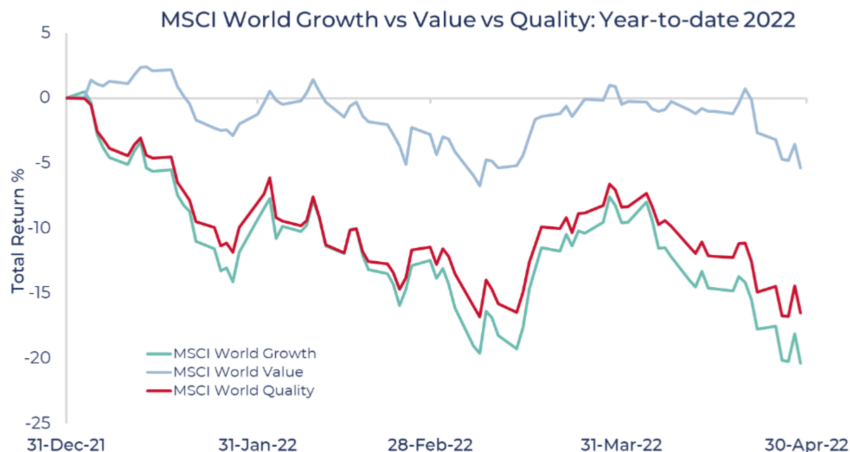
Guinness Atkinson
**Global Innovators Fund**
Managers Update – May 2022

GUINNESS ATKINSON FUNDS

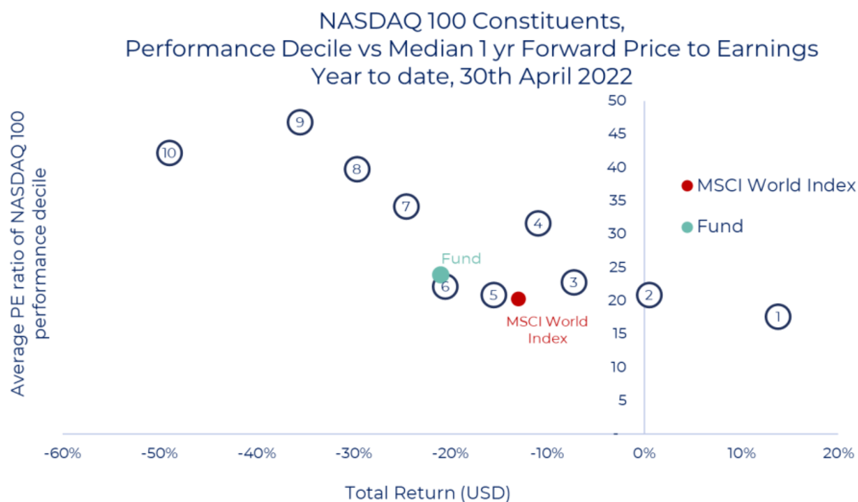
**April in review:**

Since the turn of the year, there has been a significant divergence in performance between growth and value. The MSCI World Value Index has outperformed the MSCI World Growth Index by +7.9% USD, and the MSCI World by +3.5%. In the context of war in Europe, high inflationary pressures, disrupted supply chains and hawkish monetary policy, investors have sought the sanctuary of value-tilted names.




*Source: Bloomberg, Guinness Atkinson Asset Management*

Growth-focused sectors such as Information Technology, to which the Fund has an overweight position, typically trade from higher multiples, and de-rated over the period. Yet even within the technology sector, there has been a clear correlation between performance and level of valuation. This can be observed in the chart below, which compares the median 1-year-forward Price-to-Earnings ratio of each performance decile within the Nasdaq 100, a predominantly tech focused index.



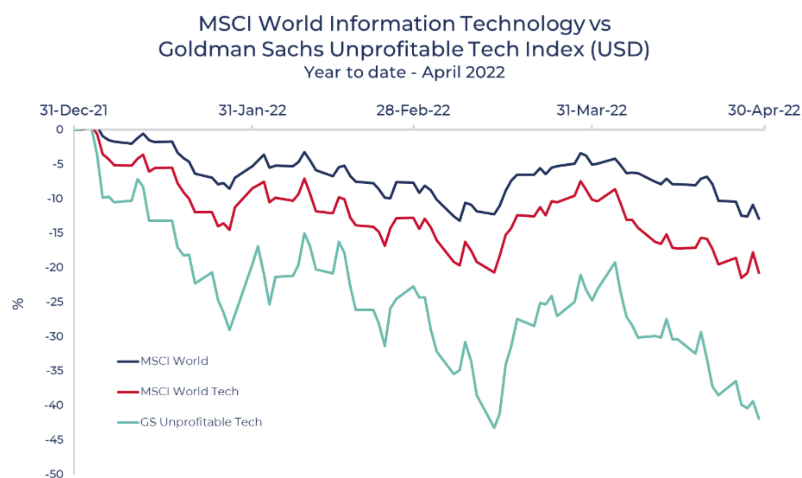

*Source: Bloomberg, Guinness Atkinson Asset Management*

'Speculative' growth stocks are typified by high-multiples and are typically "high duration" in nature, with a significant portion of their cash flows forecast to materialize long into the future. Consequently, these companies are typically more sensitive to changes in interest rates, which make up an important element of the discount rate in which to measure the present values of future cash flows. As seen in the chart above, over a period in which 'risk-off' sentiment becomes prevalent, these stocks tend to underperform.

Over the course of the pandemic, a number of "stay-at-home" speculative stocks were bid up to high valuations as demand accelerated for their products. During this period, the market often failed to accurately distinguish between stocks in which a permanent change in customer behavior and habits would create superior cashflows for the underlying, and those in which the tailwinds were just temporary. Netflix is a prime example, at one point reaching 80x 1-year forward Price to Earnings. However, as "stay-at-home" speculative stocks in which behavior change tailwinds are now expected to be temporary, or even the 'pull forward in demand' is given back, we have seen significant de-ratings alongside changing future rate expectations. Netflix, as of the end of April, was trading at 18x 1 year forward PE.

Stocks held in the Fund play instead to long-term, secular growth themes, such as Cloud Computing, Artificial Intelligence and Big Data. While the pandemic may have been a catalyst for demand in products and services within this segment and therefore proved a boon for related stocks, these revenues are 'stickier' and more-long term in nature. As a result, the Fund has largely been isolated from the temporary behavioral changes that many speculative stocks at first benefited from, but are now paying the price. Microsoft, held within the Fund, is a good example, as the shift to cloud accelerated during the pandemic, and continues to carry momentum into the long term. While Microsoft peaked at 35x 1-year-forward PE over the pandemic, it's strong earnings performance has allowed it to maintain a premium valuation of 30x (as at the end of April), despite the tech sell off.

Alongside exposure to long-term secular trends, the Fund's quality tilt is particularly important in periods of volatility and weak equity performance. The year-to-date returns of the Goldman Sachs Unprofitable Tech Index (a basket of tech stocks with negative earnings) has sold off significantly this year, where concerns over supply chain disruption and rising yields have caused a rotation towards stocks which have actual, positive earnings and can rely on the strength of their balance sheets, alongside high margins in which to absorb the shocks of rising costs. These are all factors typical of stocks within the Fund.

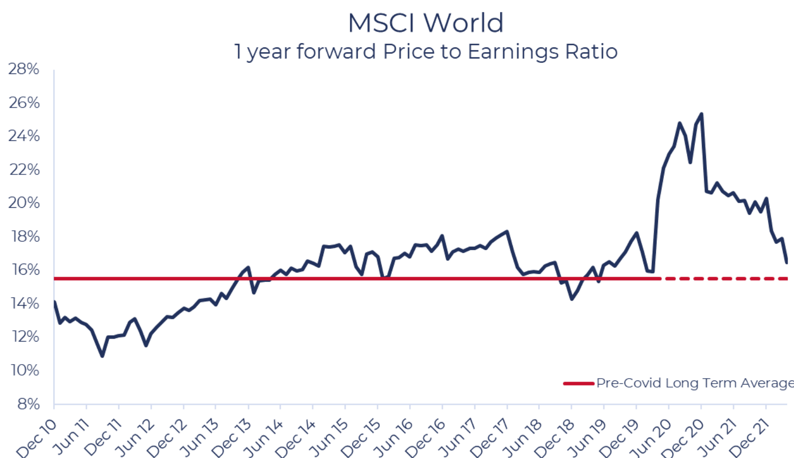



*Source: Bloomberg, Guinness Atkinson Asset Management*

And much in the same vein, being conscious of valuation has also been a tailwind. As seen below in MSCI World Information Technology Growth Index vs MSCI World Information Technology Value Index, technology stocks with a value tilt actually performed in-line with the broader MSCI World Index, whereas higher valued 'growth' tech stocks have underperformed. Part of this is risk aversion – value orientated stocks are typically more defensive, due to higher, more stable earnings, albeit less growth. With a weak economic outlook over the medium-term, (inflation, war, interest rate hikes), investors have sought higher quality, safe havens with less of a downside valuation risk.

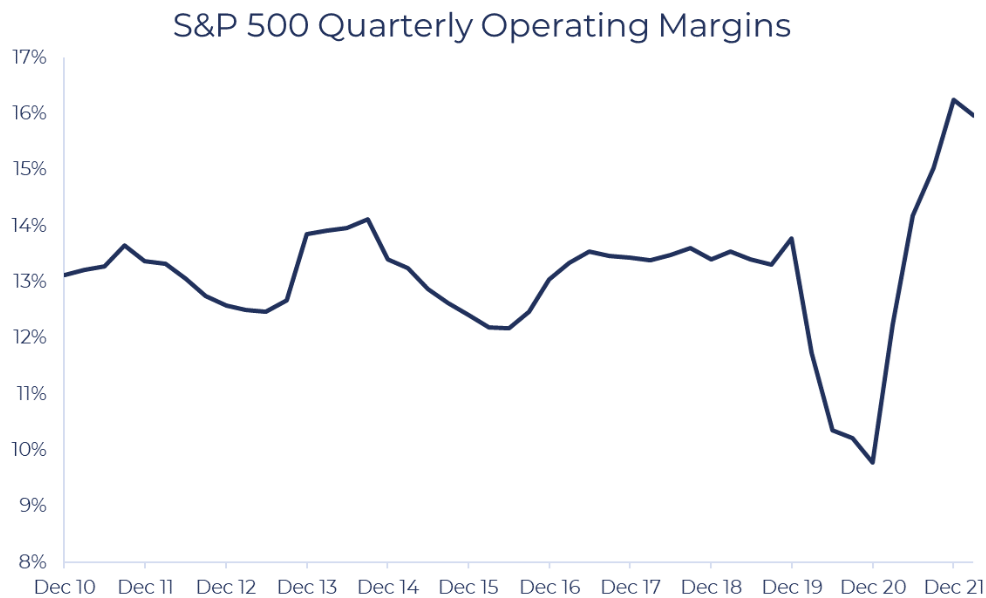
*Source: Bloomberg, Guinness Atkinson Asset Management*

In the midst of this rotation towards value and away from growth and particularly the speculative end, this has resulted in valuations coming-off since the beginning of the year. The S&P 500 is approaching levels around the pre-pandemic long run average, as seen below. This may be indicative of a more rational and healthy market environment, where "growth at any value" is no longer a sustainable strategy and long-term trends and quality aspects become more important.



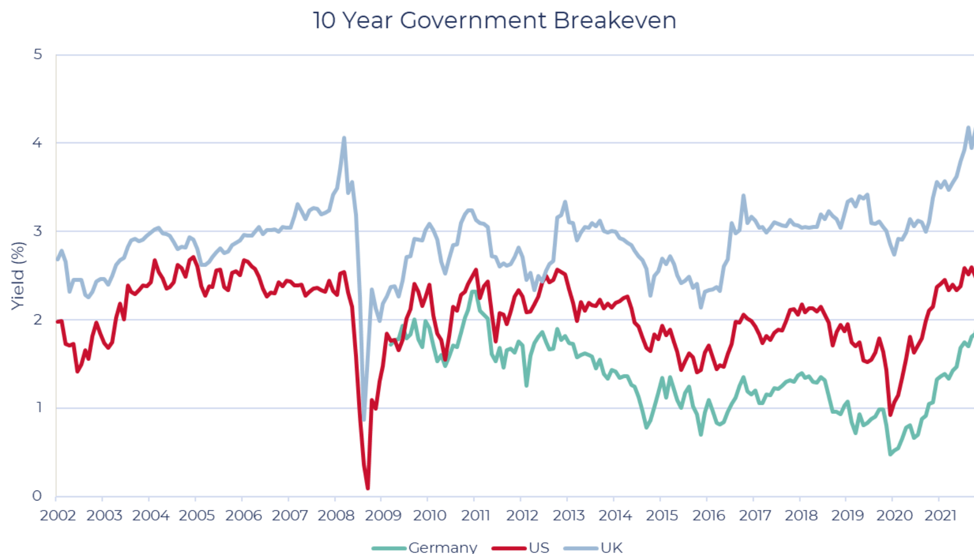

*Source: Bloomberg, Guinness Atkinson Asset Management*

While this long term average Price to Earnings level could offer an attractive entry point for many, on balance, there are valid arguments for why this value rotation could still have room to run in the short term. Margins in the S&P 500 are currently running at an all-time high, with company's hiking prices to offset inflation and benefitting from operating efficiencies made during the pandemic. A fall in margins, which in an inflationary environment is certainly a possibility, could therefore cause earnings expectations to decline, and valuations to again increase, leaving room for further potential downgrades.




*Source: Bloomberg, Guinness Atkinson Asset Management*

On top of this, the future path of inflation and interest rates has yet to fully play out. Inflation continues to run rampant. The US Consumer Price Index recorded inflation of 8.5% in April, a new 40 year high, and has shown little indication of slowing down in the short-term. The story is similar elsewhere, with the UK reaching new 30 year highs (+6.2%) and the EU reaching all-time highs (+7.5%). The 10 year government breakeven, a common indicator of future inflation market expectations, rose sharply to new 10 year highs.

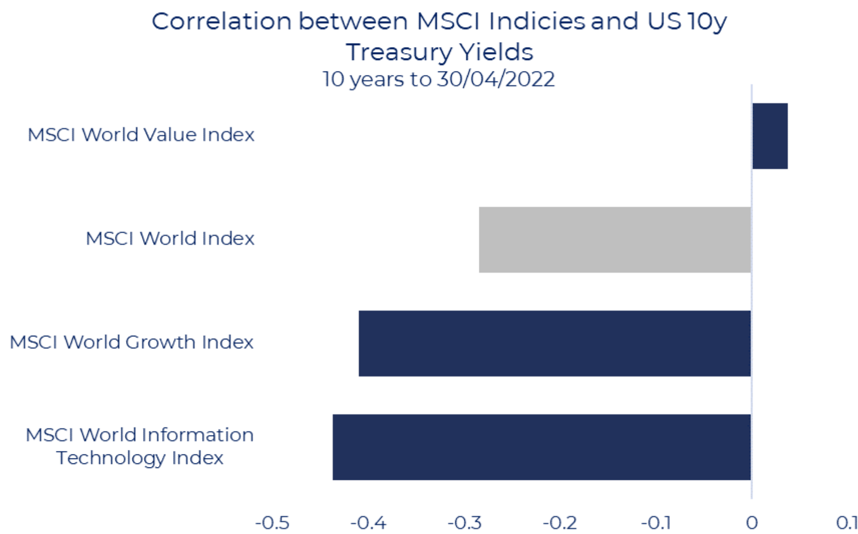



*Source: Bloomberg, Guinness Atkinson Asset Management*

It was not until the end of November last year that the Fed "retired" the word transitory from describing inflation. At the turn of the year, the tone became markedly more hawkish, as US Fed Chair Jay Powell failed to rule out potential rate hikes at every subsequent Federal Open Market Committee (FOMC) meeting from March until the end of 2022. By the end of April, markets were pricing in three 50bps rate hikes in the following three FOMC meetings. This is in stark contrast to the market's position in June last year, where consensus estimated no interest rate rises in the US during 2022, and just one by the end of 2023. This rapid change in expectations has acted as a significant headwind to equities, and growth stocks in particular. With inflation still prevalent, this causes concern that rate hikes could come at an even greater pace. As a result, we have seen bond yields driven sharply higher. In particular, real-yields, as calculated by the Federal Reserve, turned positive for the first time since March 2020, exiting their longest ever period in negative territory.

*Source: Bloomberg, Guinness Atkinson Asset Management*

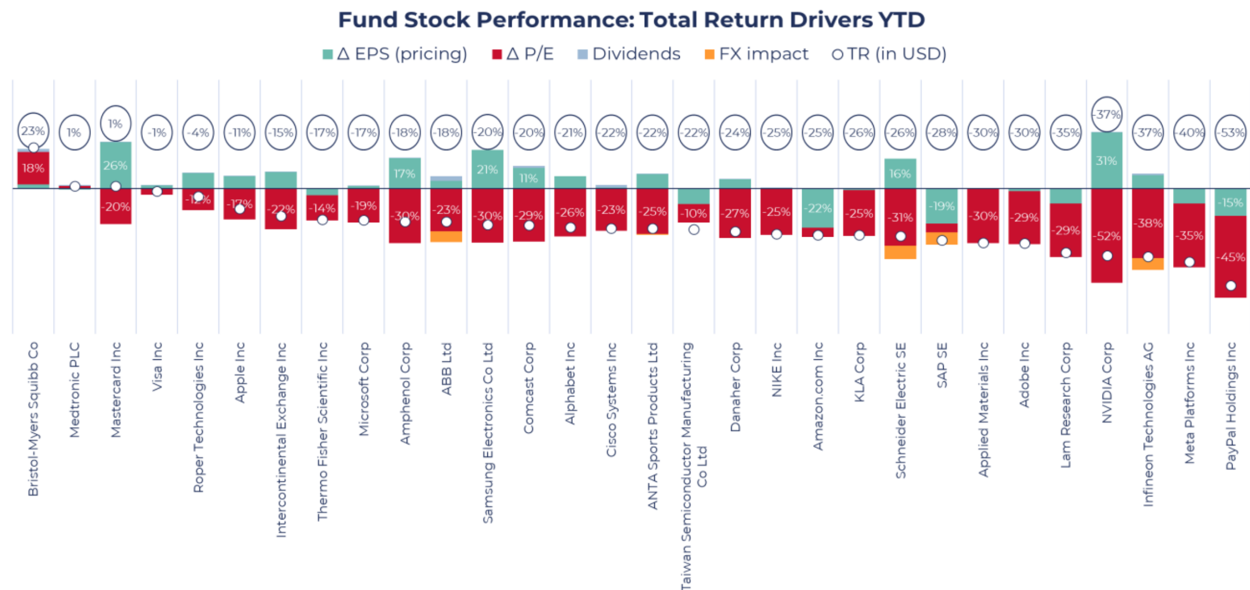
In the past 10 years, there has been a positive correlation between yields and value orientated stocks. When yields increase, value tends to outperform – and April was no different.




*Source: Bloomberg, Guinness Atkinson Asset Management*

First quarter company earnings offered a relative bright spot amidst the context of war, China covid-lockdowns, rampant inflation and hawkish monetary policy. Of the 55% of S&P 500 companies that reported by the end of April, 72% of firms reported a beat to top-line revenues (5 year avg 69%, FactSet), with an average beat of 2.2% (5 yr avg 1.7%) and average growth of +14%. More companies than average also reported a beat to the bottom line (80% vs 77% 5 yr avg), although the 'beat' of +3.4% was below the historical average (8.9%) and the first-time average earnings growth was in single digits (+7.1%) since Q4 2020. In what has been a difficult year for equity performance, fundamental numbers are proving to be more resilient than market expectations.

Despite the uncertain outlook, we are confident in the long term positioning of the portfolio. Strong quality metrics, in particular strong balance sheets with low debt servicing requirements, high margins and solid return metrics, should serve the stocks well in periods of volatility and market concern. Recent earnings announcements resulted in earnings upgrades across a vast portion of portfolio holdings, highlighting the strength in the underlying business models despite the inflationary environment. Yet even with fundamentals being in check and outlooks upgraded, multiples contracted, with portfolio stocks largely being caught up in the general tech/growth sell off, rather than any underlying concern about fundamentals and earnings.




*Source: Bloomberg, Guinness Atkinson Asset Management*

Indeed, we believe there is a good argument for high quality, secular growth stocks in the 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. The recent, and significant, de-rating of many of these companies 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 and broader geopolitical situation remains uncertain.

## Earnings Review

In what has been a difficult year for equity performance, fundamentals are proving to be more resilient than market expectations. During the month, a number of positive themes emerged, including:

**Strength in consumer spending – Mastercard & Visa**

Both Mastercard and Visa, two of the funds top three performing stocks over the period, highlighted the strength in consumer spending across their payments networks, driving adjusted net revenues up +27% each (year-on-year), despite exiting their Russian businesses during the period (Russia about 4% of sales for both firms). In terms of where money is being spent, sectors that were impacted by lockdowns are now accounting for a larger portion of consumer wallets with travel, retail goods, and restaurants all showing broad based growth. The earnings releases highlighted two key points, above all else:

1.) **Neither payment network has seen a negative impact as a result of inflationary pressures and macro-volatility**, with payment volumes holding up and with limited change in consumer spending habits.

*"We are monitoring a number of factors, including inflationary pressures, supply chain constraints, geopolitical uncertainties and COVID infection rates. At this stage, we have not seen any significant impact of these in consumer spending." – Mastercard, Sachin Mehra CFO*

2.) **Cross-border travel is in the midst of an ongoing and sharp recovery**, with payment volumes above 2019 levels for the first time since the pandemic (+110% for Mastercard, +112% for Visa), with continued pent-up demand offering a strong outlook.

*"Overall, Payments Volume were 135% versus 3 years ago [pre-pandemic]. Cross-border volumes, excluding intra-Europe [where margins are in-line with domestic transactions], were 112% versus 3 years ago. And it's important to note that travel-related cross-border rose to 82% versus 3 years ago, up 5 points from Q1" – Visa, Alfred Francis Kelly CEO*

**<u>Business demand for tech remains robust</u> – Roper & Microsoft**

Strong business demand was evident in a number of earnings announcements, particularly within the tech sector. Roper Technologies, a tech company for niche industrial use-cases, felt broad based organic revenue growth across both software and product segments of +11%. The firm highlighted an important characteristic typical amongst many software companies – high quality, sticky revenues. Of the firm's software revenues (about two-thirds of sales), approximately 75-80% are recurring (up from 65%-75% last year), helping to protect the downside in times of macro-volatility.

*"Not only did we grow nicely in the quarter, but the quality of the underlying business also improved as we saw double-digit organic increases in our recurring revenue base." – Laurence Neill Hunn, CEO Roper Technologies*

This sentiment was largely echoed across big tech. Revenues of Microsoft, Amazon and Alphabet's cloud divisions (which make up 62% of the market) grew +42% year-on-year collectively, as businesses continue to accelerate their digital transformation. Microsoft CEO Satya Nadella highlighted succinctly how technology is often the place businesses turn to when attempting to counter inflation, by investing in systems and processes to improve automation and efficiency.

*"In an inflationary environment, the only deflationary thing is software… I don't hear of businesses looking to their IT budgets or digital transformation projects as the place for cuts… If anything, some of these projects are the way they're going to accelerate their transformation…. I have not seen this level of demand for automation technology to improve productivity." – Satya Nadella, Microsoft CEO*

Yet despite a broadly positive set of results (all sectors delivered, on average, a positive revenue surprise during Q1), investors took caution to the subdued and cautious outlook offered by many high profile names, such as Apple and Amazon. Three key themes that were particularly relevant to the fund include:

**<u>Supply-chain headwinds are expected to persist over the short-term</u> – Apple**

Despite earnings announcements often coming in ahead of analyst expectations and management guidance, many companies warned that supply chain woes were expected to continue into the mid-term. Apple warned of a potential $8bn (about 2% of sales) hit over the next quarter, "*which is substantially larger than what we experienced during the March quarter",* with factory shutdowns and supply chain shortages in China being the key driver, alongside silicon semiconductor shortages. At one point during the month, half of Apple's top 200 suppliers

were subject to Covid-19 lockdowns in China. Market concerns surround the fact that if Apple is struggling, smaller competitors with less bargaining power within the supply chain will also be. Taking a long-term view, while supply chain issues may persist in the short-term, relatively speaking, this will likely benefit companies with strong, entrenched market positions over the long term, relative to smaller competitors with less power over suppliers. Demand continues to remain hot, and supply issues will likely just delay revenues, rather than be forgone altogether.

**Cost Pressures are starting to bite - Amazon**

Cost input inflation was another core key topic amongst earnings announcements, with rising energy prices, worker shortages, freight challenges and raw material inflation affecting a broad base of companies across industries. Amazon, who rapidly increased capacity to keep up with pandemic related demand over the past couple of years, are now suffering with excess capacity and overstaffing. The firm also noticed a slow-down in discretionary spending, which is seemingly in contrast to the statements made by Visa and Mastercard. This discrepancy may simply be reflective of a shift in consumer spending habits towards services that Amazon does not offer – restaurants, hotel and travel for example – which are now more freely available post pandemic.

*"We continue to face a variety of cost pressures in our Consumer business. We'll break these into 2 buckets: externally driven costs, primarily inflation; and internally controllable costs, primarily productivity and fixed cost deleverage…. Line haul air and ocean shipping rates continue to be at or above the rates in the second half of last year…. Some of this is due to the impact of the Omicron variant in China and labor shortages at point of origin, and the start of the war in the Ukraine has contributed to high fuel prices….The next bucket of costs related to productivity and fixed cost leverage, which we consider to be more within our control and are working to reduce." – Brian T. Osavsky, CFO Amazon*

Despite this, we recognize the risk that increased costs are likely to have on margins, and ultimately, the end-customer. While many companies have so far successfully passed on cost increases to the consumer without impacting demand, partially a result of consumers being flush with cash post-pandemic, 'consumer fatigue' over price increases could set in eventually.

**Online Advertising momentum stumbling – Meta, Alphabet, Amazon**

As the global economy emerged from lockdowns during 2021, business spend on advertising soared. Now up against a tough comparable, and with consumers re-assessing spending habits in the midst of inflation, growth in advertising spend has slowed. Alphabet's advertising revenues slowed to +22% year-on-year, down from +32% a year earlier, Amazon's to +25%, down from +75%, and Meta's advertising growth slowed to +6% - it's lowest growth in a decade. Macro-economic uncertainty, including inflation and the war in Ukraine, have encouraged some advertising budgets to be cut.

*"The war did have an outsized impact on YouTube ads relative to the rest of Google… That was both from suspending the vast majority of our commercial activities in Russia as well as . . . the related reduction in spend primarily by brand advertisers in Europe." – Ruth Porat, Alphabet CFO*

While Meta had managed to increase the number of ad impressions made across its suite of apps during the quarter by +15%, prices per ad fell 8%. Recent privacy changes by Apple in particular caused an estimated $10bn of revenues to be forgone during the second half of 2021, with Meta COO Sheryl Sandeberg stating at the time that

*"the accuracy of our ads targeting decreased, which increased the cost of driving outcomes for our advertisers. And . . . measuring those outcomes became more difficult."* This quarter, Sandberg said global regulatory risks are *"a real challenge for our industry"* as *"the rules that are governing the internet are being rethought and rewritten"*. While advertisers are up against both a difficult comparable, macro-uncertainty and regulatory challenges, these firms continue to be the best placed in the industry to overcome these challenges in the long run.

**Stock Specific News:**

**Mastercard (+1.8% USD), Visa (-3.9% USD)**

**Relatively speaking, April was a strong month for Mastercard and Visa, who featured in the fund's top three performing stocks, outperforming the MSCI World by +10.1% USD and by 4.4% USD respectively**. As already mentioned in the previous section, there was strength in consumer spending across their payments networks, driving adjusted net revenues up +27% each (year-on-year). This was despite both firms exiting their Russian businesses during the period (Russia about 4% of sales for both firms). In terms of revenue, both firms have revenue-run-rates trending approximately where they would have expected to have been at this point pre-pandemic.

For both firms, high margin cross-border transactions have been the largest challenge over the course of the pandemic, yet a sharp and sustained recovery appears to be underway across regions, with volumes now ahead of pre-pandemic levels. Cross-border *travel* volumes continue to offer upside however, at just 82% of 2019 levels, with management expecting US inbound and Europe to be core drivers with a material runway for a continued recovery. Asia represents the biggest opportunity, at just ~40% of 2019 levels. The firm expect cross border travel activity to reach 100% of 2019 levels by the end of September.

Management teams sounded upbeat on the macro picture, despite having to suspend Russian operations following the Ukraine conflict, providing a 4% headwind in terms of both. Near-term uncertainty remains, with the potential rise of inflation and further lockdowns, but the acceleration of cash to electronic payments and further upside yet from the re-opening of economies offers a bright, long term growth outlook.

**Roper Technologies (-0.4% USD)**

**Roper performed strongly over the month, outperforming the MSCI World by +7.91%.** Following a set of results which saw top-line growth of +3.6% and organic revenue growth of +11%, management upgraded guidance for both organic top-line and EPS. Roper have been repositioning their portfolio towards higher quality, predictable

revenue streams over recent years, with 75-80% of revenues from software segments (two-thirds of revs) classified as recurring, up from 65-75% last year. Growth in recurring revenues is occurring at double digits, driven by strong customer retention, migration to SaaS (Software as a service) delivery models and cross-selling activity. This 'stickiness' is helping to protect the downside, as demonstrated in the most recent quarter. Alongside the software business, the 'Products' business is also performing very well, with very high levels of demand and a record backlog. The business will increase prices in order to offset commodity costs throughout the year, helping to support margins, having seen limited levels of customer elasticity previously. The firm has been suffering with some minor supply chain troubles, predominantly in their smallest 'Process Technologies' segment. This is not expected to impact growth substantially, with growth expected to remain in the high teens. The firm has tough comparator periods for Q1 and Q2, but with strong organic growth of +11% to start the year, the full year outlook now looks moderately easier to achieve – a potential source of upside. While this period has highlighted Roper's resilience in difficult market conditions, we are equally optimistic about the growth outlook of the firm. Following the sale of Transcore (transportation service provider), the firm have "reloaded" their balance sheet with about $5bn of M&A firepower (with $3.2bn in cash, $2bn in borrowing capacity). This sale "enhances the quality and durability of the portfolio", but also makes way for capacity in M&A, with the firm possessing a large pipeline of high-quality candidates.

**Nvidia (-34% USD)**

**With the rotation away from growth and into value, it was a difficult month for most of the funds Semiconductor companies, leaving Nvidia as the funds bottom performer during April.** The industry was the MSCI's worst-performing, underperforming the MSCI World by 9.5% over the month. However, it was pleasing to see that out of the six semiconductor stocks with the Fund, just Nvidia underperformed the MSCI World Semiconductor industry (-17.8% USD). The industry as a whole underwent significant multiple expansion over the pandemic, taking 1 year forward Price Earnings from about 20x to more than 26x pre-value-rotation (MSCI World went from about 18x to about 20x). This multiple expansion can be explained by the global supply-demand imbalance of chips, with a surge in demand from consumer electronics and the auto industry, paired with pandemic related supply chain disruptions and capacity constraints, combining to cause chip-prices to dramatically rise and global semiconductor revenues to rise by 26% over 2021 (S&P Global). Nvidia performed particularly well over that period, delivering +122% USD in 2020, and +126% in 2021. However, in a month where real-yields rose sharply higher, being one of the Funds most expensive stocks at 31x Price to Earnings, (1 year forward) this was inevitably going to prove to be a significant headwind.

Despite this sell-off, we believe the investment thesis remains strong and intact – not just for Nvida, but all of our semiconductor holdings. While supply chain constraints will persist into the mid-term, the outlook for the industry remains strong. For chip equipment manufacturers LAM Research, Applied Materials and KLA, large-scale capacity expansion across the US, Europe and Asia offers significant visibility to future revenues. TSMC provided a prime example during February, announcing a year on year increase to expected capex spend of $44bn during 2022 in order to expand capacity, up from $30bn last year and over triple the spend from 2019. Intel also announced a $28bn package (up from $25bn) for two new fabs in the US. The "Innovation Race" between the US and China is expected to bring large fiscal packages (about $54bn in the US) for domestic chip production, helping to alleviate

the reliance each country has on the other. A multi $100-billion capex per year spend across the industry are clear tailwinds for capital equipment vendors such as Lam Research, Applied Materials and KLA. Designers such as Nvidia will be key in servicing this strong demand outlook into the long-term, as themes such as autonomous driving, automation and digital transformation continue to generate growth in the industry.

**Paypal (-24.0% USD)**

**Paypal also featured in the fund's bottom performers, falling (-24.0% USD) over the month.** Following the outbreak of the global pandemic in 2020, share prices surged as an accelerated shift from cash to digital payments took place, supported by a significant upswing in ecommerce. Year-on-year revenue growth topped out at +30.6% in Q1 2021. However, the firm has struggled ever since a weak 2Q22 earnings release in July last year. The firm's failed $45bn bid for Pinterest was met with investor pushback, and a second miss to consensus in a row during their 3Q22 catalysed further downgrades. In the previous quarter (4Q21), it was management guidance that concerned the market the most, with the firm having to abandon 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'.

Over April, the stock slid a further -24% USD, battling a mix of both negative stock momentum from the previous quarter, and being caught up in the general technology sell-off/value rotation. Other than a solid set of results during the month, which saw the stock bounce +11% on the day, there was very little news-flow elsewhere, perhaps suggesting an over-reaction from the market. Revenue, which was expected to come in at +6% for 1Q22, grew by +7.5% year-on-year. The quarter, which was up against a difficult comparable, is largely expected by the markets to be the 'bottom' of revenue growth, before accelerating in subsequent quarters to reach +11% for the full year. Analyst estimates expect revenue growth of +16% in FY23, in line with pre-pandemic levels. While management cut guidance for the full-year, citing a few increasing headwinds (Russia, supply chain and inflation), these problems are expected to be transitory, and this was likely a necessary reset of expectations required in order to stem the negative stock momentum. The firms recent shift in strategy towards higher quality users (rather than simply driving new user numbers) makes the metric "transactions per active account" a key indicator, which for this quarter was up +11% year-on-year. 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 catalysts down the road. With a strong outlook and solid fundamentals, paired with a 1-yr forward P/E ratio at all time lows (20.4x), a 44% discount to its all time average (since 2015), we continue to view Paypal as an attractive opportunity.

We thank you for your continued support.

**Portfolio Managers**

Matthew Page, CFA

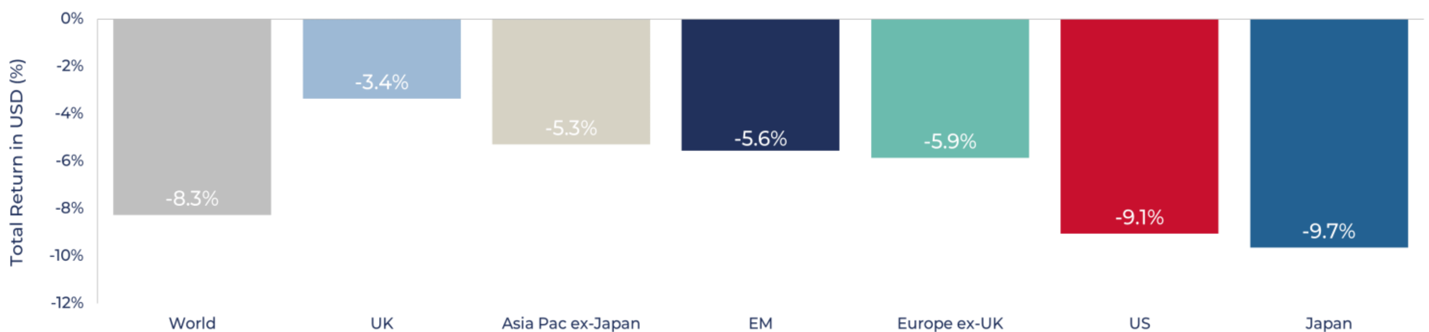
Dr Ian Mortimer, CFA

**Summary performance**

For the month of April, the Guinness Atkinson Global Innovators Fund provided a total return of -10.77% (USD) against the MSCI World Index net total return of -8.31% (USD). Hence the fund underperformed the benchmark by -2.46% (USD).

In USD terms, a difficult macro-environment translated to declines across all major markets during April. Many of the negative themes experienced by equities in the first quarter continued into April, driving the S&P 500 to its worst month since March 2020 (and its worst April since World War II), and the tech-heavy Nasdaq to its worst month since May 2008. As supply chain pressures and rising commodity prices continued to drive inflationary pressures, expectations of tighter money drove US 10 year Treasury yields to within touching distance of 3% for the first time since 4Q18. A healthy corporate earnings season did little to ease negative momentum, with management teams often warning of short-term impacts to 2022 earnings from supply-chain/inflationary pressures.

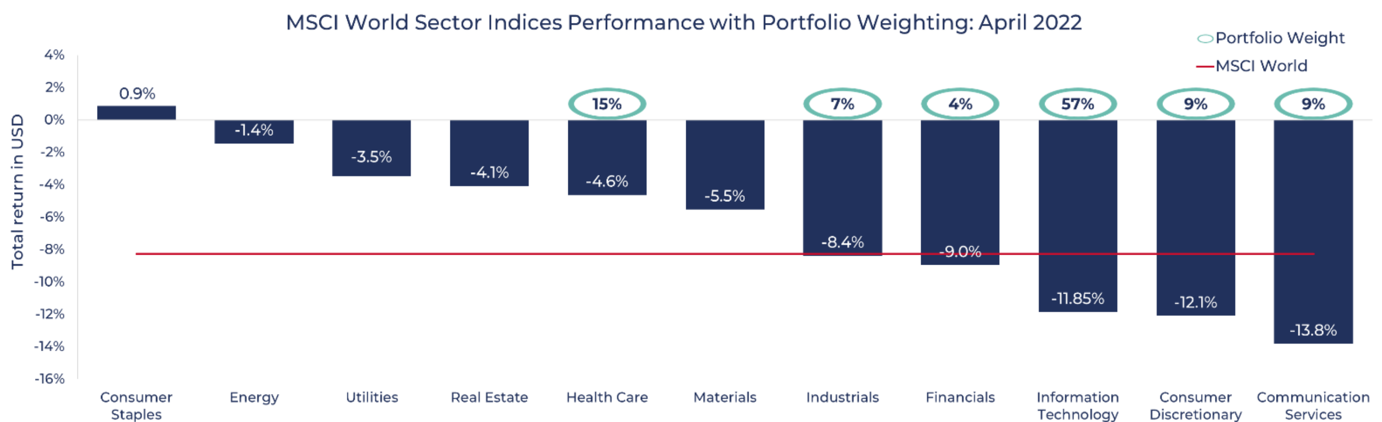
The UK's tilt towards defensive and value orientated sectors, in particular high consumer staples and energy exposure, acted as a relative safe haven for equity investors during April – particularly in the context of soaring commodity prices and inflation. The region actually delivered positive performance in GBP (local currency) terms (+0.95%), although a strengthened dollar lead the index -3.4% lower in USD. In China, the zero-covid policy led to a full lockdown in Shanghai for the duration of the month, with sentiment dented further as Beijing also implemented stricter measures. The impact was often noted in corporate earnings across developed markets, as upstream manufacturers struggled to get products into Chinese factories, and downstream retailers dealt with disruption to inventories. In Europe, the EU's reliance on Russian fossil fuels continued to generate volatility in the energy markets, as state-owned Gazprom cut off Poland and Bulgaria's gas pipeline following a refusal to settle contracts in Russian roubles. With little sign of an impending conclusion to the Ukraine war, consumer sentiment across the region tumbled. The more expensive, growth-tilted US market significantly underperformed its western counterparts following increased expectations of monetary tightening from the Federal Reserve, with the market now pricing in three consecutive 50bps rate hikes – the last 50bps rate hike occurred in May 2000.




*Source: Bloomberg, Guinness Atkinson Asset Management*

*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.*

From a factor perspective, value remained very much in favor during April, continuing the broad trend seen throughout much of 2022. Monetary tightening at an accelerated rate creates a sizeable headwind for growth, with the increase in the equity risk premium leading to depressed valuations for 'high duration' firms – firms where a large proportion of today's value is based on expected future cash flows that are forecast to grow long into the future. As a result, we saw growth tilted sectors, such as technology, underperform the broader market and particularly companies at more extreme valuations. Many of the "stay-at-home" stocks that were bid up to very high valuations during the pandemic have retraced back to levels seen pre-pandemic. The defensive properties of Consumer Staples offered the desired sanctuary for many investors during the sell-off, buoyed by a stellar earnings season which saw firms such as P&G, Pepsico and Danone increase prices to offset inflation, but also grow volumes simultaneously.




*Source: Bloomberg, Guinness Atkinson Asset Management*

Over the month of April, fund performance can be attributed to the following:

- From an allocation perspective, the significant outperformance of value and defensive sectors negatively impacted Fund performance during April. Consumer Staples, Energy, Utilities, Real Estate and Materials were five of the six sectors that outperformed the MSCI World, and, as seen in the chart above, are all sectors in which the Fund has a zero-weighting.
- On the other side, the Fund's overweight position to the Tech sector (57% of the portfolio vs 22% benchmark) contributed to a significant portion of fund underperformance during the month. This was partially offset, however, by good stock selection in names such as Mastercard, Visa and Roper Technologies, which outperformed the MSCI World Technology Index by 13.7%, 8.0% and 12.5% respectively.
- At the industry level, the Fund's overweight allocation to semiconductor stocks acted as a significant headwind, with the MSCI World Semiconductor Index the worst performing industry (-17.8% USD) in April. However, five of the Fund's six semiconductor stocks outperformed the MSCI World Semiconductor Index. Nvidia was the Fund's bottom performing stock for April, at -32% USD.

While the fund experienced a number of headwinds during the month, and volatility in the market is likely to continue into the short-term, we believe that the fund is well-positioned. We believe the secular growth trends and innovation themes that our companies are exposed to are unlikely to be slowed down significantly by higher levels of inflation and we believe the fundamental outlook for our companies remain robust.

| as of 04.30.2022 (in USD) | 1 year | 3 years annualized | 5 years annualized | 10 years annualized |
|---|---|---|---|---|
| Global Innovators, Investor Class[1] | -13.10% | 12.36% | 12.23% | 13.77% |
| Global Innovators, Institutional Class[2] | -12.87% | 12.64% | 12.51% | 13.95% |
| MSCI World Index NR | -3.52% | 10.41% | 10.15% | 10.05% |

| as of 03.31.2022 (in USD) | 1 year | 3 years annualized | 5 years annualized | 10 years annualized |
|---|---|---|---|---|
| Global Innovators, Investor Class1 | 2.84% | 19.23% | 15.44% | 14.74% |
| Global Innovators, Institutional Class2 | 3.10% | 19.53% | 15.73% | 14.92% |
| MSCI World Index NR | 10.12% | 14.93% | 12.42% | 10.87% |

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 4/30/2022:

| | | |
|---|---|---|
| 1. | Roper Technologies Inc | 4.01% |
| 2. | Mastercard Inc | 4.00% |
| 3. | Intercontinental Exchange Inc | 3.84% |
| 4. | Microsoft Corp | 3.79% |
| 5. | Meta Platforms Inc. - Class A | 3.74% |
| 6. | Thermo Fisher Scientific Inc | 3.71% |
| 7. | Amphenol Corp | 3.66% |
| 8. | Visa Inc | 3.65% |
| 9. | KLA-Tencor Corp | 3.56% |
| 10. | PayPal Holdings Inc | 3.47% |

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.

MSCI World Information Technology 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 within the Technology sector, exhibiting overall growth style characteristics across developed markets.

MSCI World Information Technology Value 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 within the Technology sector, exhibiting overall value style characteristics across developed markets.

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.

Duration is a 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 uses 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.

Correlation represents the relationship between two variables. A positive relationship suggests two items move together in the same direction, and a negative correlation suggests and inverse relationship – when one variable rises, the other one falls. Correlation moves between -1 and 1, with -1 suggesting a perfectly (strong) inverse relationship, 0 representing no relationship, and +1 suggesting a perfectly (strong) positive relationship.

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.

One cannot invest directly in an index.

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