ambition, the product and the ability to become super apps, possibly new mega-tech companies. Among them we have long listed **Square/Block, Paypal, Uber, Airbnb,** and **Zillow.**

2021 was a tough year for this list!

Square/Block & **PayPal** seem to have missed the opportunity near term to become super apps, we are baffled by the lost opportunities. **Zillow** had to pull back from algorhythmic home buying, a surprise to us considering the strength of their real estate data base; perhaps this is best done by the large banks. **Airbnb** managed the year best, boosted by the Work From Anywhere trend; they remain the pre-eminent non-hotel travel app. **Booking** and **Uber** are side-lining but have significant recovery potential from true reopening. **HelloFresh** also has super-app potential in the increasingly crowded fresh food delivery space; we find their subscription model and logistics to be leagues ahead of the start-up competition and expect a consolidation wave in 2022.

Digital living took a breather lately as people showed a desire to live outside again, but the convenience of eCommerce, the addiction to social media and the excitement of metaverse experiences suggest to us that the pandemic acceleration provided market share gains that are here to stay. We continue to own **Snap** despite the selloff as we see it a unique asset in the teen cohort with extraordinary stickiness: the only social media app alongside YouTube to have shown q/q download growth in 4Q21. We continue to own **Ubisoft**, recently boosted by the M&A of **Microsoft/Activision** and **Sony/Bungie;** M&A is targeting AAA libraries to migrate into metaverse properties and Play-to-Earn models; we are also watching smaller European studios like **CD Projekt, Stillfront** and **Embracer**.

We added **Netflix** after they lowered net subscriber addition targets, normalising their post-pandemic growth rate to an easy 12% 4-year outlook; they remain the most innovative content creators with cross-border relevance. We also expect them to enter the gaming space with an acquisition.

DF owns eCommerce, TaaS/eLogistics and Metaverse plays to capture some of the largest TAMs. Subscription and advertising based New Media also features here.

- ***Amazon, Meta, Uber, HelloFresh, Alphabet, Netflix, Ubisoft, Snap***

- Watch list eCommerce/TaaS/eLogistics : ***Adyen, PayPal, Square/Block, Shopify, Mercadolibre, Sea Ltd, Ocado, JD.com, Zillow, Redfin, Opendoor, Delivery Hero, Zur Rose, Jumia, Lightspeed Commerce, Bill.com, BigCommerce, Coupa, Global-E***
- Watch list New Media: ***Trade Desk, CD Projekt, Paradox, Roku, Stillfront, Adobe, Zoom Video, Kahoot!, Chegg, Asana, Pinterest, Salesforce***
- Private company watch***: JobandTalent, Rex Home***

Clean Tech & Mobility

As discussed earlier we are active investors in electrification technologies, across Electric Vehicles, Grid dispatching software, electricity inverters and battery storage tech.

Alongside **Tesla**, we alternatively own Chinese EV leaders **Nio** and **X-Pheng** ; Nio is uniquely innovative with their Battery-as-a-Service, offering car owners a membership service for battery replacement, not only for fast charging but for future upgrades as battery tech evolves. X-Pheng is a low cost leader with a very impressive manufacturing track record. We also follow **Polestar**, the performance EV brand co-owned by Geely and Volvo Cars; they are on course for a merger with the Gores Guggenheim SPAC. The high volatility of the last 6 weeks has prompted us to reduce holdings in Nio and X-Pheng as well as the Gores/Polestar SPAC. But we continue follow them closely; we increased our holdings in Tesla instead.

Alfen is the leading charging station owner and operator in Benelux, with service starting in Germany and France. They also operate an electricity load balancing software service, similar to their US counterpart **Stem** which we own as well. **Enphase** is a world leading manufacturer of electric current inverters critical to the charging and discharging of stationary batteries; they also sell complete home battery systems, competing successfully with Tesla’s Powerwall; they recently reported re-accelerating growth; we sold our holdings in late 2021 but expect to return once we get evidence of an improved manufacturing supply chain out of Malaysia.

Environmental sustainability remains a dominant narrative for consumer products and brands. One of the fastest ways to impact this transition is sustainable packaging. **We remain investors in** French chemical engineering **Carbios** who have developed an enzymatic biodegration of several plastic polymer chains, notably PLA and PET. Carbios recently hired a new CEO, formerly head of Michelin’s Auto division, with a great track record of negotiating large OEM contracts; in this case targeting the integrated and independent petro-chem refiners. The demonstrator plant capable of processing 40,000 liters of polymers for mega brands to test volume production. As a reminder, l’Oréal’s Biotherm brand recently announced the launch of the « bottle of the future ». The two brands have created a bottle (« Waterlover ») made of from 100% bio-recycled plastic produced through Carbios' unique enzymatic bio-recycling process. Biotherm anticipates mass production of bottles in 2025. DF participated in an equity raise for Carbios in May 2021.

Given the inflation trends we also decided to add some exposure to natural resources. First we added **Albemarle**, the second largest lithium miner in the world. Second, we added **Schlumberger**, the global leader in energy services, who have launched a series of decarbonization practices for energy producers and heavy industry such as steel and cement; they have also launched Genvia, a solid oxide fully reversible electrolyzer/fuel cell system for clean hydrogen. With these additions we remain invested in the EV and hydrogen sectors while paying attention to strong free cash flow generation. We continue to watch **Plug Power** and will revisit once the interest rate outlook stabilizes.

DF owns EV, Hydrogen and Clean Tech companies:

- ***Tesla, X-Pheng, Alfen, Stem Energy, Carbios, Schlumberger, Albemarle***
- Watch list: ***Enphase Energy, Solar Edge, Sunrun, Sunnova, First Solar, ReneSola, Plug Power, Ballard Power, Fuel Cell Energy, Bloom Energy, Ceres Power, Doosan Fuel Cell, ITM Power, Nio, Li Auto, Niu, Polestar (Gores Guggenheim SPAC), CATL, Blink Charging, ChargePoint, STMicro, Wolfspeed, Lucid Motors, Rivian, Volvo, Volkswagen, Geely, LG Chem, Joby Aviation, eHang***

Life Sciences and Gene Medicine

Since inception, we have been investors and supporters of the **CRISPR Cas9 revolution in gene editing.** During the 4th quarter 2021 several related companies reported challenges in clinical tests. As reported previously, **Allogene Therapeutics** announced that the FDA had placed a clinical hold all of its allogeneic CAR-T programs due to some uncertainty around possible off target gene editing (chromosomal translocation); Allogene uses French company Cellectis's TALEN technology, putting their own pipeline in question as well. Another company, **Sangamo Therapeutics**, reported clinical challenges as well using its zing finger technology, and this month partner Sanofi dropped out of their sickle cell disease partnership. It has been a challenging time for Biotech throughout 2021.

As reported in our last review, while gene editing has so far shown high efficacy, the manufacturing of allogenic CAR-Ts is a challenge as it scales up. We expect the FDA to set a high bar.

Last Oct, lymphoma results from **CRISPR Therapeutics** (held in DF) also led to interpretations of chromosomal alterations. CRISPR said up to 1% of a patient's cells have a translocation at editing sites. The FDA didn't place CRISPR's program on hold but the stock and the group still haven't recovered. Meanwhile, the sickle cell program has now enrolled 70+ patients and is expected to be approved by the FDA by the end of 2022. With $2.4b in cash representing about 50% of their market cap, we find **CRSP's enterprise value to be trading at about 2.5x the estimated revenue of their sickle cell treatment alone.** We have noted M&A transactions in the space at 6-8x EV/peak sales. We think CRSP is uniquely undervalued.

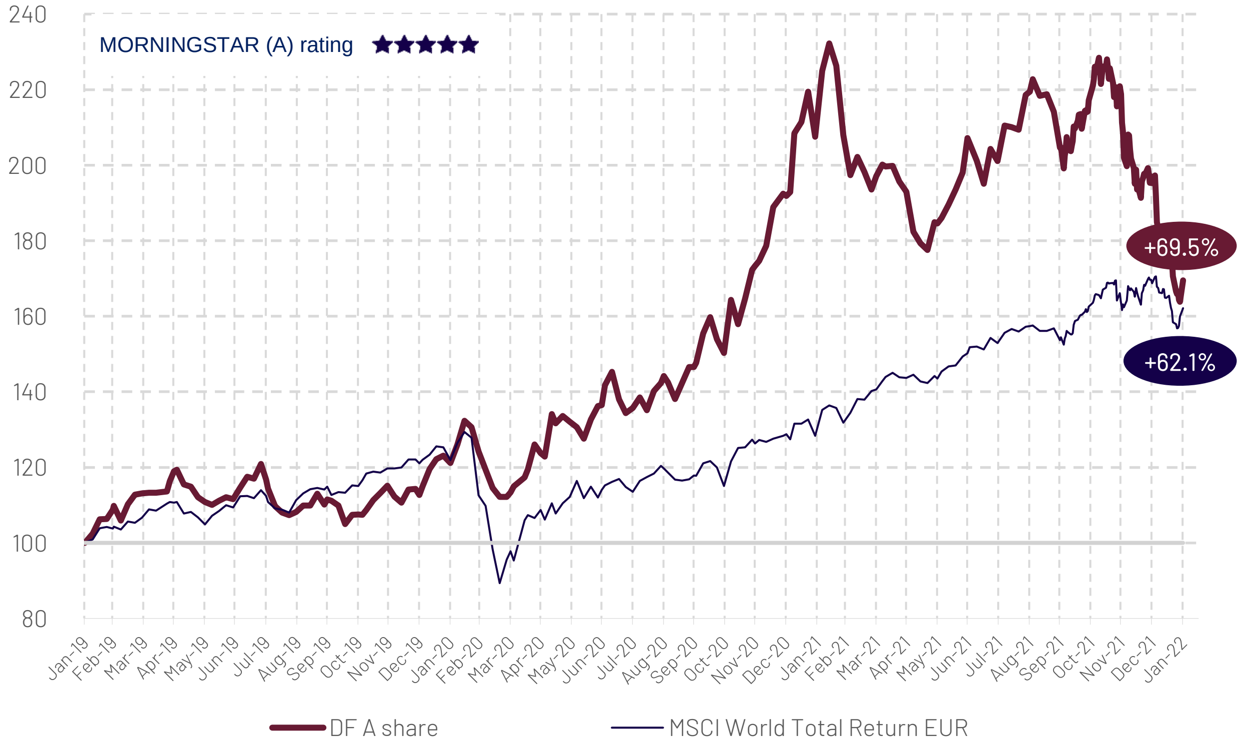
Finally, we are also investors in **BioNTech**, the mRNA pioneer who, alongside **Moderna**, developed the biggest selling and most efficacious Covid vaccine. There is endless debate as to the likelihood of seeing the Covid crisis evolving from pandemic to endemic; still we model that approximately 25% of the existing vaccinated population will seek to renew annual inoculations for 5 more years, suggesting a cumulative free cash flow of €25b, or approx. 65% of current market cap. Some analysts have modelled a 50% recurring vaccination rate for 10 years, suggesting the equity value is trading at 1x cash 2024. Whatever the net cash value, it's larger than any other biotech company. We think both BioNTech and Moderna have near unlimited and self-funded R&D for the next 10 years, with a fair probability of success in antivirals and even cancer vaccines.

DF owns CRISPR and AI driven molecular research companies:

- ***CRISPR Therapeutics, Intellia, BioNTech, Evelo Bio***
- Watch list: ***Moderna, Iovance, Illumina, Pacific Bio, 10X Genomics, ToolGen, Cellectis, Thermo Fisher, Exact Sciences, Adaptive Bio, Natera, Accelerate Diagnostics, T2 Bio, Exagen, Beam, C4 Therapeutics, Invitae, Arvinas, Caribou Bio, Graphite Bio***

Disruption Fund Performance

	YTD 31/01/22	Since 31/01/19
Disruption Fund (A share)	-13.2%	+69.5%
MSCI World Total Return EUR	-3.92%	+62.1%



Note: Data range = 31/01/2019 → 31/01/2022. Jan 31, 2019 marks the start of the new fund management team, including name change and new prospectus. Past performance is not indicative of future returns. Please consult your investment advisor for suitability. NAV performance shown here is for A-shares, net of fees.

As of Jan 31, 2022, the top equity positions of the Disruption Fund were as follows:

- *Tesla Inc* 4.05%
- *ASML Holding N.V* 3.84%
- *Palo Alto Networks Inc* 3.73%
- *Schlumberger Ltd* 3.38%
- *Airbnb Inc* 3.33%
- *Advanced Micro Devices* 3.30%
- *Ubisoft Entertainment* 3.28%
- *Albemarle Corp* 3.18%
- *Intel Corp* 3.17%
- *Splunk Inc* 3.13%
- *HelloFresh SE* 3.05%
- *ASM International N.V.* 2.93%
- *CRISPR Therapeutics AG* 2.76%
- *Wise plc* 2.68%
- *Lam Research Corp* 2.55%
- *Alphabet Inc* 2.54%
- *KLA Corp* 2.53%
- *Meta Platform Inc* 2.48%
- *Netflix Inc* 2.46%
- *SOITEC SA* 2.46%
- *Alfen N.V* 2.45%
- *Snap Inc* 2.35%
- *SentinelOne Inc* 2.26%
- *Uber Technologies Inc.* 2.16%
- *Carbios SACA* 2.08%
- *VanEck Ethereum ETN* 2.08%
- *Stratasys Ltd* 2.06%
- *Amazon.com Inc* 2.05%
- *Intellia Therapeutics Inc* 2.05%
- *Microsoft Corp* 2.02%
- *GlobalFoundries Inc* 1.78%
- *Believe SA* 1.05%
- *BioNTech SE* 0.97%
- *Stem Inc* 0.89%
- *Xpeng Inc* 0.76%
- *Evelo Biosciences Inc* 0.68%

We hope you find our letter useful and look forward to continuing this discussion.

Jean-Edwin Rhea – 31 Jan 2022

Legal Information:

Disruption Fund is a French UCITS, (A share: FR0012770154 / B share: FR0012770162) invested primarily in global equities, with a recommended holding period of 5 years. Broadly speaking, the Fund seeks to invest in innovative technology businesses. More specifically, the fund seeks out sectors and companies undergoing structural or technological disruption. The fund manager seeks leading disruptive companies, growing fast, with visionary management teams. All historical data provided is for A-shares, currently closed to new investors.

This information letter is not contractually binding, and the formulated assessments reflect our opinion on the publication date and consequently are likely to be revised later. Reference to certain securities and financial instruments is for illustrative purposes to highlight stocks that are or have been included in the portfolios of Disruption Fund. This is not intended to promote direct investment in those instruments and does not constitute investment advice nor an offer to invest or subscribe in any asset or funds. The portfolio of Disruption Fund may change without prior notice. Past performance is not a reliable indicator of future performance. Performances are net of fees where applicable. Investors may lose some or all of their capital, as the capital in Disruption Fund is not guaranteed.

The MSCI World Net Total Return Euro Index (Bloomberg : MSDEWIN) is calculated net dividends reinvested and is published by MSCI.