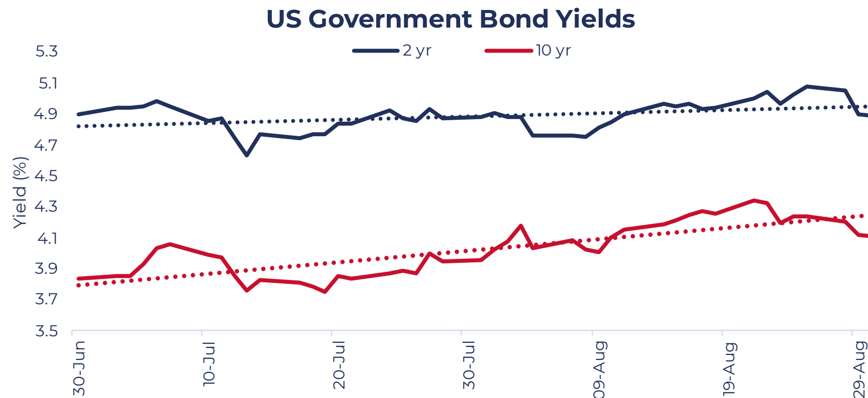
Guinness Atkinson
Global Innovators Fund
Managers Update – September 2023

GUINNESS ATKINSON FUNDS

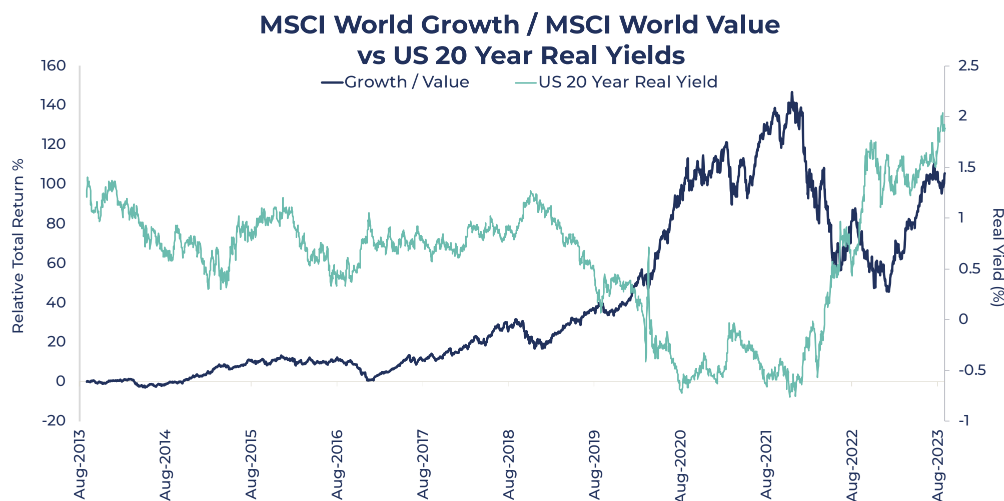
August in review:

How have yields impacted factor performance year to date?



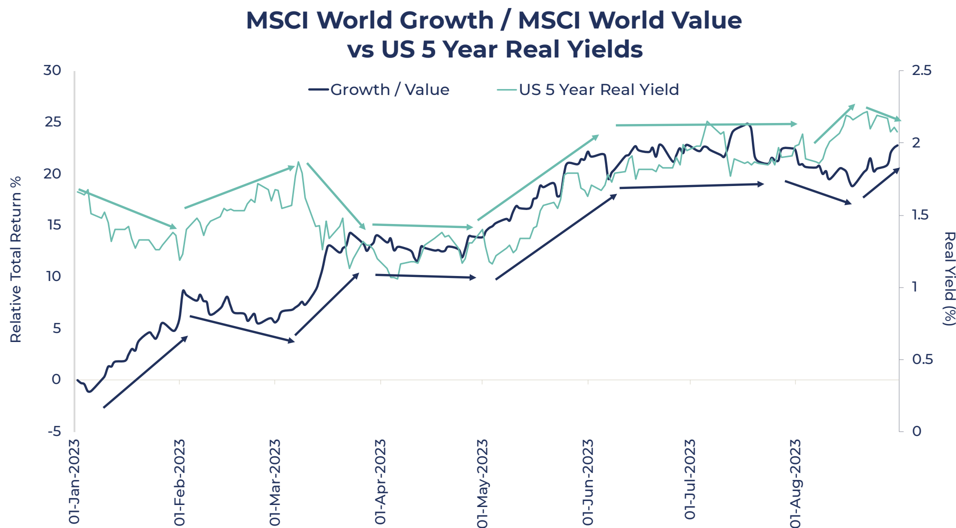
Source: Guinness Atkinson Asset Management, Bloomberg, as of August 31st 2023

Rising yields typically impact growth-tilted stocks more negatively than value-tilted stocks. This relationship can be seen by comparing the total return of the MSCI World Growth / MSCI World Value against the US 20-year Treasury Real Yield (which strips out the impact of inflation), with the two lines typically moving in opposite directions. Over a 10-year period to August 2023, the two lines have a correlation of -0.59, suggesting a reasonably strong negative correlation (over a 20-year period, the correlation is -0.63). When the Growth/Value line is rising, this indicates the outperformance of growth over value, and vice versa. When yields are rising, value tends to outperform, and when yields are falling, growth tends to outperform.



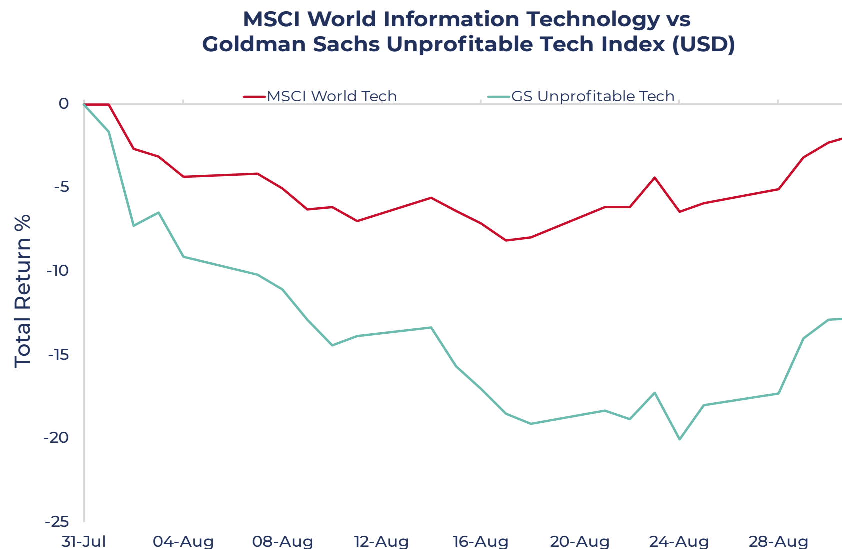
Source: Guinness Atkinson Asset Management, MSCI, Bloomberg, as of August 31st 2023

Clearly, this relationship has not always held true, particularly over shorter time periods. For example, looking at the 5-year real yield (which shows a higher level of volatility over the period), we can see that during May and June, the two lines move in relative lock-step – likely a result of enthusiasm over AI driving growth stocks higher, despite a rise in yields at the time. During July and August, we can see the usual relationship returning.



Source: Guinness Atkinson Asset Management, MSCI, Bloomberg, as of August 31st 2023

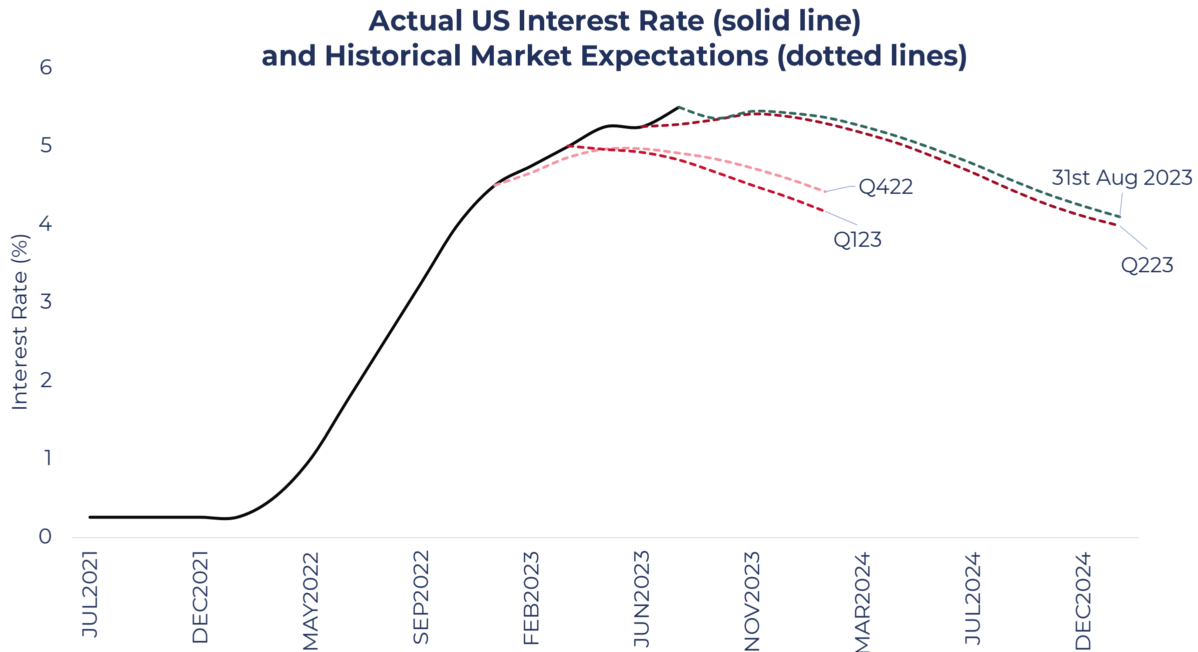
In August, we saw a significant increase in yields across longer maturities (10 years +). This created a headwind for growth stocks in the initial part of the month, and particularly at the 'speculative end' of the growth spectrum, which typically have an even greater sensitivity to interest rates.



Source: Guinness Atkinson Asset Management, MSCI, Goldman Sachs, Bloomberg, as of August 31st 2023

Why are yields now rising?

Over the past two years, the increase in yields has been driven predominantly by interest rate expectations. As the Federal Reserve has undertaken a historic tightening cycle, bond yields have been driven upwards.



Source: Guinness Atkinson Asset Management, Bloomberg, as of August 31st 2023

Interestingly, despite the rise in government yields at the long end of the spectrum over the past couple of months, there has been very little change in interest rate expectations. What is driving the increase? One way to look at this is by breaking down the nominal yields into a real yield and inflation expectations (since nominal yields = the breakeven rate + a real yield). Real yields are often used as a reflection for market expectations of economic growth, and the breakeven rate is a measure of the implied average inflation expectation over the defined time period.

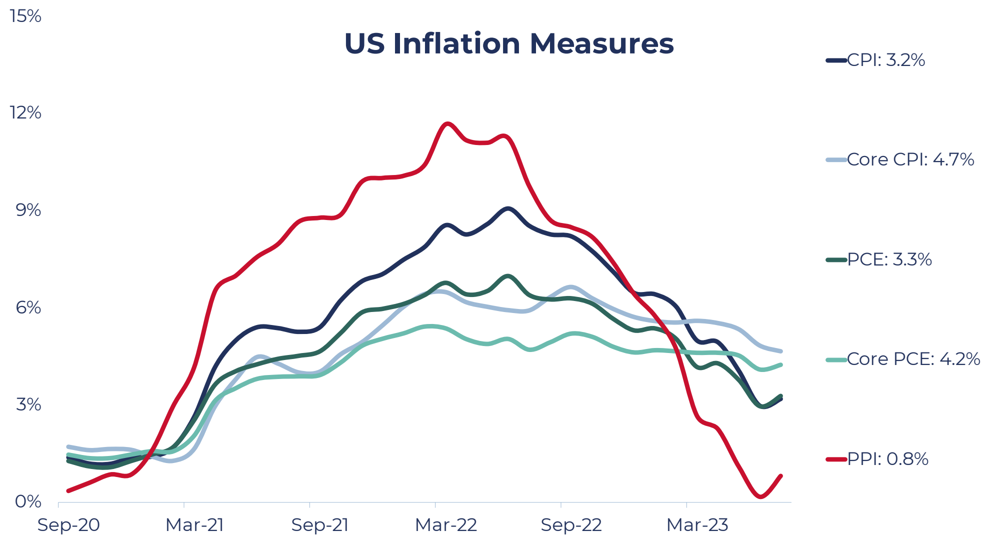
US 5 Year Breakeven Expectations
Dec 31st 2021 – Aug 31st 2023

Source: Guinness Atkinson Asset Management, Bloomberg, as of August 31st 2023

The US 5 year breakeven has remained stable since May and has even declined over the month of August. Hence any change in the nominal yield must be driven by a change in the *real* yield, suggesting a change in market expectations of economic growth. The recent rise in treasury yields reflects improved growth expectations, as fears about recession have subsided at the same time as inflation data continues to show improvement. It should be pointed out that these are market implied figures rather than actual economic estimates.

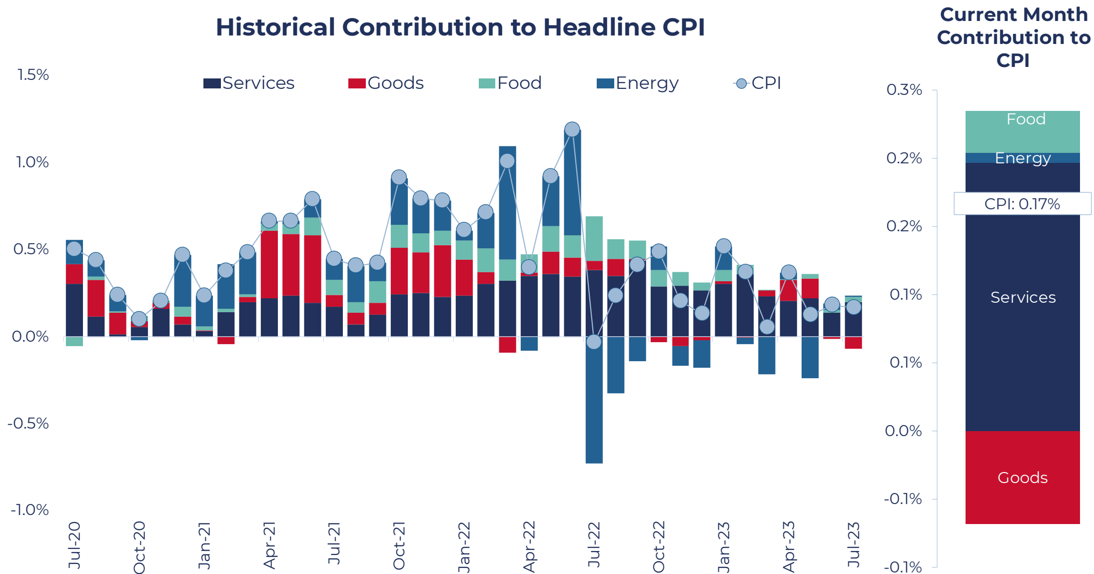
Does this mean a soft-landing is now priced in?

The best-case scenario for the market is a soft-landing. This means that the Federal Reserve have adjusted interest rates such that there is a return to normalized inflation of around 2% target, without an economic recession (and ideally without a significant step-up in unemployment). Progress in inflation is clear in the US. Most measures of inflation have shown signs of improvement, although the Fed's preferred measure, Core Personal Consumption Expenditures (PCE), is showing the slowest downward trend.



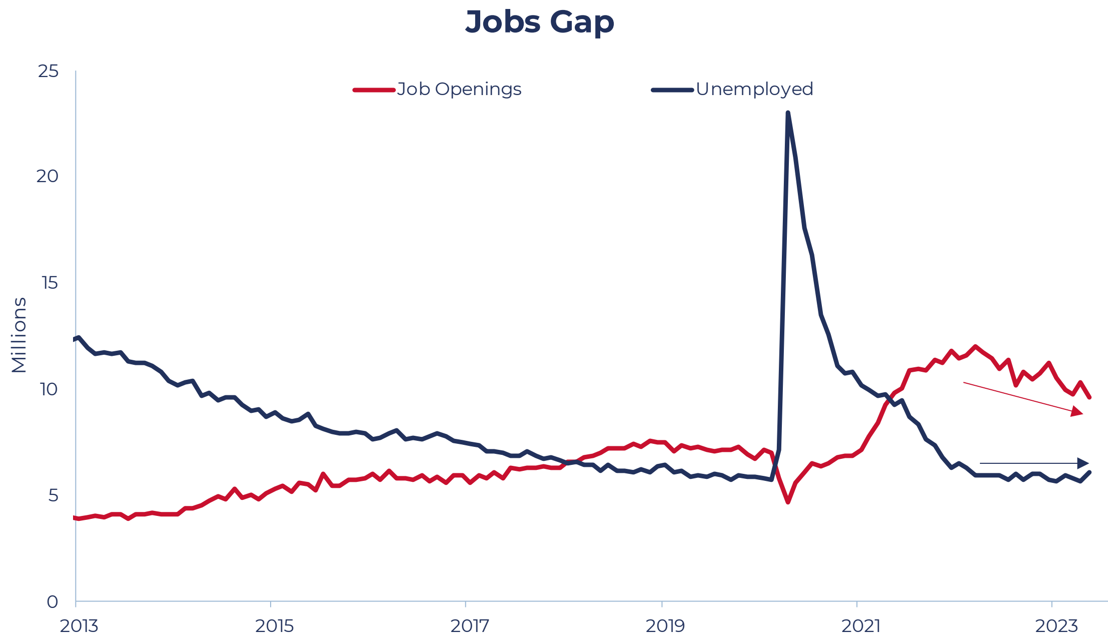
Source: Guinness Atkinson Asset Management, Bureau of Labor Statistics, Bureau of Economic Analysis, Bloomberg, as of August 31st 2023

In terms of inflationary pressures, we have seen an improvement in the 'stickiest' source of inflation, Services. While still the biggest contributor to month-on-month inflation, this has made significant progress over the last 12 months, with Food, Energy and Goods no longer offering a meaningful contribution over a sustained period.



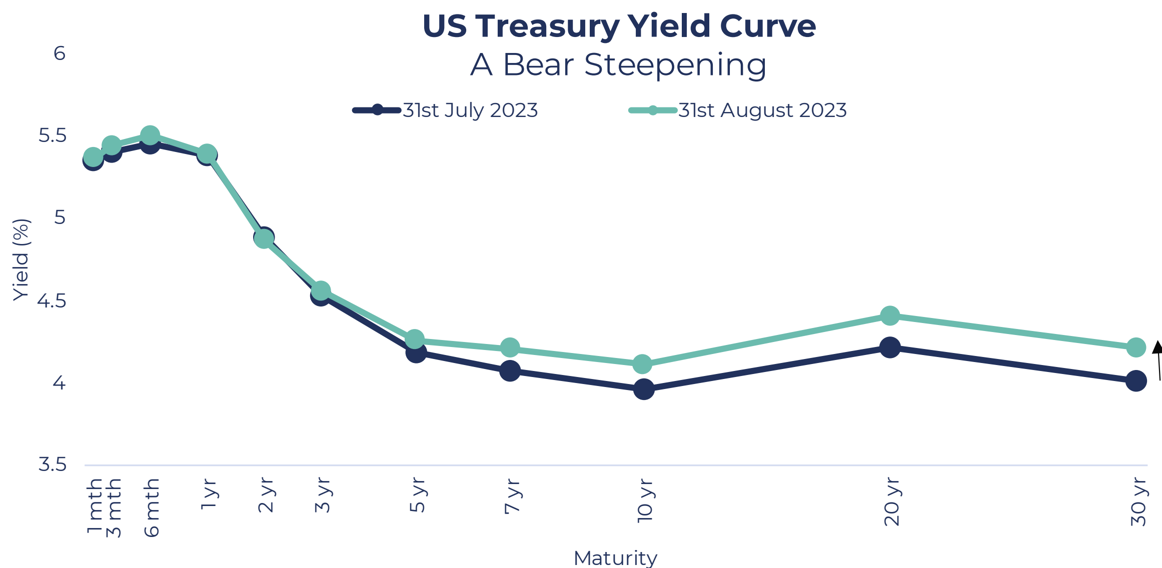
Source: Guinness Atkinson Asset Management, Bureau of Labor Statistics, Bloomberg, as of August 31st 2023

There has also been good progress in the jobs market, as the jobs gap has shown persistent progress in closing. While the unemployment rate has stayed relatively flat, job openings have been trending downwards, reducing pressures on wages and hence inflation pressures.



Source: Guinness Atkinson Asset Management, Bureau of Labor Statistics, Bloomberg, as of August 31st 2023

Despite a record hiking cycle over the past two years, the economy has remained surprisingly resilient, and inflation has trended downward, all pointing to an improved outlook and a greater chance of a soft-landing. On the other hand, the yield curve remains deeply inverted – one of the most successful forward indicators for economic recessions. Looking at the yield curve more closely, we have seen what is termed a 'bear steepening' over the past month. This occurs when bond prices are falling (i.e. yields are rising), but the yield curve is steepening. While not totally uncommon, this type of movement does not occur that often.



Source: Guinness Atkinson Asset Management, Bloomberg, as of August 31st 2023

What does this all mean for equities?

Over the year, we have often commented on the apparent contradiction that good news in the economy can often be interpreted as bad news for equity markets. Expectations of an improved economic growth outlook have often invited views of greater inflationary pressures and hence continued tight monetary policy from central banks, creating a further headwind for equities – not just in their cost of debt, but the discount rate at which they are valued. The opposite is also true; tentative signs of a cooling economy and a marginally weakening outlook across several data points have been viewed as a positive for markets over the medium term, as investors began to price in central bank rate cuts sooner than previously expected.

At the start of August, however, it appeared that market expectations for a "Goldilocks" scenario (a scenario in which the Fed brings inflation down towards the targeted 2% without causing a recession) that had supported the recent equity rally had been called into question and we saw equity markets fall in the first half of the month - serving as a reminder of the potential negative impact of tighter monetary policy and of its lagged effects. The rally into the month end, however, followed what we have seen across much of the year – growth outperforming with Information Technology and Communication Services leading.

The future direction of markets into the year-end therefore continues to reflect the balance between the benefit of lower rates to equity valuations and a weaker economic picture that might precede those lower rates. This is also in context of a market rally that has been predominantly driven by a re-rating upwards of market multiples, rather than a fundamental change in company earnings today. We therefore believe our 'quality growth' approach and focus on the valuation we are paying up for any future growth in our investee companies remains a sensible approach in this environment.

Changes to the Portfolio

In August we made one change to the portfolio:

Buy - Novo Nordisk

Novo Nordisk is an innovative industry leader characterised by high R&D / sales and world class new product innovation, driving sector beating cash returns. The firm has shown strong momentum in recent quarters, with their weight loss drug Wegovy exhibiting positive early results and looks to be a meaningful growth driver for the business going forward. Additionally, they are also showing a broadening out of strength from the rest of the portfolio particularly in Cardio Vascular, which has a much wider addressable market. Sales growth has been accelerating with a 2yr forward sales (compound annual growth rate) CAGR of 22% and a 2yr forward earnings per share (EPS) CAGR of 30%. The firm's CFROI (cash flow return on investment) stands at 20.4%, the firm has strong dividend growth (5 year dividend CAGR is 10%) and the balance sheet remains solid (debt has grown to $25bn but is ~ 0.3X EBITDA, a very manageable figure).

Sell - Bristol Myers Squibb

Over the holding period, Bristol-Myers Squibb returned +9.6% vs the MSCI World +34.4%. Our sell decision was based on a view of a weakened outlook. In Q2 2023, management downgraded guidance for FY2023, previously seeing 2% topline growth and now seeing low single digit declines, primarily due to generic competition from biosimilars which hurt demand for its multiple myeloma therapy, Revlimid. Revlimid sales are tracking weaker than expected and there are additional headwinds on the horizon, with BMS patents expiring in 2023 on drugs such as Opdivo, a cancer drug, and Eliquis, a blood thinner.

This somewhat weaker relative performance, comes on the back of very strong performance in 2022 - where the stocks rallied +19% vs the benchmark MSCI World Index which fell -18% and made BMY the best performer in the fund over the period. Generally, healthcare did better in that period (along with defensive sectors more broadly) but the stock also benefitted from improved expectations of new pipeline drugs. In 2022 the multiple expanded from 8.5x to 10.5X, but we have seen that de-rate in 2023 back towards 8.5x on lowered growth expectations. We do not currently see strong potential for this to reverse, although we note any positive news flows on their pipeline progress would likely challenge that view (but is by definition hard to predict). We therefore felt there were better opportunities offering superior growth and quality characteristics that we seek.

Individual Stock Performance

Intuit (+5.9% USD).

Intuit ended the month as the Fund's top performer. Intuit 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, 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. Supported by the rotation back towards growth, a positive earnings release at the end of August injected further momentum into the stock, taking year-to-date returns to 40.0% (in USD). Revenues came in +2.4% ahead of expectations, an increase of 13% year-over-year. The performance of the firm's core segment, Small Business and Self-Employed (which includes QuickBooks and Mailchimp) was particularly strong, with revenue growth of 24%.

"Five years ago, we declared our strategy to be an AI-driven expert platform with data and AI core to fueling innovation across our 5 Big Bets. - Sasan K. Goodarzi, Intuit Inc. - CEO, President & Director

The firm is continuing to double down on its 'big bets', in particular their efforts to become the 'center of small business growth'. Management has shown commitment and execution in driving efficiency gains across the business and forward revenue guidance remains conservative, with the firm noting that it was taking a 'prudent' approach to guidance given macro-uncertainty. We see this as sensible, but also note the opportunity for positive surprises down the road. The firm enters FY24 with a strong set-up, retaining a market leading position with a strong economic moat, and a number of long-term growth drivers.

Nvidia (+5.6% USD)

Nvidia's strong outperformance continued into August, taking total returns year-to-date to 237.8%. The majority of this outperformance was sparked at the end of May following Nvidia's blowout earnings release, where guidance of $11bn for the next quarter was $4bn ahead of expectations. Results announced during the month of August again significantly beat guidance, delivering revenues of $13.5bn – year-on-year growth of 102% and 22% ahead of consensus estimates. Management also guided for an extraordinary third quarter of $16bn, +170% to the prior year and 27% higher than analyst estimates. The chip designer's unique position in supplying GPU chips that can handle the computing power required for Generative AI has been the ultimate driver of recent share price performance. The chip in

question, the H100, was released last year and costs around $40,000, offering higher performance and reduced training costs for AI learning systems. Excitement over the technology demonstrated by Chat GPT led to a rush in tech firms across sectors attempting to purchase the chip, powering Nvidia to a blow-out quarter.

Infineon (-18.7% USD)

Infineon gave up a large chunk of its strong year-to-date performance over August, with the stock ending the month down -18.7%. Year to date, the firm remains up 18.6%, well ahead of the MSCI World Index (up +11.4%), but lagging other Semiconductor peers. Nearly half of the firm's negative performance in August came on the day of results, despite the revenues and earnings coming in broadly as expected. End-market performance was relatively bifurcated, with auto's & industrials performing well, while consumer remained weak. While revenue was down 1% sequentially, the firm beat guidance (+2.5%) and grew +13% year-over-year. The firm announced a significant expansion to their SiC (silicon chip) foundry in Kulin, costing $5bn through to 2028, making it the world's largest 200mm SiC factory. The firm has covered the cost of manufacture through not just EUR 5bn 'design-wins', but EUR 1bn in customer pre-payments. The factory is expected to drive EUR 7bn revenues annually by the end of the decade. The share price reaction was likely driven a.) the level of investment the firm has committed to, in a competitive space – this capex (capital expenditures) comes atop a EUR 5bn commitment to their Dresden build-out; b.) by margin compression (26.1% vs 28.6% in Q2) and c.) weaker guidance for Q4. On the whole, we view the market reaction as overdone. The firm's balance sheet is in very strong (Net Debt to EBITDA 0.4x), as is cash generation (124% trailing 12 months), and we are also reassured that the firm is looking to fund this large capex through achieved design wins and customer prepayments. We therefore view the commitment to invest in industry leading facilities as a positive tailwind to future performance – although we agree that it opens the firm up to a greater risk of factory underutilization and/or a price war with peers who are also investing in the space. In the short term, while it may be disappointing that margins have compressed and the order book is decreasing, longer term, we continue to believe the picture remains bright for Infineon, who are exposed to favourable long term secular trends such as electrification and renewable energy demand.

PayPal (-17.6% USD)

PayPal ended the month as the second bottom performer, with the majority of stock weakness (-15.4% USD) occurring in the first three days of August following their earnings release. While revenues and earnings came in relatively in-line, the stock faced a

strong negative price reaction. Growth remained moderate, with net revenue +7% year-on-year (in-line with consensus) and total payment volumes increasing 11% (on constant currency basis), a slight deceleration from the prior quarter. Transaction margins were a core sticking point in the Q1 results, and saw a further contraction in Q2, falling 120bps. These weaker margins were driven by the firm's unbranded suite of products, Braintree, a checkout alternative to the firm's traditional payment button. The product is aimed at small businesses, and allows them to accept cards, digital wallets, and even Apple Pay. While currently lower margin, it is growing (nearly 30% year-on-year) faster than the market and allowing the firm to take share of an additional $750 million in TAM (total addressable market). As was that case in Q1, we view the negative price movement as unjustified, considering the in-line top-line result, just a small EPS miss and a reaffirmation of guidance for the year. While transaction margin may be pressured over FY23, we expect long term benefits to the overall margin profile. The firm is clearly in a transition period, but there are a number of areas that are showing improvement and long term promise.

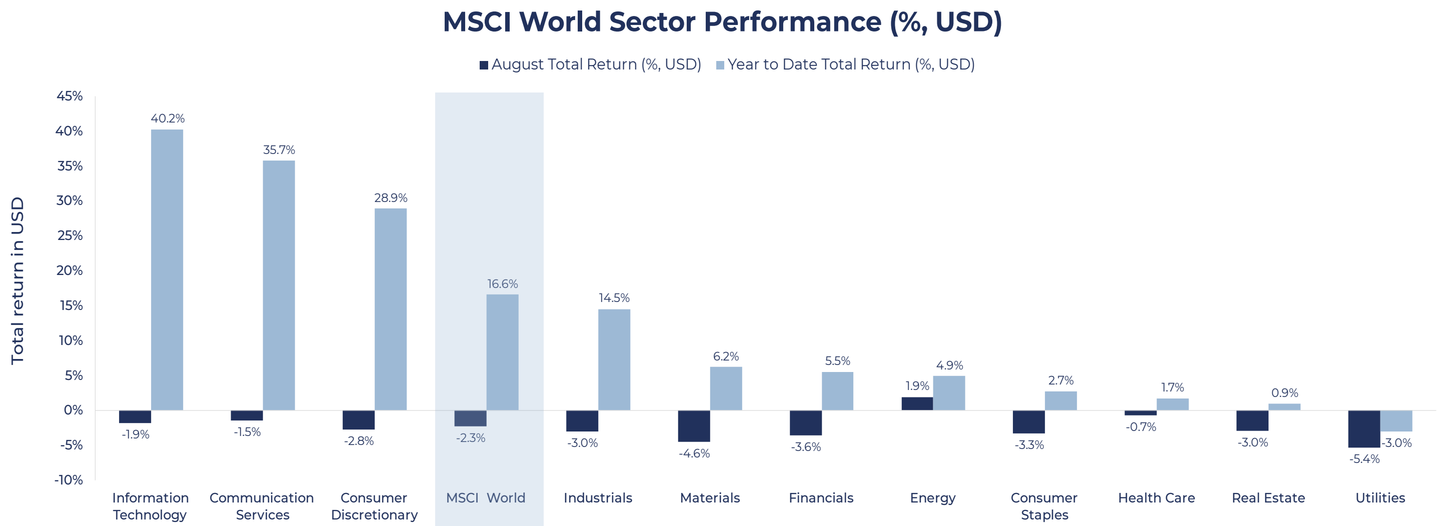
We thank you for your continued support.

Portfolio Managers

Matthew Page, CFA   Dr Ian Mortimer, CFA

Summary performance

Equities faltered during August, breaking a five-month streak of month-on-month gains. Despite persistently high core-inflation across regions, tighter monetary policy than expected from global central banks, broad downgrades of corporate earnings expectations over the year, banking failures, a disappointing Chinese re-opening, recessionary concerns, investors have largely brushed these concerns aside over the course of 2023. Markets have instead been optimistic that the US may yet achieve a soft-landing, with the economy remaining surprisingly resilient (notwithstanding interest rate hikes), but not too 'hot' to risk a return to elevated levels of inflation, and hence tighter-for-longer monetary policy. Index performance in the first half of the year had largely been driven by a narrow selection of 'big tech' stocks, particularly those most exposed to the long-term secular trend of artificial intelligence. With 'narrowness' concentrated particularly within the technology sector (one of three sectors to outperform the MSCI World), growth orientated stocks have outperformed, despite interest rate expectations and yields increasing meaningfully over the period. Since the end of May, this narrowness has largely ended.



Source: Guinness Atkinson Asset Management, MSCI, Bloomberg, as of August 31st 2023

August's declines were shallow but broad, with only energy stocks posting a month-on-month gain. During the month, the 10-year US treasury yield rose to 4.35%, levels not seen since November 2007. This was posited to be driven by a number of factors including a.) the US credit downgrade; b.) greater supply of debt following the resolution of the debt ceiling and c.) positive economic data, including continued consumer resilience, suggesting a stronger economic growth outlook. The increase in yields not only enticed investors away from equities, but created a headwind for 'high-duration' growth stocks in particular. Unlike the prior year, the Fed Chair Jay Powell's speech at Jackson Hole was largely well-received by markets, offering guidance relatively in-line with expectations – that the Fed would continue to be data driven and further rate rises are not off the table.

In the final third of the month, the US GDP estimate was revised downwards (2.1% from 2.4%), the S&P's US Composite PMI (purchase manager's index) fell from 52 to 50.4 in August (a number above 50 indicating positive economic growth), jobs data suggested fewer job openings and a measure of consumer confidence fell. This all helped to fuel a resurgence in stocks, and growth stocks in particular, with investors buoyed by this news that the economy was continuing to perform well, but not so well that inflation may re-accelerate which, all else equal, could push the Fed to issue further rate rises.

During the month, relative outperformance of the Fund was driven by the following factors:

- While value outperformed for the majority of the month, a late resurgence in 'growth' stocks, more than offset this outperformance, which acted as a tailwind for the Fund.
- Stock selection was the core driver of outperformance for the Fund. The Firm's financials holdings, Mastercard and Visa, outperformed their sector group (MSCI World Financials) by +8.3% and +7.2% (in USD) respectively. Stock selection within Information Technology was also strong, with the Fund's top two performers for the month, Intuit and Nvidia, also delivering returns ahead of their respective sector group (MSCI World Information Technology) by +7.9% and 7.6%, respectively.

- From an allocation perspective, having no exposure to the Energy sector, the only positively performing sector during August, created a drag to relative performance. However, this was offset by the Fund's zero exposure to Utilities, Consumer Staples, Materials and Real Estate. The Fund's overweight position to Information Technology offered a small tailwind.
- Weakness in Infineon (-18.9%) and PayPal (-17.6%) was not enough to offset the broader strength across the portfolio, with almost two-thirds of the Fund's holdings outperforming the MSCI World.

as of 08.31.2023 (in USD)	**1 year**	**3 years annualized**	**5 years annualized**	**10 years annualized**
Global Innovators, Investor Class[1]	**26.03%**	**7.73%**	**10.97%**	**12.74%**
Global Innovators, Institutional Class[2]	**26.37%**	**8.00%**	**11.25%**	**12.95%**
MSCI World Index NR	**15.60%**	**8.41%**	**8.32%**	**9.27%**

as of 06.30.2023 (in USD)	**1 year**	**3 years annualized**	**5 years annualized**	**10 years annualized**
Global Innovators, Investor Class[1]	**25.40%**	**11.22%**	**10.80%**	**12.84%**
Global Innovators, Institutional Class[2]	**25.69%**	**11.49%**	**11.08%**	**13.05%**
MSCI World Index NR	**18.51%**	**12.18%**	**9.06%**	**9.49%**

All returns after 1 year annualized.

[1] Investor class (IWIRX) Inception 12.15.1998 Expense ratio* 1.24% (net); 1.27% (gross)
[2] Institutional class (GINNX) Inception 12.31.2015 Expense ratio* 0.99% (net); 1.10% (gross)

[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, 2026. 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 8/31/2023:

1.	NVIDIA Corp	4.76%
2.	Lam Research Corp	4.00%
3.	Mastercard Inc	3.92%
4.	Amphenol Corp	3.90%
5.	Microsoft Corp	3.86%
6.	KLA-Tencor Corp.	3.84%
7.	Applied Materials Inc	3.84%
8.	ABB Ltd	3.79%
9.	Intuit Inc	3.78%
10.	Roper Technologies Inc	3.68%

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 and revenue growth are 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.

The MSCI World Equal Weighted Index represents an alternative weighting scheme to its market cap weighted parent index, the MSCI World Index. The index includes the same constituents as its parent. However, at each quarterly rebalance date, all index constituents are weighted equally, effectively removing the influence of each constituent's current price (high or low).

The Citigroup Economic Surprise Indices are objective and quantitative measures of economic news. They are defined as weighted historical standard deviations of data surprises (actual releases vs Bloomberg survey median). A positive reading of the Economic Surprise Index suggests that economic

releases have on balance [been] beating consensus. The indices are calculated daily in a rolling three-month window.

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.

The Purchasing Managers' Index (PMI) is an index of the prevailing direction of economic trends in the manufacturing and service sectors.

The Producer Price Index (PPI) is a family of indexes that measures the average change over time in selling prices received by domestic producers of goods and services. PPIs measure price change from the perspective of the seller.

The Personal Consumption Expenditures (PCE) Price Index Excluding Food and Energy, also known as the core PCE price index, is released as part of the monthly Personal Income and Outlays report. The core index makes it easier to see the underlying inflation trend by excluding two categories – food and energy – where prices tend to swing up and down more dramatically and more often than other prices.

One basis point (bps) 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 Federal Open Market Committee (FOMC) consists of twelve members--the seven members of the Board of Governors of the Federal Reserve System; the president of the Federal Reserve Bank of New York; and four of the remaining eleven Reserve Bank presidents, who serve one-year terms on a rotating basis.

Standard deviation is a statistic that measures the dispersion of a dataset relative to its mean and is calculated as the square root of the variance. If the data points are further from the mean, there is a higher deviation within the data set. A volatile stock has a high standard deviation, while the deviation of a stable blue-chip stock is usually rather low.

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 MSCI China Index captures large and mid cap representation across China A shares, H shares, B shares, Red chips, P chips and foreign listings (e.g. ADRs). With 717 constituents, the index covers about 85% of this China equity universe. Currently, the index includes Large Cap A and Mid Cap A shares represented at 20% of their free float adjusted market capitalization.

A yield curve is a line that plots yields, or interest rates, of bonds that have equal credit quality but differing maturity dates. The slope of the yield curve can predict future interest rate changes and economic activity. There are three main yield curve shapes: normal upward-sloping curve, inverted downward-sloping curve, and flat.

A composite PMI™ is the weighted average of manufacturing and service sector PMIs for a given geography or economy, produced by S&P Global.

Cash flow return on investment (CFROI) is a valuation metric that looks at cash flow, relative to a company's cost of capital. CFROI assumes that the financial markets set the prices of stocks based on a company's cash flow, rather than primarily on earnings or other metrics.

The net debt-to-EBITDA ratio is a debt ratio that shows how many years it would take for a company to pay back its debt if net debt and EBITDA are held constant.

EBITDA, or earnings before interest, taxes, depreciation, and amortization, is an alternate measure of profitability to net income

Beta is a measure of a stock's volatility in relation to the overall market.

R-squared (R^2) explains to what extent the variance of one variable explains the variance of the second variable. R-squared is a statistical measure that represents the proportion of the variance for a dependent variable that's explained by an independent variable or variables in a regression model.

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 multiples approach is a valuation theory based on the idea that similar assets sell at similar prices. It assumes that the type of ratio used in comparing firms, such as operating margins or cash flows, is the same across similar firms.

Multiple expansion is when a stocks valuation multiple (for example, their Price to Earnings ratio, or Enterprise Value to EBITDA ratio) increases, meaning that the stock is now more expensive than before.

Compound annual growth rate, or CAGR, is the mean annual growth rate of an investment over a specified period of time longer than one year. It represents one of the most accurate ways to calculate and determine returns for individual assets, investment portfolios, and anything that can rise or fall in value over time.

Correlation is the interdependence of variable quantities. It is a statistical measure that expresses the extent to which two variables are related i.e. how much one variable changes when another variable changes. The relationship does not need to indicate causation.

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 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%

The MSCI USA Index is designed to measure the performance of the large and mid cap segments of the US market. With 625 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in the US.

Forex (FX) refers to the global electronic marketplace for trading international currencies and currency derivatives. Most of the trading is done through banks, brokers, and financial institutions.

Year-over-year (YoY) sometimes referred to as year-on-year, is a frequently used financial comparison for looking at two or more measurable events on an annualized basis

Total Addressable Market (TAM), also referred to as total available market, is the overall revenue opportunity that is available for a product or service if 100% market share is achieved. Because it represents the potential opportunity, it is often used to determine the level of funding or resources that a company should invest into a new product or business line.

One cannot invest directly in an index.

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