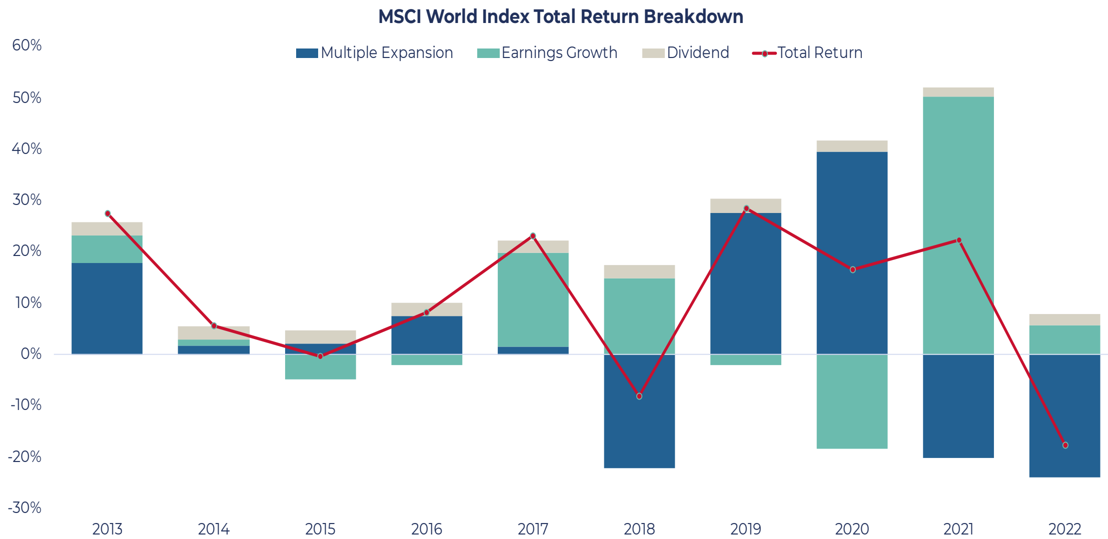
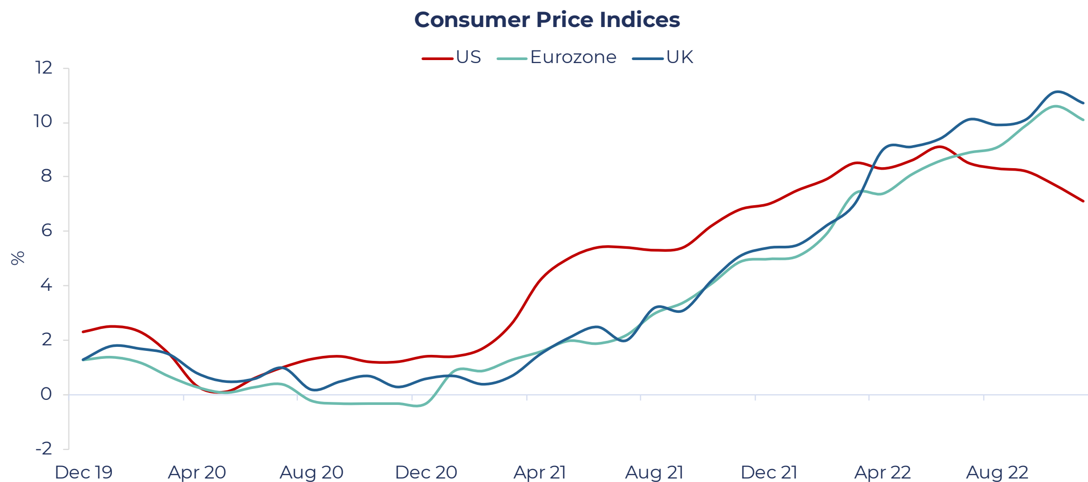
2022 – Market Overview

Equity markets experienced some of their weakest returns since 2008, as central banks began a period of monetary tightening measures to battle decade-high inflation rates, Russia invaded Ukraine sparking an energy crisis in Europe, supply chains bottlenecks persisted, and China's zero-COVID policy slashed global growth prospects. Subsequently, the MSCI World Net Return Index ended 2022 down 17.7% (in USD), with multiple contraction the primary driver - a continuation from 2021. And while markets were buoyed by robust earnings growth in 2021, this was not the case for 2022 as investors found themselves in a substantially lower growth environment with potential recessions on the horizon.



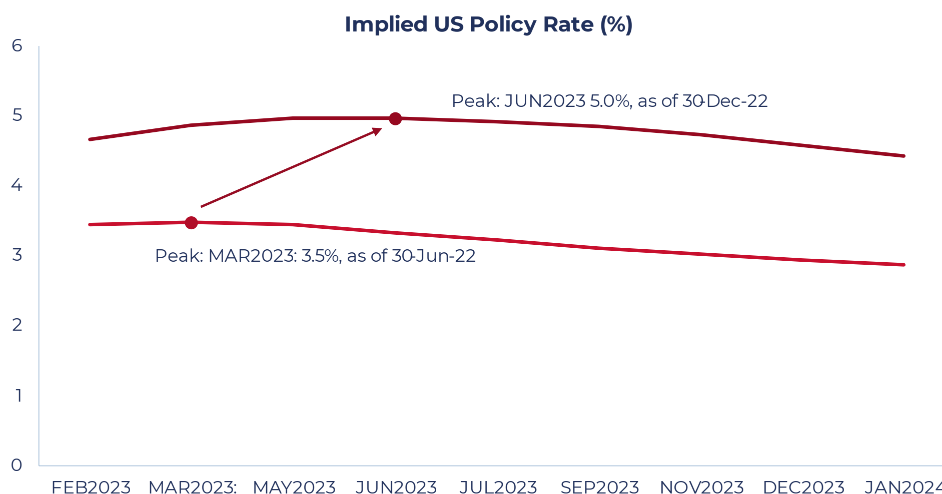
Source: Bloomberg, data as of December 31st 2022

Over the course of 2022, inflation rates across the US, Europe and the UK hit multi-decade highs, after businesses and consumers battled supply chain bottlenecks and an energy crisis in Europe – both exacerbated by Russia's invasion of Ukraine.



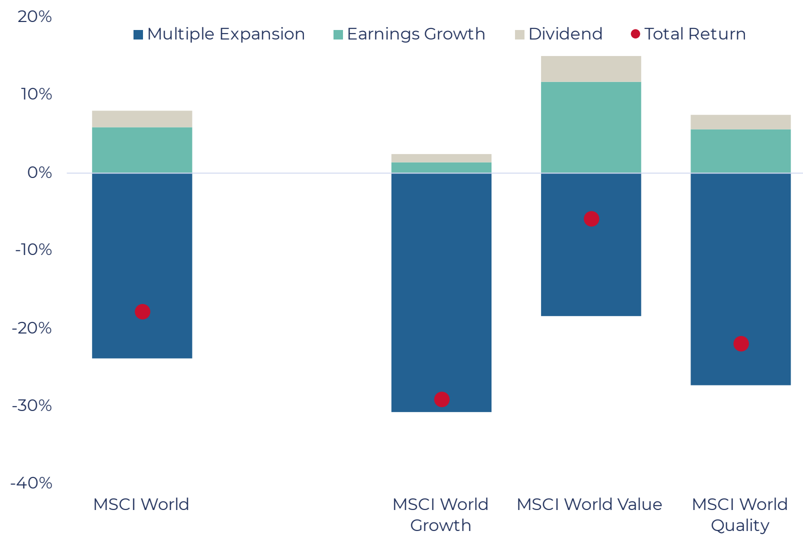
Source: Bloomberg, data as of December 31st 2022

In response to this 'persistent' inflation, developed market central banks began tightening and set course for the fastest rate-hiking cycle on record. Indeed, beginning in March 2022, the US Fed raised rates in each of the 7 Federal Open Market Committee (FOMC) meetings bringing the target rate to its highest level in 15 years at 4.5%. In many cases the expected trajectory of future rates – which changed rapidly over the course of the year as conflicting economic data points were released - and investors' evolving predictions of those rates drove volatile markets. Below we look at option implied market expectation for the US Fed's future interest rate path at different points in time. Investor's expectations for the FED policy rate changed dramatically over the year, with expectations on the 30th of June that rates would peak in March 2023 at 3.5% before the FED would begin cutting. By year-end, investors expected both a higher and later peak, as seen in the chart below, with markets forecasting the FED would raise rates to a peak of 5% in May 2023.



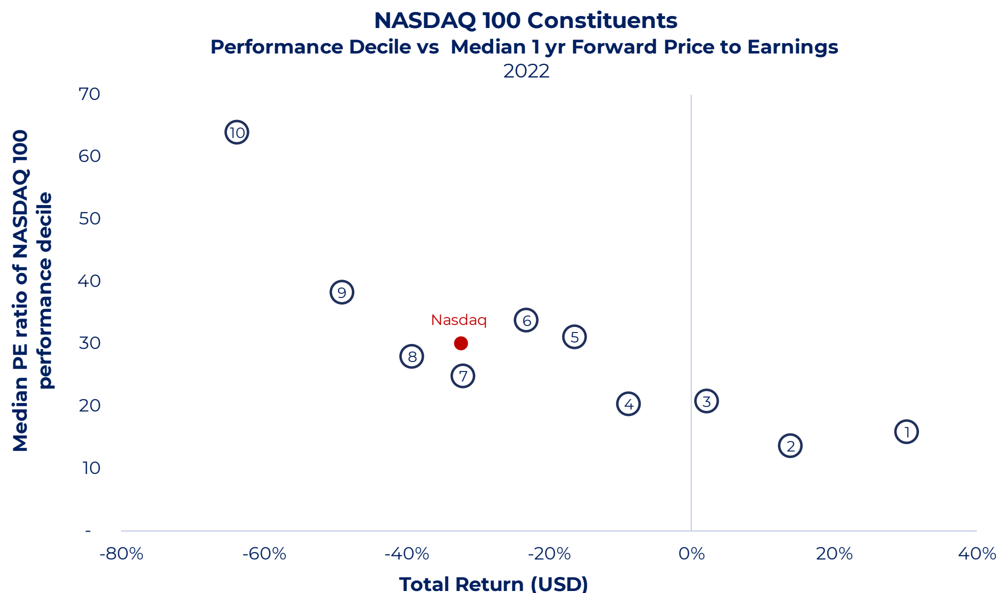
Source: Bloomberg, data as of December 31st 2022

With interest rates (and interest rate expectations) on the rise, growth companies – those whose cash flows are more heavily weighted towards the future – were hit the hardest. The MSCI World Growth index underperformed the MSCI World Value index by 22.7% (USD) over the year. Valuations were downgraded significantly, with the MSCI World Growth Index 1-year forward price-earnings ratio falling from 31x to 21x – a fall of 32%.



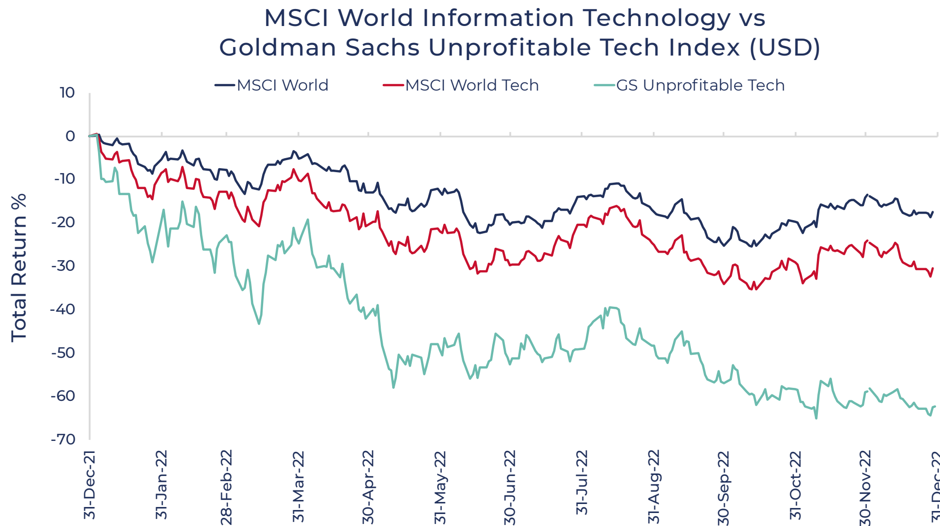
Source: Bloomberg, data as of December 31st 2022

As the perceived chances of a 'soft landing' decreased, and as equity analysts downgraded earnings forecasts, the prospect of a lower growth environment saw a rotation towards more defensive areas of the market, as well those of higher quality stocks. A divergence in performance opened up between lower quality, 'speculative' stocks with more extreme valuations and 'quality growth' stocks, where current valuations place lower weight on future growth prospects. The bottom performing decile (labeled 10 in the chart below) in the Nasdaq 100 - which is regarded as a more growth/tech orientated index - over the period in question was the highest valued (median) by far, on a 1 year forward P/E basis. This suggests more speculative stocks with more 'extreme' valuations, underperforming. On the other hand, the two best performing deciles (labeled 1 and 2) were some of the cheapest on a forward P/E basis.



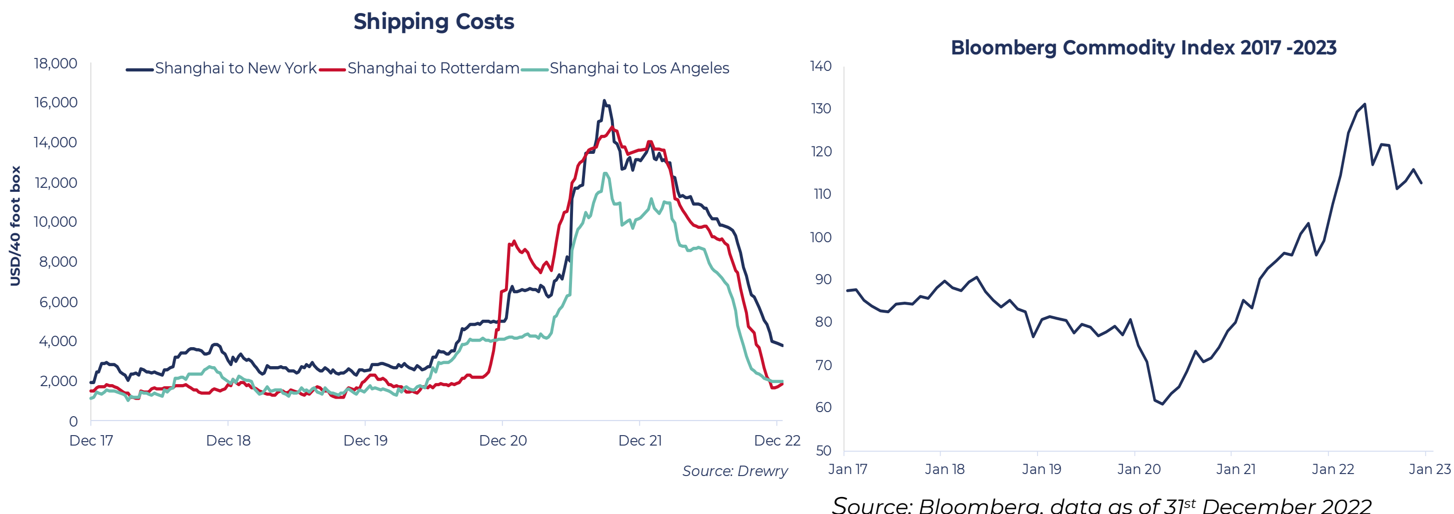
Source: Bloomberg, data as of December 31st 2022

The Goldman Sachs Unprofitable Tech Index tells a similar story. The index, which is made up of a basket of unprofitable tech companies, significantly underperformed the broader MSCI Technology Index over the same period. These companies were typically the more speculative stocks with "frothier" valuations, with most (if not all) positive cash flows forecast way out into the future. In times of an uncertain macro-economic outlook, particularly one with a potential recession on the horizon, markets tend towards the relative sanctuary of quality stocks with good balance sheets, stable earnings and strong fundamentals – such as those found within the Fund. While the MSCI World Information Technology Index underperformed the MSCI World over the period, it significantly outperformed the Goldman Sachs Unprofitable Tech Index, reflecting the outperformance of higher quality, profitable technology companies.



Source: Bloomberg, data as of December 31st 2022

While inflation remains a headwind across many economies, we believe there is reason to be optimistic that the worst may behind us going into 2023. In the US, inflation has seemingly peaked with many of the inflationary pressures easing including shipping costs and commodity prices.



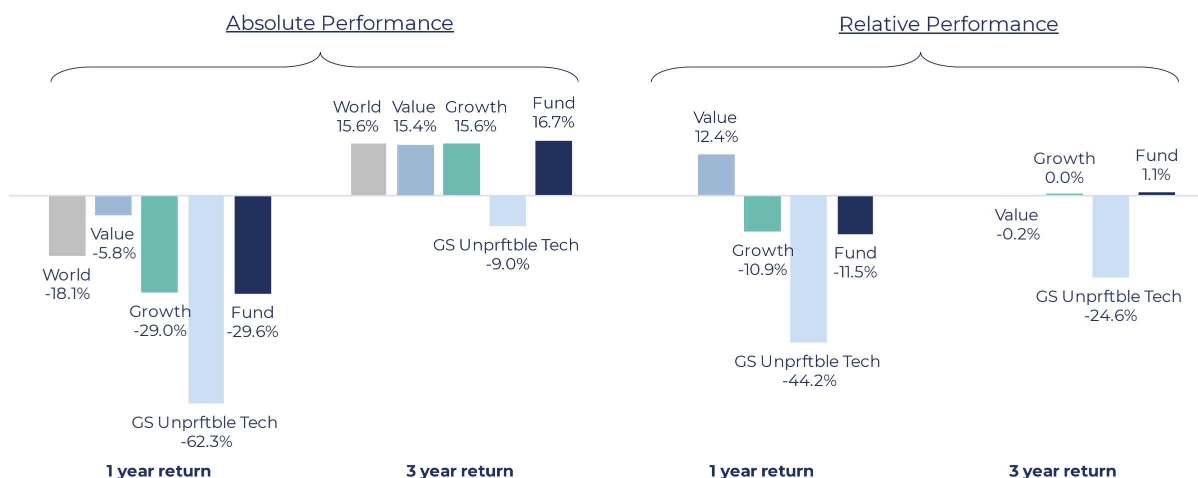
Source: Bloomberg, data as of 31st December 2022

Aside from this, retail sales in the US remain robust (above pre-pandemic levels), unemployment remains low, and the relative strength in the US dollar means the US is not importing inflation. Although Jerome Powell has indicated rate hikes are likely to continue into 2023, there is good reason to believe the pace of hike will slow as inflationary pressures continue to ease – a move which can be expected to be taken positively by equity markets.

Fund performance in review

The outperformance of value was a negative for the Fund, with many holdings' valuations compressed substantially over the year. While the Fund is 'growth' focused, it is important to reiterate the Fund's focus on quality growth as opposed to 'growth for growth's sake'. We focus on businesses with high returns-on-capital that aren't overly leveraged and have real earnings – these are not the cash-burning 'speculative' businesses that have been hardest over the last 2 years. It is also important at this point to distinguish the difference between cyclical and structural growth. If we are to proceed in a low growth environment (and perhaps recessionary), it is even more crucial to be invested in quality businesses that can actually grow throughout the cycle – in other words, have the ability to produce real earnings driven by structural and secular shifts in demand, such as those underpinning the Fund philosophy. The realization that many 'Covid winners' may in fact be short-term winners has been felt hardest in the more speculative end of the growth spectrum.

While the Fund performed relatively in line the with MSCI World Growth Index over the course of 2022, it significantly outperformed stocks at the more 'speculative' end. As recessionary concerns grew throughout the year, markets rotated towards stocks which have actual, positive earnings and can rely on the strength of their balance sheets in more challenging times. With investors preferring the relative sanctuary of these quality stocks – such as those found within the Fund – the Fund was therefore able to significantly outperform areas of the market where earnings were less assured (or non-existent), such as the Goldman Sachs Non-Profitable Tech Index (-62.3% USD).



Source: Bloomberg, data as of December 31st 2022

1 year performance: MSCI World (-18.1%), MSCI World Value (-5.8%), MSCI World Growth (-29.0%), GS Unprofitable Tech (-62.3%), Fund (-29.6%)

5 year performance: MSCI World (34.7%), MSCI World Value (27.4%), MSCI World Growth (45.2%), GS Unprofitable Tech (4.8%) , Fund (32.6%)

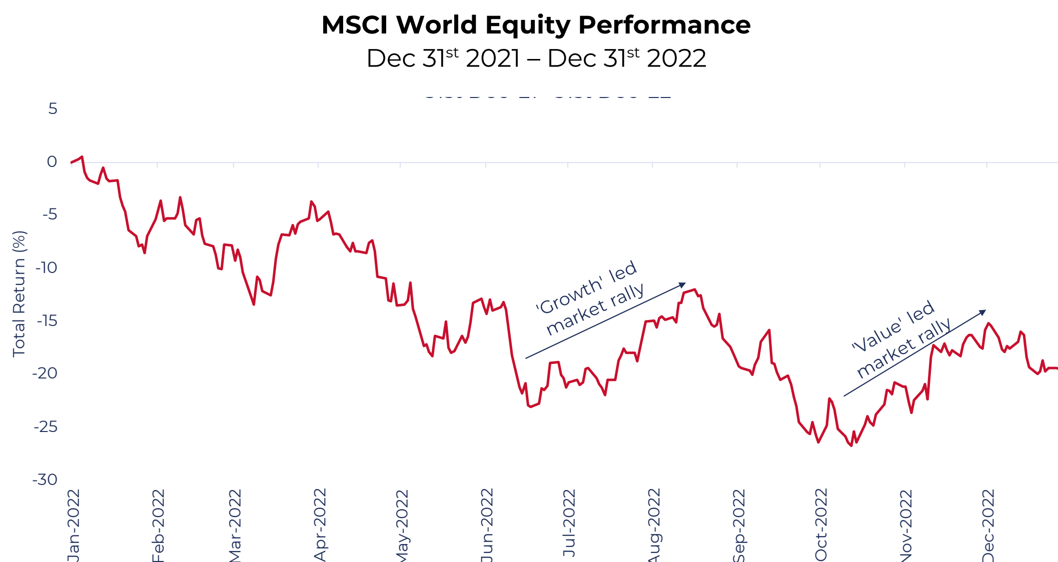
10 year performance: MSCI World (133.6%), MSCI World Value (118.0%), MSCI World Growth (170.2%), GS Unprofitable Tech (index launched in 2014, therefore no 10 year performance available), Fund (210.1%)

These points are illustrated best when looking at Fund performance over a 3-year period. Over the past three years, the world has seen a global pandemic that debilitated supply chains globally, the outbreak of war in Europe sparking an energy crisis, and multi-decade high inflation sparking unprecedented tightening from global central banks. Over this period, the Fund has not only outperformed the MSCI World Index, but the MSCI World Value Index and the MSCI World Growth Index – a period which has seen rotations between growth and value on multiple occasions.

While our high exposure to the IT sector means we are not immune from the potential impact of further rotations away from growth, our investment philosophy has always been to seek out companies delivering profitable growth. In the Fund we continue to apply a 'valuation discipline' to stock selection and monitor carefully the valuation we are ascribing to future growth against that of the current business. We believe the secular growth trends and innovation themes that our companies are exposed to, matched with a quality focus and a valuation tilt, deliver a strong fundamental outlook for our companies. Indeed, we believe there is a good argument for high quality, secular growth stocks in the current market environment, especially in recessionary and/or slower growth periods, as these companies should continue to be able to grow despite the market headwinds and have better fundamental characteristics in terms of margins and balance sheets. The significant de-rating of many of these companies over the past year may provide a better

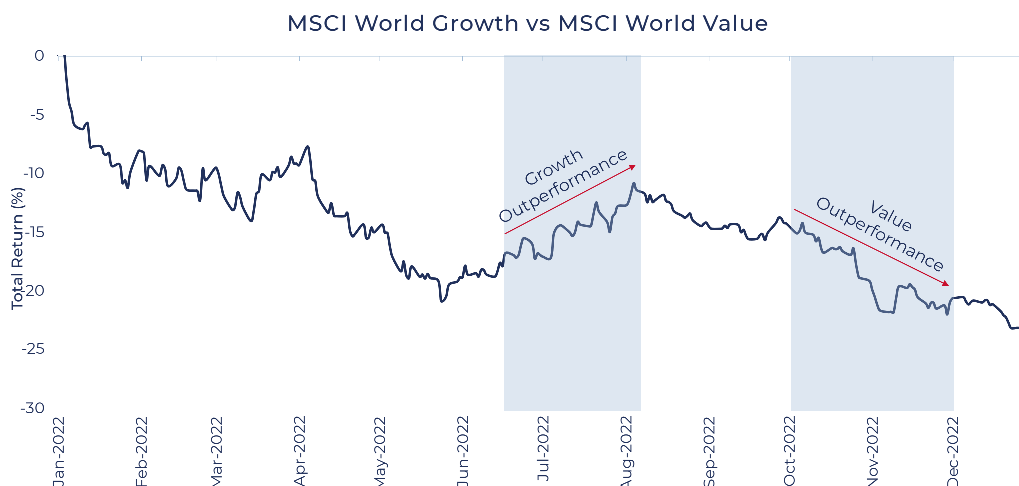
opportunity in terms of valuation today, but we note this does not preclude the potential for further market de-rating in the near term as the future path for the global economy, interest rates and broader geopolitical situation remains uncertain.

While weakness in equities across 2022 was fairly consistent, there were two note-worthy market rallies in mid-June and mid-October, in which the MSCI World rose 14.7% and 16.1% (in USD terms) respectively but driven by differing factors. Around mid-June, markets began anticipating a lower 'peak' policy rate and earlier rate cuts, following dovish commentary from Fed Chair Jerome Powell. This led equity markets, and growth stocks in particular, higher. However, concerns over a dislocation between share price performance and fundamental outlook led many to muse of a 'bear market rally'. By mid-August, these fears were all but confirmed, following a broad sell-off that ensued until mid-October.



Source: Bloomberg, data as of December 31st 2022

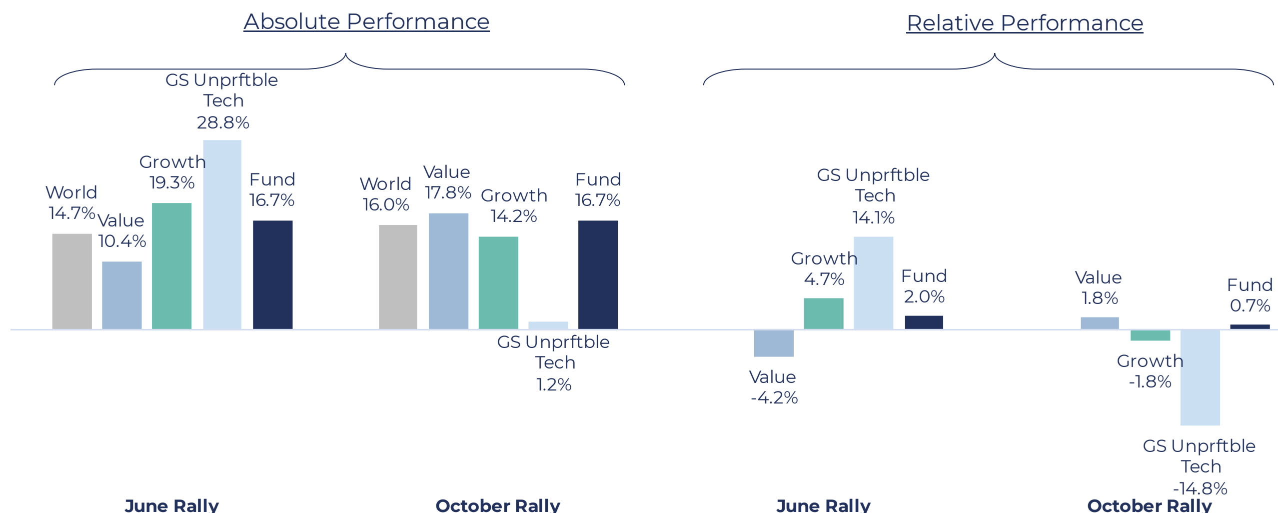
The rally seen between mid-June and mid-August was very different compared to the second rally seen in October. Firstly, the strength in equities seen from mid-October was 'value' led, rather than 'growth' led. And rather than strength in 'cyclical' companies over 'defensive' companies, while very volatile, the picture between mid-October and December was rather more balanced.



Source: Bloomberg, data as of December 31st 2022

In the 'growth' led rally seen in the summer (17th June to 16th August), the highly valued, cyclical sectors of Consumer Discretionary and Information Technology outperformed all else. With the exception of Utilities, other 'defensive' sectors such as Healthcare and Consumer Staples underperformed the MSCI World, alongside the commodity-based sectors of Energy and Materials. The rally seen in October (12th October – 1st December) looked quite different. Information Technology was the only outperforming 'growth' sector, and this was the only due to strong performance on the final day of the month. Up until November 29th, Information Technology, Consumer Discretionary and Communication Services (all growth orientated sectors) were the bottom three performing sectors over the rally. Even within 'cyclical' stocks there was a divide between growth and value, with the more value orientated materials, financials and industrials (to an extent) sectors outperforming, and the more 'growth' tilted sectors of Communication Services and Consumer Discretionary significantly underperforming. Defensive sectors such as Utilities and Consumer Staples stayed broadly in line with the MSCI World.

However, even with this 'value' outperformance, the performance differential between growth and value was less stark than it was during the June rally. In the 'growth' led rally of June, the MSCI World Growth Index outperformed the MSCI World Value Index by 9.6%. In the 'value' led rally of October, value outperformed growth by just 4.3%. Pleasingly the Fund outperformed the MSCI World Index in both market rallies (2.0% and 0.6% respectively, in USD), despite differing market drivers.



Source: Bloomberg, data as of December31st 2022

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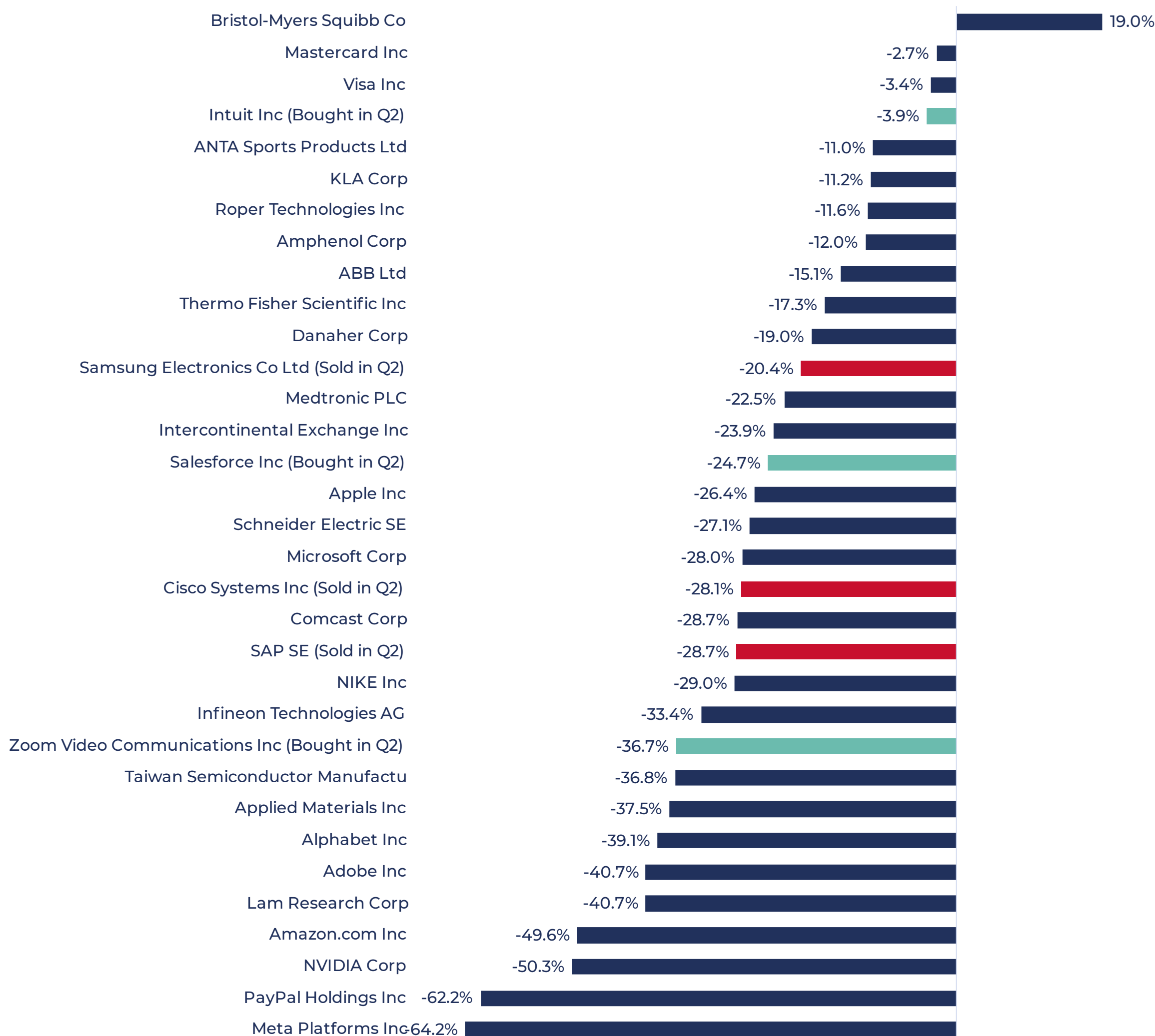
Individual stock performance in 2022

The chart below shows the fund constituents' performances over 2022 in USD.



Source: Guinness Atkinson Asset Management, Bloomberg, as of 12.31.2022

Bristol-Myers Squibb (+19.0% USD)

Bristol Myers Squibb ended the year as the Fund's top performer, outperforming the broader MSCI World Healthcare Index by 24.0% (USD). The firm entered the year in a potentially precarious position, with their top-selling cancer drug, Revlimid (27% of sales in 2021), coming off patent in March 2022. However, markets reacted well to clarity given over the firm's plans in replacing the revenue stream, with Bristol Myers Squibb outlining a strong product pipeline and strategy. The

firm forecast its current immuno-oncology brands (Opdivo and Yervoy) and blood-thinner (Eliquis) to add an additional $8-10bn in sales by 2025 (these brands already accounted for about $20bn in 2021), helping to offset the about £13bn of at-risk revenues from Revlimid. Longer term, the firm's new product portfolio (most notably Reblozyl, Sotyktu and Opdualag) could generate $25 billion or more annually by 2029.

With the firm facing additional patent-cliffs in the next 6 years (most notably Opdivo in 2028), the strength of the firm's new product development and pipeline has become increasingly important in allaying investor fears of sales declines. The FDA approval of Camzyos (cardiomyopathy) proved to be a strong catalyst, addressing lingering market concerns with one of the firms most promising drug hopefuls. Opdualag, a cancer treatment, had a highly impressive drug launch, coming in +24% to consensus in Q3, helping the firm expand its exposure to the Melenoma market and mitigate against the eventual patent loss of Opdivo. The company also announced a partnership with JNJ for Phase III trials of cardiovascular drug Milvexian, as well as the potential expansion of potential use cases.

The firm's strategy of focusing on higher margin specialty drug groups such as cancer, which typically commands greater pricing power, will aid the firm maintain drug pricing stability – particularly with a renewed focus from regulators on drug pricing. Progress in oncology drugs has been compounded by the announcements of two notable deals, firstly the planned $4.1 billion acquisition of precision cancer medicine company Turning Point Therapeutics (TPTX), as well as a deal with Immatics (IMTX) to develop next-generation cell therapies. In addition, the firm's use of partners such as JNJ (Milvexian) and Pfizer (Eliquis) will help the bottom line through the sharing of development costs, and diversifying risk of failure. While the firm is likely to face headwinds from generics over the remainder of the decade, a very strong lineup of new drugs (both in-house and acquired), a promising acquisition pipeline, and the continued strength of shareholder returns through both buybacks and dividends, we maintain our positive outlook for the stock, on top of a good relative valuation (FY1 PE 9.5x) vs the industry median (FY1 PE 13.5x).

Mastercard (-2.7% USD), Visa (-3.4% USD)

Mastercard and **Visa** featured second and third in the Fund's top performers over the year, outperfoming the MSCI World benchmark by 15% and 14% respectively. The electronic payments companies generate revenue through processing transactions across their respective networks, whether this is a credit-card payment, debit-card payment or cross border transaction. Each transaction, the firm will earn a flat-fee (switch transaction fee) and a percentage of the gross dollar volume (switch volume fee). The firms therefore benefit when transactional activity picks up in both value and volume, generating greatest margins on cross-border transactions.

Following pandemic related headwinds to consumer spending both domestically and internationally, 2022 saw a continuation of the sharp rebound in consumer activity that began in 2021. High levels of savings, record low unemploympent rates and rising wage levels all contributed to a surge in spending, with purchase volumes (dollar value of cash spent on networks) reaching record levels over the calendar year – despite both firms pulling out of Russia (a 4% headwind to revenues). While the market may have been pricing in a weak consumer over

recessionary concerns and rising interest rates, on the whole, the consumer remained resilient allowing consistent upside surprises to the top-line. The return of cross border travel has been a material tailwind, as constant currency cross border volumes (excluding intra Europe, which have comparable fees to domestic transactions) grew +49% for Visa and +53% for Mastercard in the final reported quarter of the year and have shown little sign of slowing down, a significant benefit to margins which are now at pre-pandemic levels.

Near-term uncertainty remains with the potential of sustained inflation, recession and further lockdowns, but the acceleration of cash to electronic payments (particularly in emerging markets) and further upside yet from the re-opening of economies (e.g. Asia at 60% of pre-pandemic travel volumes) offers a bright outlook. Aside from the positive secular trends that benefit each firm, Mastercard and Visa are leveraging their protected market shares to innovate within their core businesses (e.g. tokenization and cloud commerce) as well as enter new ones (e.g. cryptocurrency and open banking), and we believe their strong brands and protected market shares will support them in their growth strategies.

Meta (-64.2% USD)

Meta faced a number of headwinds over the course of 2022, battling not only a rotation away from technology and growth, but increasing competition, a slowdown in advertising spend sparked by recessionary fears, and shareholder discontent over spending. Consequently, Meta ended 2022 as the Fund's worst performing stock. The firm suffered a 26.4% fall in a single day following their Q4 earnings announcement (February) after reporting a fall in users for the first time in history, with CEO Mark Zuckerberg citing strong competition from fast growing rival TikTok, a company which he had previously labeled "the most effective competitor we have ever faced". The stock largely tracked the MSCI World Technology Index downwards between earnings events, as the rotation away from growth further dented sentiment. However, the downward slide was given additional impetus in July as Meta issued a mixed outlook, citing concerns over the advertising market. CEO Mark Zuckerberg stated that *"we seem to have entered an economic downturn that will have a broad impact on the digital advertising business"*.

The firm faced an additional negative price reaction following their Q3 earnings release (about -20% at open), despite quarterly results being pretty resilient. In particular, the firm highlighted an encouraging improvement in operational metrics that indicated early success in improving engagement and relevance, such as user count and overall engagement, with Daily Active users up +4% year-on-year. Only one region declined in users from last year, Europe, following Meta blocking Russian users after the outbreak of war in Ukraine. The negative price reaction was driven by investor concerns over cost control and the level of investment going into long term projects. Free cash flow dropped from nearly $10bn in 3Q21 to just $173mn in 3Q22, due to substantial investment to innovation in projects such as Reality Labs. Relatively low visibility into when, and even if, these investments will yield a return led to this negative market reaction.

While the firm is clearly subject to a number of headwinds, operational metrics indicate the strength in Meta's brand proposition. The firm retains the world's largest user base, which is continuing to grow, and will continue to attract advertising revenues despite privacy changes – which will have an outweighed negative effect on smaller competitors with lower investing capabilities. The firm is also likely to improve targeted advertising accuracy over time, through

spending on new advertising measurement tools helping to improve advertising Return on Investments (ROIs). Growth of their short format video 'reels', a product that is proving highly popular, and is yet to be monetized at the same rate as other products, setting the scene for future revenue growth.

PayPal (-59.6% USD)

PayPal was the fund's second bottom performer over 2022. Following the outbreak of the pandemic in 2020, share prices surged to unprecedented levels, as an accelerated shift from cash to digital payments took place. However, since July 2021 the firm's stock price has fallen significantly, following a shift away from growth stocks, weak earnings results and guidance, and investor pushback around a failed $45bn for Pinterest. Negative stock momentum continued into 2022, with the stock falling 56% in the first 4 months of the year, before tracking relatively in line with the MSCI World Technology Index for the remainder of 2022.

The firm's first earnings release of 2022 (4Q22) saw the share price fall 25% in one day, despite revenue growth (+13%) coming in ahead of management guidance. However, concerns around the outlook sparked a sell-off, with the firm abandoning its target set just last year of reaching 750m users, after finding that many of the 120m new customers added over the two years of the pandemic were no longer 'active'. Previous strategies and targets focused on user growth, yet Q1 saw the firm pivot towards targeting a more engaged user (33% of users currently drive the majority of total payment volume). An earnings released at the end of April offered a turning point of sorts, with relatively robust results seeing the stock bounce +11% on the day. While management cut guidance for the full-year, citing a few increasing headwinds (Russia, supply chain and inflation), these problems were largely expected to be transitory. From April onwards, the stock traveled relatively in-line with the MSCI World Technology Index, although with a higher level of volatility.

In Q3, positive price momentum returned to the stock. In July, there were reports that activist investor Elliott was building a stake in the company, causing a one-day jump of 12%. The company announced 2Q22 earnings in early August, somewhat ahead of estimates and guidance, leading to a strong positive market reaction. Net revenue increased 10% year-over-year, and 14% excluding eBay headwinds. The firm's recent shift in strategy towards higher quality users seen an improvement in the quality of their cash flows, as seen by growth in 'transactions per active account' metric (+12% in 2Q22 and +13% in 3Q22). The firm also saw Total Payments Volume up +9% year on year in the final two quarters. The headwind from the eBay disposal (about 2% of revenues) is diminishing, and growth avenues such as Buy Now Pay Later and Venmo are carrying strong momentum. Expansion into new product areas such as credit-cards and cryptocurrency offer further visibility to growth down the road, and innovation through initiatives such as the PayPal Rewards program provides an opportunity for further engagement and customer acquisition. With a good outlook paired with solid fundamentals, we continue to view PayPal as an attractive opportunity.

Changes to the portfolio

We sold three positions and initiated three new positions over the course of 2022.

Number of changes to the portfolio

	2015	2016	2017	2018	2019	2020	2021	2022
Buys	6	7	4	5	3	5	3	3
Sales	6	7	4	5	3	5	3	3
Total Holdings	30	30	30	30	30	30	30	30

We made no changes over Q1.

Over Q2, we made six changes to the portfolio. With the market de-rating significantly year-to-date, a number of attractive buying opportunities had come to light, allowing us to make room for additions of companies that had been on our watchlist, yet had not offered an attractive entry point until then. In keeping with our one-in one-out strategy, this meant the removal of three companies. The changes made to the portfolio were as follows:

Buys

Intuit Technologies

Intuit Technologies is a global technology platform, providing the target market of small businesses and self-employed customers with key financial management and compliance products and services. Key products include QuickBooks, an accounting software platform for Small-Medium-Enterprise's (SME's), and US income tax return management software, TurboTax. At the end of 2021 the firm bought MailChimp for $12bn, adding an email marketing platform to their product portfolio.

QuickBooks' market leading position (about 80% market share) has a wide economic moat, with significant switching costs stemming from product integration within business processes. Customer retention rates of 79% highlight a defensible market position. In addition, having such a commanding share of the market offers a platform in which to launch additional products to upsell, those such as TurboTax and MailChimp, or any other new innovation the firm may bring to the market. The firm grew customer numbers from 57m in 2020 to 102m in 2021, and we expect a combination of both organic and inorganic top-line growth to continue into the long term. In addition, the firm's relatively high operating leverage offers ample runway for improved profitability, through closing the gap between operating margins (currently 24%) to gross margins (82%) as the top-line grows. While offering a higher growth outlook than peers, the firm is trading at roughly similar P/E levels – an attractive entry point considering the firm traditionally trades at a significant premium. All in all, the firms track record of innovation, quality attributes and growth potential that Intuit offers makes it a natural fit for the Fund.

Salesforce.com

Salesforce is regarded as one of the most innovative companies within the cloud computing application space, building up a formidable brand amongst enterprise software providers. Through a number of products of substantial scale and growth, Salesforce aims to increase the productivity and efficiency of sales representatives. The firm's cloud hosted Customer Relationship Management technology is the outright market leader, with a market share over four times the size of its nearest competitor, Oracle. Yet with just about 24% (up from about 20% 2020) of the total market, there continues to exist a large growth opportunity. On top of the market share opportunity, end-market growth in the firm's five operating segments are expected to grow with between 11-16% compound annual growth rate (CAGR) until 2025. Diversification is such that each product segments offers at least 17% of revenues.

Through building on the idea of Customer 360, a holistic product catalogue for companies in managing their business processes, the firm achieved a 26% 8-year CAGR by year-end FY22, while also expanding operating margins from below 0% to 19% over the same period. Through an integrated offering, the firm is building upon customer relationships and developing exit costs, improving the quality of their revenues through customer switching costs and stickiness. The firm has demonstrated exemplary success in growing the top-line through a combination of both organic and inorganic opportunities, with highly successful acquisitions such as ExactTarget, Demandware, MuleSoft and Tableau all delivering growth of at least about 29%. Through being able to cross-sell across adjacent products, margin expansion, inherent end-market growth, market share growth and both innovation and inorganic opportunities, the firm has many growth levers to pull in order to continue on their strong growth trajectory.

Zoom Video Communications

Zoom was one of the primary beneficiaries of the 'stay-at-home' trend in the early days of the pandemic, with the firm's 'Zoom Meetings' product offering a low-cost platform for friends, family and colleagues to keep in touch over lockdown. Market hype surrounding the new age of work-from-home and video conferencing caused the market to bid-up the stock to extremely high levels. Yet concerns over whether the stock could maintain both market share and growth have caused a sharp decline since market highs in October 2020, with the stock now trading at near pre-pandemic levels.

The vastly better position that Zoom now finds itself in compared to pre-pandemic (stickier revenues, higher market share, greater product portfolio), in our view, provided an attractive entry point. While Zoom was certainly at one point 'speculative' in the early days of the pandemic, the company has executed an excellent strategy that built on the extreme early growth it underwent during the past couple of years, and now holds a commanding position in a $43bn market (latest fiscal year revenues of $4.1bn), that is expected to reach in excess of $90bn by 2025. Through a

low-touch, freemium model that lends itself to viral adoption, paired with a market-leading product, the firm has quickly become one of the most well-known brands within video communications. Through focusing on enterprise customers (now >50% of sales), the firm is increasing the stickiness and therefore quality of its revenues. Still in the early growth stage, the firm continues to invest heavily, but with a net cash position, it has the capacity to do so. Initial concerns of Zoom where that it would be displaced by in-person meetings post the pandemic. Clearly this has not happened, with net customer adds continuing to grow, albeit at a lower pace, video calling is now normalized in offices and a hybrid approach is likely to be the business approach from here on out. The technology is now a necessity, rather than a luxury. An expanding portfolio stemming from Zoom Meetings, in particular Zoom Phone (the product went from a test case 2 years ago to in excess of 2 million 'seats' today), there is a long runway for revenue growth. While it remains to be seen whether Zoom will be one of the 'winners' in the space, competing with strong brand names such as Microsoft, we believe the firm has given itself every chance of doing so, with a superior product, strength in the brand name, and a sensible strategy.

Sells

SAP

Bought August 2015 and sold late May 2022. Underperformed benchmark over the period (+64% vs +94%, total return in USD).

SAP is a global software vendor providing enterprise resource planning and database management software, among others. The business has been transitioning away from licensing, offering software as a service and has disappointed the market by pushing back guidance (some of which was pandemic related) and seeing a somewhat slower and less profitable shift to cloud than potentially expected. Although likely leading to higher margins and better profitability if successfully executed in the medium term, and despite the discount to the wider software sector (SAP trades on 17.5X 2022 expected earnings) reflecting some of this uncertainty, we felt there were better opportunities with clearer earnings growth potential on offer considering the significant market sell off in 2022. We also noted some concern that the shift to cloud could in fact open the company up to higher levels of competition from cloud-only vendors if switching costs for customers became less onerous.

Cisco

Bought in strategy in June 2014 and sold late May 2022. Outperformed the MSCI World benchmark over the period (+132% vs +91%, total return in USD).

Cisco, a leading supplier of network IT hardware and in particular switches and routers, has been increasing its software capabilities over recent years and moving to capture a greater recurring revenue stream, even within its hardware offerings. The business is very well run and has been improving returns on capital over the past few years. Earnings had been growing at a high teens rate leading up to the pandemic but fell as hardware orders declined. We have seen a recovery

since, and management were bullish on the latest earnings call that demand remained strong – despite difficulties with supply chains in China causing issues in the near term. Although we rate the company highly, we are somewhat cautious on the potential for macro headwinds in a lower growth (or potentially recessionary) environment and although the valuation has de-rated to reflect this (along with the broader market) to a PE of 12.5X, we felt there were better opportunities on offer currently for high quality companies offering potentially higher growth.

Samsung Electronics

Bought in strategy mid-2004 and sold in late May. Strong outperformance versus the MSCI World benchmark (+748% vs +306%, total return in USD) over this period.

Although we are broadly constructive on the semiconductor market due to the expanding demand drivers versus history, we are conscious of the overall exposure of the fund to this industry. Samsung Electronics generates a significant proportion of both revenues and earnings from memory within its semiconductor business, alongside consumer electronics such as displays and smartphones. The latter category does not command as high barriers to entry and may suffer from any consumer spending downturn, which may also affect the memory market alongside. We also note concerns regarding corporate governance and the potential exposure to (and lack of clarity/action towards) significant carbon emissions via the power used in a large part of its manufacturing processes. Because of the strong run of the stock price through the pandemic period (some of which has been given back alongside the broader market sell off seen in 2022), exposure to lower margin consumer electronics, and already having significant exposure to the semiconductor industry through other companies held in the portfolio we felt it was an opportune time to take profits and invest in other companies that may offer more secular growth opportunities that may be less susceptible to cyclical pressures – which have potentially de-rated in similar magnitude to lesser quality businesses in the 'tech sell off' we have witnessed since the Fed pivot in late 2021.

We made no changes over Q3 or Q4.

Engagement

At Guinness Atkinson Asset Management, we believe that both individual and collaborative action around ESG issues is an important part of the investment process.

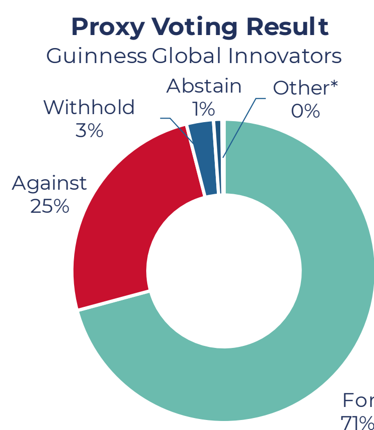
In 2022, we participated in the Carbon Disclosure Project (CDP) non-disclosure campaign, which offers investors the opportunity to engage with companies that have received the CDP disclosure request but have not yet provided a response. The objective of the annual campaign is to drive further corporate transparency around climate change, deforestation and water security, by encouraging companies to respond to CDP's disclosure requests. Within the Fund, we co-signed letters to Roper Technologies and Intercontinental Exchange requesting that they disclose to the Carbon Disclosure Project, having previously written to these companies on our own in July 2021. Both Roper Technologies and Intercontinental Exchange submitted to the CDP for Climate Change in 2022.

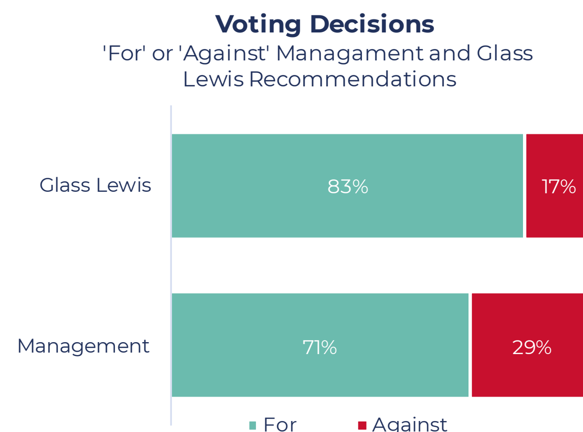
Over 2022, we engaged with 28 of our 30 portfolio companies on the issue of executive compensation, following analysis of each Fund holdings' remuneration packages. We believe that there is strong evidence to suggest that management incentive packages do indeed influence decision making, company strategy and overall company performance. We based this analysis across three key pillars: Transparency, Design and Accountability. Using this analysis, we requested further clarity from Fund holdings' Investor Relations teams as to how remuneration packages were structured, the reasoning behind certain decisions, as well as giving encouragement over positive steps we would like to see. While many of these engagements are ongoing, we received a number of meaningful responses from our holdings' investor relations teams. One example is Bristol Myers Squibb, where we spoke with their Head of Total Rewards and Executive Pay, alongside other members of the IR team. During the meeting, we discussed our concerns with the current remuneration plan (such as the use of Total Shareholder Return, and targets that vest below median), but also gained clarity over the structure of the firm's remuneration program, as well as positive steps already taken in recent years. We were not only encouraged to see the positive steps forward the firm had already taken, but the acknowledgement of the shortcomings of the remuneration package, as well as a commitment to take our views on-board when reviewing the package in future.

Proxy Voting

At Guinness Atkinson Asset Management, we manage the voting rights of the shares entrusted to us. Our voting philosophy reflects our corporate values, our long-term perspective, and our focus on sustainable returns. Over 2022, we voted in 95% of the 475 proposals allocated to holdings within the Fund. It is important to note that in order to vote in some markets, such as Switzerland, some markets require shares to be temporarily immobilized from trading until after the shareholder meeting has taken place. In these instances, we decided it would be in clients' best interests to refrain from voting – these 'non-voted' proposals accounted for the remaining 5% of proxy votes.

Of the proposals voted, 25% were 'Against' management, and 17% were 'Against' the recommendations of Glass Lewis, our proxy voting provider. In 71% of cases we voted 'For' a proposal, and the remainder we either 'Withheld' our vote, or 'Abstained'.

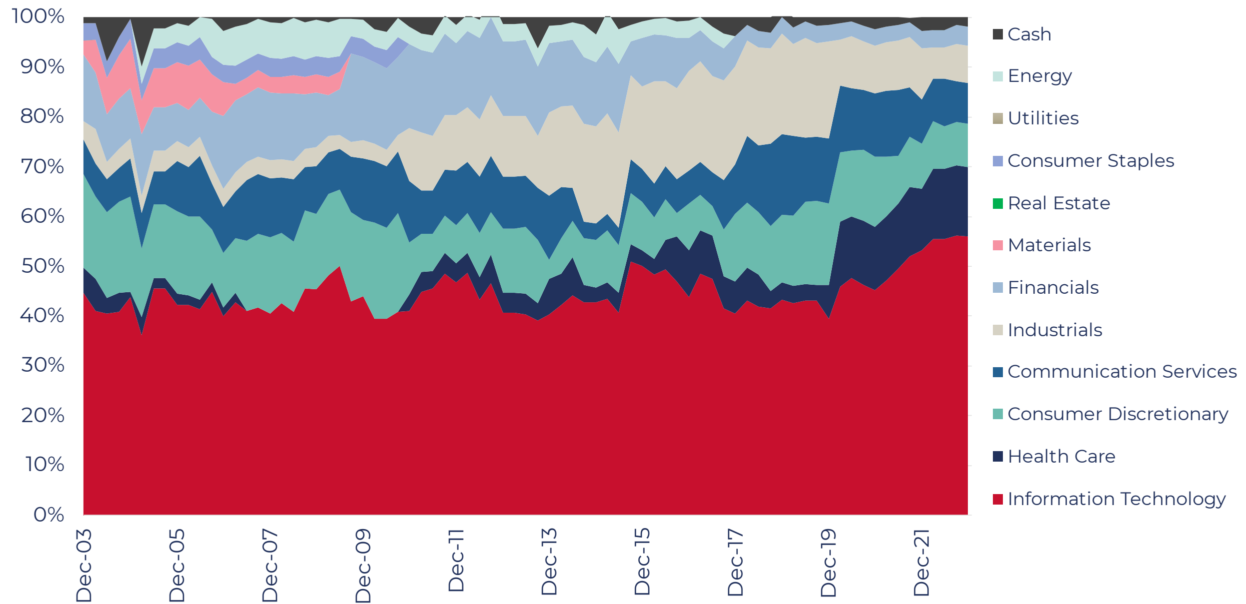




Portfolio characteristics

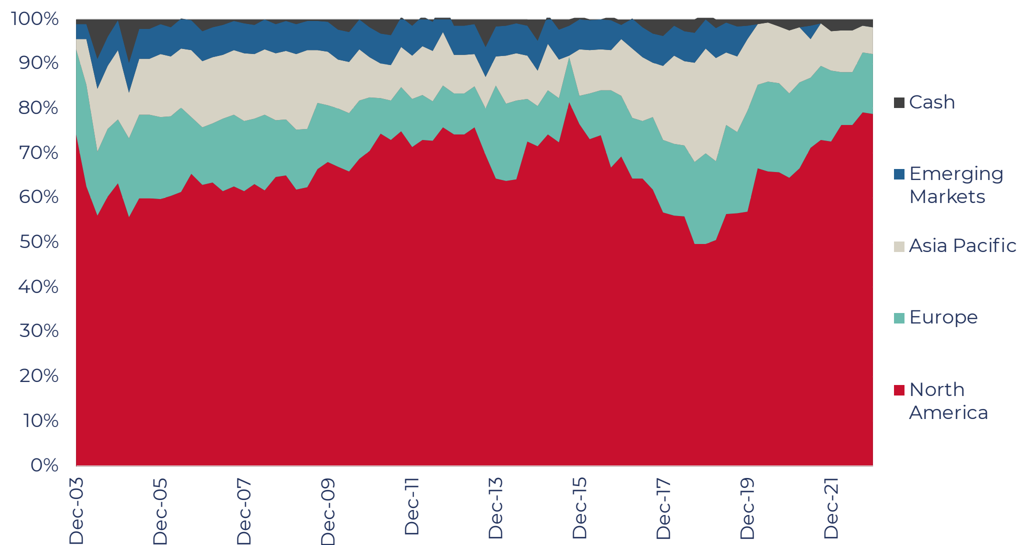
The charts below show the sector and geographic breakdown of the portfolio at the end of each quarter since the strategy's inception.

Portfolio sector breakdown (all dates at quarter-end)



Source: Guinness Atkinson Asset Management, Bloomberg, as of 12.31.2022

Portfolio geographic breakdown (all dates at quarter-end)

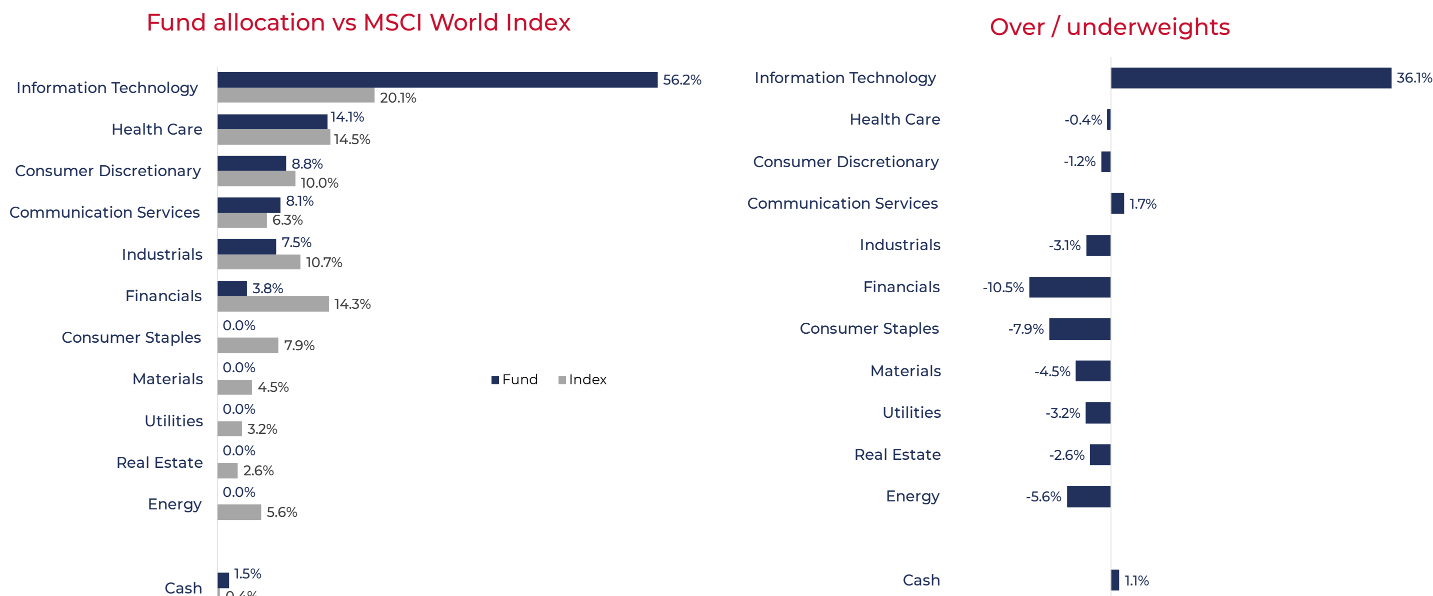


Source: Guinness Atkinson Asset Management, Bloomberg, as of 12.31.2022

Over 2022, the net effect of purchasing Intuit, Salesforce and Zoom while selling Cisco, Samsung Electronics, and SAP had no effect on the Fund's sector exposures, since all six stocks are within the Information Technology sector.

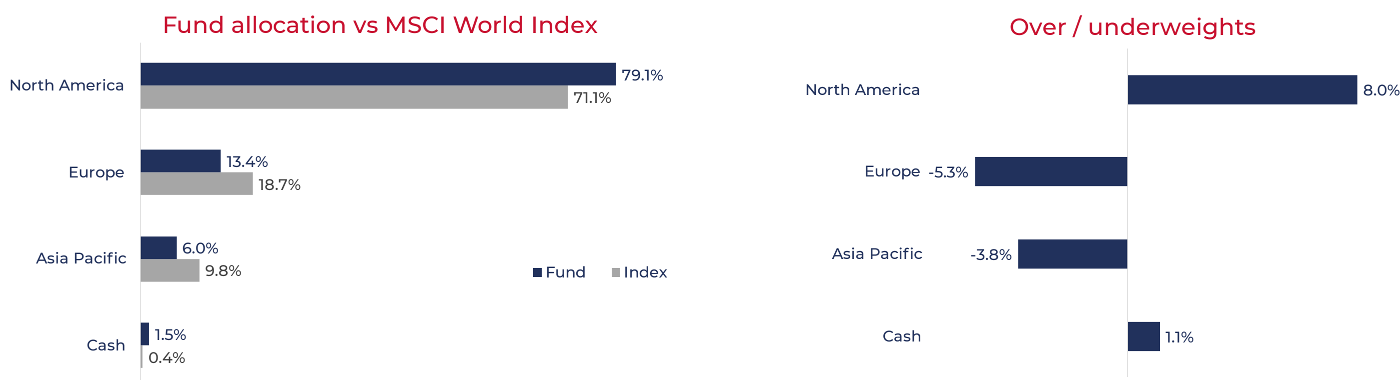
In terms of the portfolio's geographic breakdown, the portfolio continues to have a bias to the U.S and we increased this during 2022, while reducing our exposure to Europe and Asia.

Sector breakdown of the fund versus MSCI World Index



Source: Guinness Atkinson Asset Management, Bloomberg, as of 12.31.2022

Geographic breakdown versus MSCI World Index



Source: Guinness Atkinson Asset Management, Bloomberg, as of 12.31.2022

Outlook

The Fund seeks to invest in quality, innovative growth companies trading at reasonable valuations. By doing so, we seek to invest in companies that are experiencing faster profit growth, larger margins and with less susceptibility to cyclical pressures. While it has been a difficult year for the

Fund due to the significant outperformance of 'value', we are pleased with how well the fund has performed despite the varying market conditions over the last 3 years. In particular, our focus on quality growth-at-a-reasonable-price has shown it strength in avoiding the highly valued non-profitable tech businesses that have swung between large rises and falls, but ultimately underperformed significantly over the period.

The table below illustrates how the portfolio at year-end reflects the four key tenets of our approach. The four key tenets of our approach are innovation, quality, growth, and conviction. The fund has superior characteristics to the broad market; higher spend on intellectual property through research and development (R&D), less capital intensiveness, higher cash flow returns on investment, with higher historic growth. The fund currently trades at a 22.1% premium to the benchmark on a PE basis which we believe is a small price to pay for this attractive set of characteristics.

Portfolio metrics versus MSCI World Index

		Fund	MSCI World Index
Innovation	R&D / Sales	8.4%	6.8%
	CAPEX / Sales	6.1%	8.7%
Quality	Return-on-Capital	20.6%	7.0%
	Weighted average net debt / equity	29.5%	70.8%
Growth (& valuation)	Trailing 5-year sales growth (annualized)	14.1%	3.5%
	Estimated earnings growth (2023 vs 2022)	8.8%	7.7%
	PE (2023e)	19.1	15.5
Conviction	Number of stocks	30	1508
	Active share	84%	-

Source: Guinness Atkinson Asset Management, Bloomberg, as of 12.31.2022

In the current market environment where inflation concerns and slower growth remain top of mind, we are confident that the Fund's focus on high quality growth stocks, underpinned by structural changes stands us in good stead going forward.

With inflation seemingly moderating and global Central Banks appearing to slow the rate of growth hikes, and a significant de-rating in valuations having occurred, many of the 2022 headwinds for equity markets, and growth stocks in particular, are looking more positive. However, uncertainty remains as none of these issues have been resolved conclusively and second-order effects, or indeed new issues, may arise in the coming months. Indeed, with global growth expected to slow, the prospects of a recession remain high (particularly in Europe and Asia), potentially creating a meaningful dent into company earnings. In many respects, we believe these concerns have largely been 'priced-in' to earnings estimates, but this does not necessarily preclude further earnings downgrades to come. Indeed, we believe there is a good argument for high quality, secular growth stocks in this current market environment, especially in a recessionary and/or slower growth environment, as these companies should continue to be able to grow despite the market headwinds and have better fundamental characteristics in terms of margins and balance sheets. We continue to focus on these key tenets in the fund and remain confident of this process over the long term.

May we wish you a happy and prosperous New Year, and we look forward to updating you on the progress of the fund over the course of 2023.

Portfolio Managers

Matthew Page, CFA

Dr Ian Mortimer, CFA

Fund Summary

- In 2022, the Guinness Atkinson Global Innovators Fund produced a total return of -29.7 (TR in USD), compared to the MSCI World Net TR Index return of -18.4%, therefore underperforming by 11.3%.
- Inflation, supply-chain shortages, Russia's invasion of Ukraine, and higher interest rate expectations dominated financial headlines for most of the year, leading equity markets to end 2022 significantly lower.
    - Over the course of 2022, high levels of inflation and a strong jobs market spurred global central banks to tighten monetary policy at historic rates. This drove markets towards 'value' orientated stocks, with the MSCI World Value Index outperforming the MSCI World Growth Index by 26.0% in USD terms over the course of 2022. This acted as a significant headwind to the Fund, which performed relatively in-line with the MSCI World Growth Index (-29.0% USD).
    - In the context of tighter monetary policy, fears of an impending recession grew, and investors rotated towards more defensive areas of the market - particularly as the perceived chances of a 'soft landing' diminished and as equity analysts downgraded earnings forecasts. While this was a headwind for the Fund's overweight position to typically more 'cyclical' sectors, such as Information Technology, the Fund's quality focus supported the Fund, as a significant divergence in performance emerged between more 'speculative' stocks with more extreme valuations, and 'quality growth' stocks, where current valuations place lower weight on future growth prospects. The Goldman Sachs Unprofitable Tech Index, an example of 'speculative' tech stocks, fell 62.3% (USD) over the period.
- Over 2022, fund performance relative to the MSCI World Net TR Index can be attributed to a number of factors:
    - IT, the fund's largest sector exposure, was the greatest detractor to relative Fund performance. The Fund's two largest overweight industries are both within the IT sector, Software & Services and Semiconductors & Semi-Equipment Manufacturers. These were the MSCI's World's bottom performing over the year (-30.5% USD and -36.2% USD). This was a significant headwind for relative Fund performance from an attribution point of view.

Performance data quoted represents past performance and does not guarantee future results. The investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance of the Fund may be lower or higher than the performance quoted. For most recent month-end and quarter-end performance, https://www.gafunds.com/our-funds/global-innovators-fund/#fund_performance or call (800) 915-6566.

- While not owning any Real Estate stocks benefitted the Fund over the year, not owning any Energy stocks (the best performing sector over 2022) Utilities, Materials and Consumer staples all acted as a drag on performance. The Fund's underweight to Financials also contributed to underperformance.

- The Fund's overweight position to Pharmaceuticals acted as a tailwind for relative Fund performance, as the MSCI World's third top performing sector. This was buoyed by performance from Bristol-Myers Squibb, which delivered +19.0% USD over the year, outperforming the MSCI World Healthcare Index by +24.0%.

- The strong rotation towards 'value' and 'defensives' created a sizeable headwind for Fund performance over 2022. While the Fund philosophy aims to identify 'growth' stocks that are subject to long-term secular trends and hence lower variability of revenue growth, these 'growth' stocks are often identified in perceivably more 'cyclical' sectors. Hence, these rotations impacted performance negatively from an attribution perspective.

as of 12.30.2022 (in USD)	1 year	3 years annualized	5 years annualized	10 years annualized
Global Innovators, Investor Class[1]	-29.67%	5.18%	5.81%	11.99%
Global Innovators, Institutional Class[2]	-29.51%	5.44%	6.07%	12.19%
MSCI World Index NR	-18.14%	4.94%	6.13%	8.85%

All returns after 1 year annualized.

[1] Investor class (IWIRX) Inception 12.15.1998 Expense ratio* 1.24% (net); 1.17% (gross)
[2] Institutional class (GINNX) Inception 12.31.2015 Expense ratio* 0.99%

[2] Performance data shown for Global Innovators, Institutional Class (GINNX), prior to its launch date on 12/31/15, uses performance data from the Global Innovators, Investor Class (IWIRX).

Performance data quoted represents past performance and does not guarantee future results. The investment return and principal value of an investment will fluctuate so that an investor's shares, when redeemed, may be worth more or less than their original cost. Current performance of the Fund may be lower or higher than the performance quoted. For most recent month-end and quarter-end performance, https://www.gafunds.com/our-funds/global-innovators-fund/#fund_performance or call (800) 915-6566.

*The Advisor has contractually agreed to reimburse expenses (excluding Acquired Fund Fees and Expenses, interest, taxes, dividends on short positions and extraordinary expenses) in order to limit the Fund's Total Annual Operating Expenses to 1.24% for the Investor class and 0.99% for the Institutional class through June 30, 2025. To the extent that the Advisor absorbs expenses to satisfy this cap, it may recoup a portion or all of such amounts absorbed at any time within three fiscal years after the fiscal year in which such amounts were absorbed, subject to the expense cap in place at the time recoupment is sought, which cannot exceed the expense cap at the time of waiver. The expense limitation agreement may be terminated by the Board of the Fund at any time without penalty upon 60 days' notice.

Mutual fund investing involves risk and loss of principal is possible. Investments in foreign securities involve greater volatility, political, economic and currency risks and differences in accounting methods. These risks are greater for emerging markets countries. The Fund also invests in medium and smaller companies, which will involve additional risks such as limited liquidity and greater volatility. The Fund's focus on the technology, internet and communications sectors are extremely competitive and subject to rapid rates of change.

Securities mentioned are not recommendations to buy or sell any security.

Current and future portfolio holdings are subject to risk.

Top 10 holdings for Global Innovators Fund, as of 12/31/2022:

1.	Amphenol Corp	4.43%
2.	Mastercard Inc	4.35%
3.	Thermo Fisher Scientific Inc	4.20%
4.	Roper Technologies Inc	4.20%
5.	Visa Inc	4.04%
6.	ABB Ltd	3.97%
7.	Intercontinental Exchange Inc	3.87%
8.	Danaher Corp	3.84%
9.	KLA-Tencor Corp	3.80%
10.	Microsoft Corp	3.72%

For a complete list of holdings for the Global Innovators Fund, please visit: https://www.gafunds.com/our-funds/global-innovators-fund/

The Fund's investment objectives, risks, charges and expenses must be considered carefully before investing. The statutory and summary prospectuses contain this and other important information and can be obtained by calling 800- 915-6565 or visiting www.gafunds.com. Read and consider it carefully before investing.

Earnings growth is not representative of the Fund's future performance.

MSCI World Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed markets.

MSCI World Value Index captures large and mid-cap securities exhibiting overall value style characteristics across 23 Developed Markets countries. The value investment style characteristics for index construction are defined using three variables: book value to price, 12-month forward earnings to price and dividend yield.

MSCI World Growth Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of large and mid-cap securities exhibiting overall growth style characteristics across developed markets.

Federal Open Market Committee is responsible for open market operations. The Federal Open Market Committee (FOMC) consists of twelve members, with seven members of the Board of Governors of the Federal Reserve System

The Consumer Price Index (CPI) is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services. Indexes are available for the U.S. and various geographic areas.

One basis point is equal to 1/100th of 1%, or 0.01%, or 0.0001, and is used to denote the percentage change in a financial instrument. The relationship between percentage changes and basis points can be summarized as follows: 1% change = 100 basis points and 0.01% = 1 basis point.

The Nasdaq-100 (NDX) is a large-cap growth index. It includes 100 of the largest domestic and international non-financial companies listed on the Nasdaq Stock Market based on market capitalization.

The Goldman Sachs Non-Profitable Technology Index consists of non-profitable US listed companies in innovative industries. Tech is defined quite broadly to include new economy companies across Global Industry Classification Standard (GICS) industry groupings. The basket of tech stocks is optimized for liquidity with no name initially weighted greater than 4.65%

Bloomberg Commodity Index (BCOM) is calculated on an excess return basis and reflects commodity futures price movements. The index rebalances annually weighted 2/3 by trading volume and 1/3 by world production and weight-caps are applied at the commodity, sector and group level for diversification.

Duration: The duration number is a complicated calculation involving present value, yield, coupon, final maturity and call features. Fortunately for investors, this indicator is a standard data point provided in the presentation of comprehensive bond and bond mutual fund information. The bigger the duration number, provided in years, the greater the interest-rate risk or reward for bond prices. It can also be used to describe equities in a similar manner: a higher duration suggests most cash flows are expected far into the future, with a lower duration suggesting more stable cash flows over the short and long term.

Gross domestic product (GDP) is the total monetary or market value of all the finished goods and services produced within a country's borders in a specific time period.

Earnings per share (*EPS*) is calculated as a company's profit divided by the outstanding shares of its common stock.

Price-Earnings (P/E) ratio is a valuation ratio of a company's current share price compared to its per-share earnings. Forward earnings differ from trailing earnings, which is the figure quoted more often, as they are a projection and not a fact.

Forward price-to-earnings (forward P/E) is a version of the ratio of price-to-earnings (P/E) that use forecasted earnings for the P/E calculation. While the earnings used in this formula are just an estimate and not as reliable as current or historical earnings data, there are still benefits to estimated P/E analysis

Cash Flow is the total amount of money,in cash, being transferred into and out of a business.

The MSCI World Information Technology Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of large and mid-cap equities across 23 developed markets, all classified within the Information Technology sector.

The S&P 500 Index features 500 leading U.S. publicly traded companies, with a primary emphasis on market capitalization.

Capital expenditures (CapEx) are funds used by a company to acquire, upgrade, and maintain physical assets such as property, technology, or equipment. CapEx is often used to undertake new projects or investments by a company.

The MSCI World Semiconductors and Semiconductor Equipment Index is composed of large and mid-cap stocks across 23 Developed Markets (DM) countries*. All securities in the index are classified in the Semiconductors and Semiconductor Equipment Industry Group (within the Information Technology sector)

The MSCI World Quality Index is based on MSCI World, its parent index, which includes large and mid cap stocks across 23 Developed Market (DM) countries. The index aims to capture the performance of quality growth stocks by identifying stocks with high quality scores based on three main fundamental variables: high return on equity (ROE), stable year-over-year earnings growth and low financial leverage.

The compound annual growth rate (CAGR) is the rate of return that would be required for an investment to grow from its beginning balance to its ending balance, assuming the profits were reinvested at the end of each period of the investment's life span.

One cannot invest directly in an index.

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