White Paper
Systematic Equity—Active

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Systematic Equity — Active Quarterly Q3 2023

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STATE STREET GLOBAL ADVISORS

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Systematic Equity — Active: Quarterly Q3 2023

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This quarter marks the beginning of the Systematic Equity Active quarterly, a publication that touches on a number of key themes in financial markets including macroeconomics and volatility, developments in developed and emerging markets, as well as more in-depth research topics.

We begin with macroeconomic views on the current state of the economy — with a particular focus on economic growth, labor productivity, long-term interest rates, and on the components of national accounts as they relate to debt. In this first article, our main message is that the free markets have concluded, similar to our interpretations, that technological progress is the lynchpin for getting out of the debt cycle because the alternatives are not often pleasant.

Next, we discuss tightening cycles and their impact on theoretical factor portfolios using a blend of value and quality. We show that in contrast to past tightening cycles, the recent bout of tightening in 2022 has not led to consistent outcomes, though we are still awaiting the results of the later periods. More importantly, value has had lackluster performance in the current environment, driven by a handful of names that have hijacked the index with an unprecedented set of returns in 2023. This development is intrinsically tied to a macroeconomic discussion on economic output and technological progress.

Additionally, we review some extremities in major developed markets, by observing that a historically large gap has opened up between the performance of Cyclicals (vs. Defensives) and manufacturing activity (Purchasing Managers' Index, or PMI). Specifically, the outperformance of cyclical stocks (vs Defensives) year-to-date (YTD) reached extremes last seen just prior to the Global Financial Crisis (GFC) in 2007. Therefore, we see some complacency in markets despite the overwhelming evidence as we examine comparable periods in history: where 11 out of 14 previous Federal Reserve Board (Fed) hiking cycles have ended in recessions.[1]

The picture is similar and can be viewed through a different lens — i.e the real interest rate. One can see clearly that there were two discontinuous periods in markets. While post-GFC equities market generated 10% per annum, the pre-GFC (1989–2008) was a more modest 5.7% per annum return. The real interest rate was markedly different also in both periods; for instance, in pre-GFC, real interest rates were in a more robust range between 1.5% to 4%. However, in the post-GFC period, they hovered near zero and at times, literally zero. During these years there was a significant buildup of excesses and one can see the level of underperformance of defensive themes (as indicated by the minimum volatility index) versus the broad market. For the first time since the GFC, we are now seeing normalization of the real interest rate and this provides some discipline in financial markets, thereby better days ahead for defensive strategies.

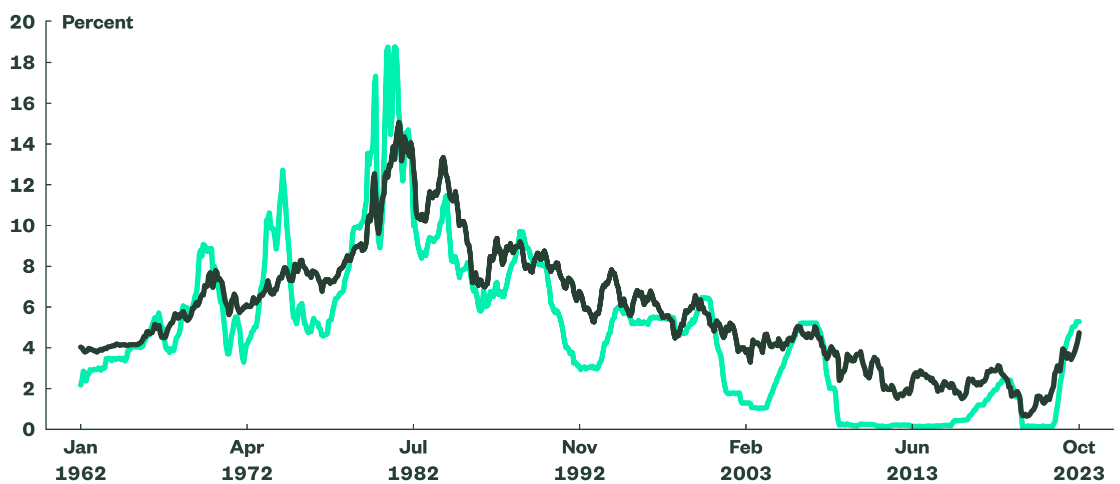
The penultimate article on Intangibles showcases some recent research as it relates to green patents and their impact on future returns. And finally, we conclude with a paper on the philosophy of our emerging markets small cap approach.

Macroeconomic Remarks

Kishore Karunakaran
Global Head of Systematic Equity Strategy — Active

A question that we fielded for much of this year is why the rapid increases in interest rates have not meaningfully resulted in a slowdown or crimping of aggregate demand. This situation is particularly notable given that we are now more than 12 months into the interest rate tightening cycle and now at levels not seen since February 2001.

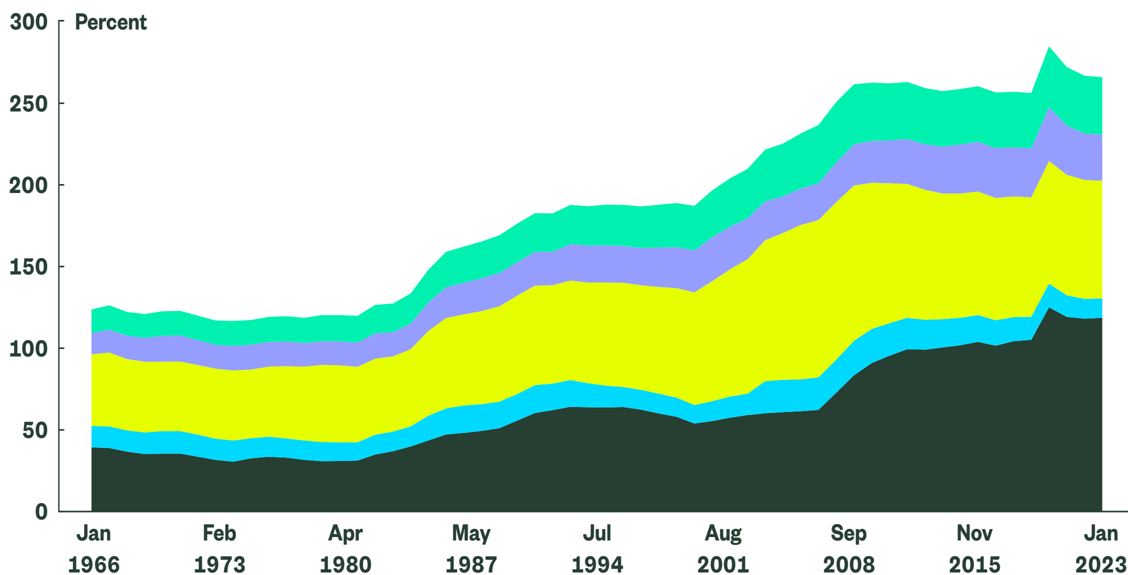
Figure 1
10-Year Treasury Yield and Federal Funds Rate Over Time



Source: Federal Reserve Bank of St. Louis database. Data as of September 30, 2023. **Past performance is not a reliable indicator of future performance.**

The US economy has evolved considerably since the 1980s, with services now around 60% of the total economy (up from 48%) and goods around 30% (down from 39%). The private sector is still sensitive to interest rates, but less so because services-oriented industries are less sensitive than manufacturing industries. The other difference is that the period of excessively low interest rates — as indicated by the flat red line in Figure 1 — led to a significant increase in debt accumulation with much of it maturing in 2025. In addition, the structures component of GDP on the national accounts have fallen from 12% to 8% of GDP partially driven by the outsourcing trends we observed over the last 40 years and perhaps an underinvestment in infrastructure.

Figure 2
Components of Total Nominal Debt to GDP



Source: Federal Reserve Bank of St. Louis database. Data as of September 30, 2023.

The other notable pattern over the last half century, and in particular since the 1980s, is that total nominal public debt to GDP has steadily increased from 31.2% in 1980 to 120% in 2023. This has been partly monetized via money printing — with money supply as a percent of GDP reaching a historical high of 93%[2] [For more on this topic, refer to our recent article _Debt Addiction and Outlook for Equities_]. The central bankers that coordinated quantitative easing episodes were focused on stimulating the economy and generating a healthy rate of growth. Unfortunately, this only propelled asset prices and did little to help the general populace.

Economic growth is largely driven by three key levers, and this can be represented by a simple production function for the economy taking the following functional form:

$Y = A. f(k, L)$ where Y is aggregate output of GDP, A is technological progress and K is capital and L is labor.

With the public debt-to-GDP ratio at around 120%, it is extremely important for the economy to achieve a steady state growth rate that essentially emulates the growth enjoyed in earlier decades. But how does one achieve this with the labor force largely unchanged, with no major immigration policies on the way, and the capital stock also not meaningfully different to what we have today? Technological progress is the only lever we can rely on as we did with the printing press, steam engine, electrification, telecommunications, internal combustion engine, and computers, to name a few key technological innovations.

Policy makers are in a difficult position because in order to keep inflation in check, they must hold rates relatively firm until there is a slowdown so as to hamper aggregate demand but not long enough that the compounding of interest payments also leads to a steady decline in the equilibrium rate of long-term economic growth. The stakes are high for long-term improvement in productivity growth, and the race for an artificial general intelligence is well under way. For example, Open AI has gained scale that has never been seen before: reaching one million users in five days and getting to 100 million users in just over six months. It is not surprising that several tech heavyweights are currently all working on their own AI capabilities.

The other race is to achieve nuclear fusion. Nuclear fusion is the process where light atomic nuclei combine to form heavier nuclei, releasing a tremendous amount of energy.

In addition, there are several healthcare related breakthroughs than should have a significant impact on bringing down the costs of healthcare in the US and globally.

The levels of the S&P 500 Index has the illusory effect of showing gains, yet as we will see in the next article, much of the gains are largely driven by bellwether names. The remaining 493 stocks are barely in positive territory.

For markets to settle down, it is abundantly clear that a few items need to take place, namely debt has to be reduced such that the interest payments on the debt do not suffocate productivity (including labor and capital). The economy also needs to find a steady state rate of interest where the cost of capital is not too onerous on businesses, but does not lead to rampant risk taking and inflation appearing again. Ultimately, productivity growth needs to exceed growth in interest payments in a benign inflationary environment otherwise we are on a knife's edge. The various technology breakthroughs will help elongate the process so it is not violent.

Unexpected Factor Payoffs or Is This Time Different?

Tim Herlihy, CFA,
Investment Strategist

Monetary tightening generally triggers increased risk aversion and outperformance of short duration assets (value equities), as well as underperformance of long duration assets (growth equities). Having just experienced the largest increase in rates since the early 1980s, investors would expect that this relationship would hold true, right? Ironically, in this current environment long duration growth equities have outperformed shorter duration value equities; and surprisingly, risk aversion has seen only a tepid increase, at best. Investors should rightly ask: what has changed or is there a theme playing out that is delaying the inevitable? In this section, we examine past relationships of these traditional factors during tightening cycles and to determine what is driving the unexpected payoff this time around.

> **“No matter how different the latest financial frenzy or crisis always appears, there are usually remarkable similarities with past experience.”**
>
> — Reinhart and Rogoff — This Time is Different[3]

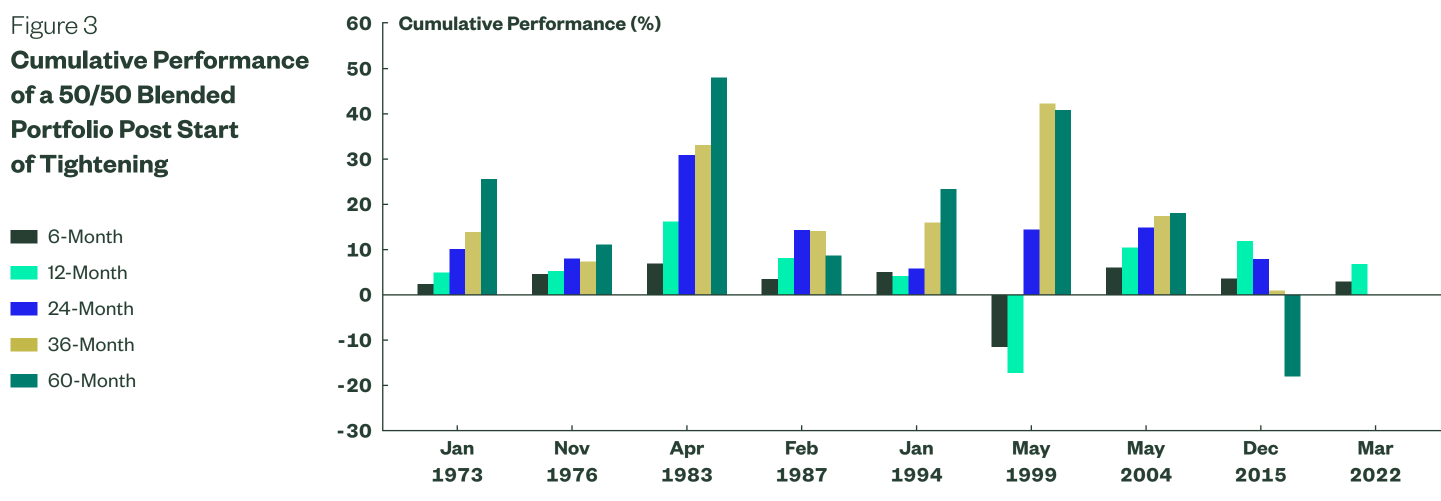
Predicting the medium- or even short-term direction of markets and economies is incredibly difficult. Exogenous events only exacerbate the challenge. When most of the world’s economies temporarily shuttered during the global pandemic, for example, few investment professionals had conviction on how the massive fiscal and monetary stimulus would affect markets in the coming years. Some quiet voices anticipated inflation, but after a decade or so of the lowest rates, both real and nominal, in modern history, and sluggish growth, many experts believed that inflation would be avoided. The Fed was certainly late to this realization. Only time will tell if inflation persists, but many things about this cycle seems new and different. For example, we have witnessed abnormally large government debt levels, positive real rates, limited equity risk premiums, strikingly low housing affordability, early stresses in the commercial banking sector, zombie companies reappearing, the AI revolution, and more. So is this time truly different or just more of the same? Many of these structural issues are likely to play out over a longer period; therefore we will have a special focus on topics driving present conditions and provide our thoughts on how to best position for what’s next.

Firstly, we take a high-level look at the history of monetary cycles during the tightening phase, specifically from an equity perspective. Typically during a tightening cycle one can count on two developments: longer duration assets become less attractive and investors become more risk averse. We recall the adage, “Don’t fight the Fed.” When it comes to equities, duration can be tricky, but generally company names with high multiples or valuations fall in this category because a greater weight of their valuation is attributable to future cash flows. From a risk perspective it is a bit more straight forward — as the Fed increases the discount rate, the cost of capital for firms increases and economic growth slows, lending and expenditures cool, effectively softening wage growth by weaking the labor market. Investors’ concerns anchor on the question

of will the Fed hold course too long and break something, and if it does break something, what will break? Generally, with increased risk aversion, investors avoid easily recognizable risks — i.e. firms with poor cash flows, leveraged capital structure, volatile earnings, etc. The tendency is to favor investments that are resilient, have high profitability, strong balance sheet quality, and consistent cash flows.

To provide some empirical support for this statement — investors prefer shorter duration (value) and higher quality names during tightening cycles — we can analyze the performance of value and quality in periods subsequent to the start of historical tightening cycles. We have used a 50/50 blended portfolio of High Minus Low (HML) and Robust Minus Weak (RMW) from Ken French's data library rebalanced monthly (to achieve a 50–50 mix) and with the period starting after an initial rate hike for each reference time window (see Figure 3). For context, the HML portfolio is a proxy for the performance of attractively priced or value names, and the RMW is a measure of profitability and will be our proxy for performance of high quality companies.

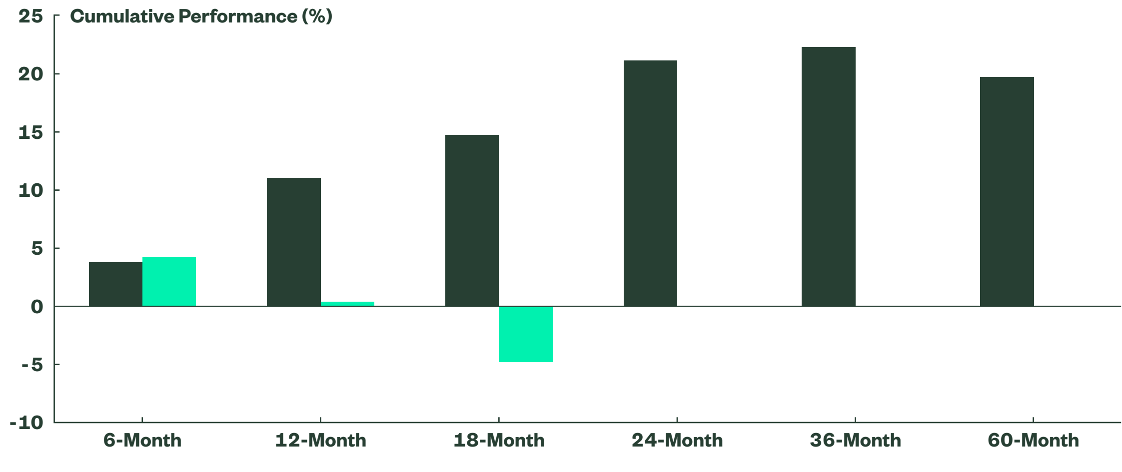
Figure 3
Cumulative Performance of a 50/50 Blended Portfolio Post Start of Tightening



Source: SSGA, Kenneth R. French. As of July 30, 2023. A 50/50 portfolio is calculated by reweighting mothly returns of HML and RMW protfolio returns. HML (High Minus Low) is the average return on the two value portfolios minus the average return on the two growth portfolios. RMW (Robust Minus Weak) is the average return on the two robust operating profitability portfolios minus the average return on the two weak operating profitability portfolios. **Past performance is not a reliable indicator of future performance.**

As anticipated, the 50/50 hypothetical self-financing portfolio exhibits strong performance in the subsequent 6, 12, 24, 36, and 60-months following initial tightening in the majority of cases. The outlier, the 60-month figure for December 2015, is driven by 2020 and will be discussed. At first glance, performance during this cycle appears in line with previous episodes; however if we probe deeper we find RMW or quality is the driving force of the 12-month performance for March 2022. The value component, HML, was flat over this period. Expanding this analysis further, we have isolated HML and averaged the performance windows of all previous cycles, including an 18-month figure to capture data through September 2023. As expected, performance is typically positive and increasing subsequent central bank tightening (blue average bars); however on this occasion, we find lackluster performance for value, especially over the past 12 months.

Figure 4
Average Cumulative Performance of HML Portfolio Post Start of Tightening



Source: State Street Global Advisors, Kenneth R. French. Average signifies simple average of the cumulative performance of HML portfolio over period stating across the eight periods specified in above figure. Axioma Value factor appended for August and September as CRSP data currently unavailable post July. Data as of September 30, 2023. **Past performance is not a reliable indicator of future performance.**

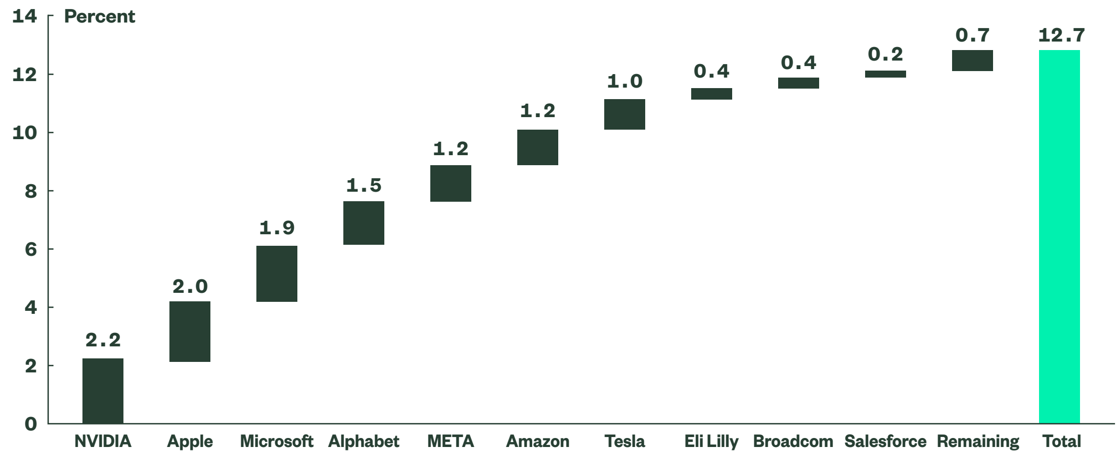
There has certainly been a belief by some throughout the year that the Fed was going to cause something to break and have to reverse course. Silicon Valley Bank (SVB) and other regional banks provided some credence to this narrative, however, it was quickly shrugged off by the market as a liability mismatch and weak business decisions. Meanwhile, the Fed has been fairly blunt and determined in its course. Acceptance of higher rates for longer had been tentative through the year; yet recent stronger-than-anticipated economic and payroll data have eroded this belief. The Fed has what it needs to stay the course in the near term, reducing the likelihood of an abrupt tack in 2023 or in early 2024. The possibility of a rapid return to a low cost of capital environment resulting in a massive boost to high growth could have been the force driving the underperformance in value over the past 12 months but it seems an unlikely scenario. It is safe to say the notion of a near-term sharp pivot by the Fed has been squashed — for now.

What is Driving Equity Returns?

We saw two themes play out this year. One is centered on artificial intelligence (AI) — its real world application and the fact that it is here to stay. Although these technologies have been tested and made available for enterprises for some time, one can attribute the recent hype to the fact this is the first time this technology has become available to the end consumer. As with previous technology revolutions, we expect the impact on productivity in this space to be a net positive, much like the internet or personal computer. The timeline with how quickly innovation will scale is unclear. What is clear is the unknown growth potential behind this technology and the flurry of excitement around it significantly ushered in a few titans back into the limelight.

This return to the limelight largely drove the other main theme of the year, namely market concentration. To put the performance of these AI firms into perspective, 62% of the market return year-to-date (YTD) is being driven by seven names: Nvidia, Apple, Microsoft, Google, Meta, Amazon, and Tesla. Interestingly, the top 10 contributors make up 71% or the market return YTD, which is higher of a percentage than any full positive calendar year in the past 25 years. In 2020 we saw a very similar story play out, with 54% of the market performance coming from the top ten names — in fact the top six names from 2020 are the same top six YTD, just in a different order.

Figure 5
Concentrated Names Drive S&P 500 Performance



Source: State Street Global Advisors, S&P, FactSet. Data as of September 30, 2023. **Past performance is not a reliable indicator of future performance.**

What Is Next?

Certainly the buzz on AI has propelled the giant tech sector to fall into favor again and has delivered the most concentrated market in the past two plus decades. Yet, it has also put a pause on the historical relationship of long duration value performance during monetary tightening. We cannot predict when this buzz will fade, but certainly a few bright spots of opportunity that may have been overlooked will be poised to benefit as the market broadens out.

This dynamic underscores the importance of assessing investment decisions using multiple factors. Analysis requires a multi-prong approach — not solely relying on valuation but also focusing on the quality of a firm, and a closely monitoring the market's sentiment. This multi-prong approach is part of our philosophy and as a result, our strategies have delivered performance YTD for our investors in the face of this unusual dynamic. Ultimately, we believe our positioning will capitalize on a broadening out of the market and a return to the historic relationship of value.

The End of Goldilocks?

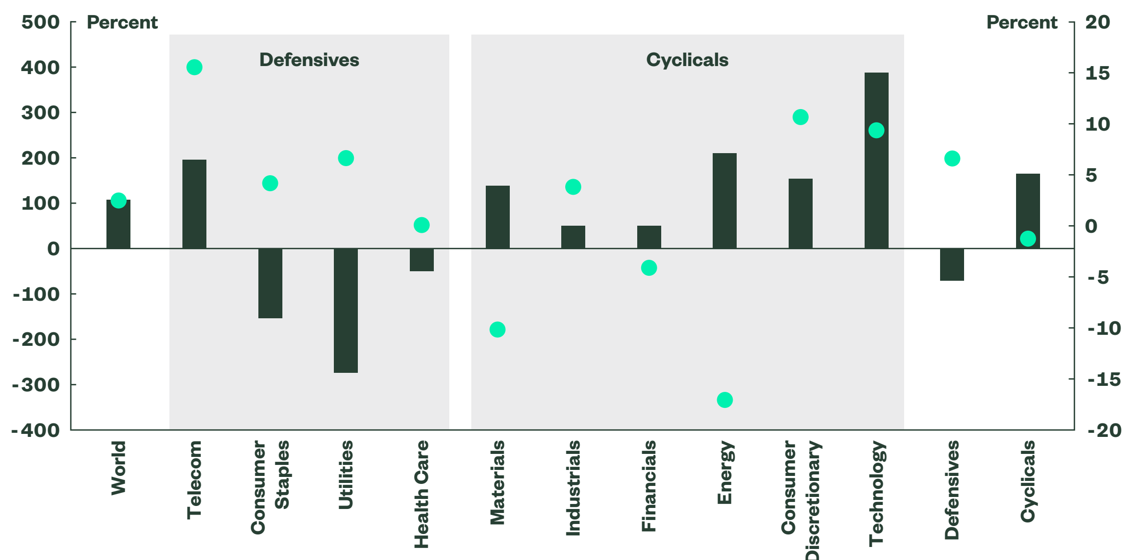
Michael Lin
Investment Strategist

- **Robust investor sentiment — led by developments in AI and expectations of a soft landing, has fueled the rally in global equities YTD**
- **Cyclical and growth sectors drove equity returns through to August, but have since stalled**
- **Significant headwinds remain going into year end. We think recent pressure on cyclicals will continue and advocate a tilt to defensive equities as recession risks remain elevated**

As we enter the final quarter of 2023, the pandemic-induced inflation spike appears to be normalizing — driven by a moderation in core goods inflation and wage growth pressures. But fighting inflation has come at the cost of stagnant real economic growth in developed markets, and growth-policy tradeoffs remains challenging going into year end. Equity markets, on the other hand, have enjoyed a euphoric rally YTD — driven by valuation expansion in cyclical and growth names. The widely discussed AI theme is now largely priced in after the 'magnificent-7' tech leaders contributed 84% of the S&P 500's returns YTD.[2] As a result, the US market is becoming increasingly concentrated, with the top 10 names now making up 25% of the S&P 500.[3]

Year-to-date, valuation expansion was also notable in other cyclical segments outside of tech, despite forward earnings growth being broadly flat. As for the defensive end of the market, growth in forward earnings expectations was notably higher. However, those sectors have actually become cheaper, with price-to-earnings contracting for the Staples, Utilities, and Health Care sectors (Figure 6).

Figure 6
YTD Changes in EPS vs. PE by Sector



Source: State Street Global Advisors, FactSet as of September 30, 2023.

Since August, developed market equities have begun to price in a less bullish outlook and a potential policy mistake. The divergence between softer activity momentum and the elevated equity prices that opened up previously is starting to close. We think the recent risk-off environment has further to run, given relatively high valuations (mainly in the US), investor complacency that is beginning to turn bearish (via sentiment indicators), and significant economic headwinds going into Q4. Fundamentally, earnings downgrades could worsen given:

- Excess savings from Covid have been depleted in most developed countries; US savings rates have fallen to ~3.5%
- Interest rates will remain restrictive for longer; Fed pivot is unlikely and this should discourage spending growth
- Money supply in the US and Europe continues to contract at a rate of -3.7% YoY and -2.4% YoY, respectively[4]
- Real income growth appear to have peaked, and surplus labor has already been absorbed
- Purchasing Managers Index (PMI) and other leading indicators suggest late-cycle macro backdrop — weakness in manufacturing remains and service sector slowed further in September
- Lower oil prices, which have been a significant driver of consumer and industrial confidence in 2022, have now retraced more than half of their prior decline — adding to inflationary pressures and tighter financial conditions

In major developed markets, a historically large gap has opened up between the performance of cyclicals (vs defensives) and manufacturing activity (PMIs). The outperformance of cyclical stocks (vs defensives) Year-to-date reached extremes last seen just prior to the Global Financial Crisis in 2007. We see this divergence as another sign of equity market complacency, and in the near term some further consolidation is warranted. With a US PMI (ISM) reading of 46.4 at the end of September, it is pointing to a further ~10–20% downside for Cyclicals relative to Defensives. European cyclicals have also diverged from PMI numbers and suggest similar levels of drawdown. We illustrate the US data in Figure 7.

Figure 7
Performance of Cyclicals Beginning to Stall

Source: FactSet, as of September 20, 2023. **Past performance is not a reliable indicator of future performance.** The information contained above is for illustrative purposes only.

How Are We Positioned?

The current macroeconomic situation remains sufficiently uncertain, leading us to believe a recession is still more likely than not. This is particularly true when we look to comparable periods in history — where 11 out of 14 previous Fed hiking cycles have ended in recessions.

While our global defensive portfolios are structurally hedged against a recessionary scenario, our benchmark-relative global equity portfolios are also exhibiting some caution around lower-quality/riskier cyclical names, and maintain positive exposure to Value, Quality and Sentiment themes. This means that on balance, our portfolios are diversified across geographies and sectors with a particular focus on higher-quality, attractively valued stocks that are benefiting from positive growth sentiment. For example, our global enhanced portfolios currently have a preference for US Health Care equipment, Biotechnology, Household Durables and select US large-cap Tech. Within tech, we prefer names that are not only expected to drive sustained earnings growth but are also not too expensive to own.

Equity Low-Volatility Strategies

Chee Ooi
Head of Defensive
Equity Strategies

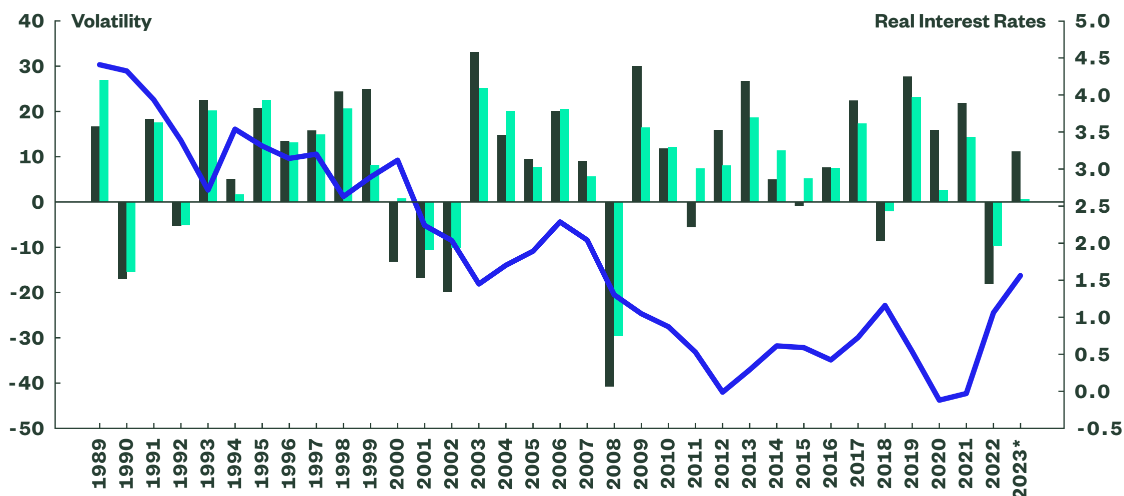
Aled Reeves
Portfolio Manager

Year-to-date, low-volatility strategies have seen sizable underperformance versus the market. Historical, low-volatility strategies tend to underperform when the market rebounds strongly after a sharp selloff. Typically during a market rebound, the strongest returns tend to concentrate on the stocks that had suffered the most during the downturn, i.e. high-volatility/high-beta stocks that are usually underweighted in a typical defensive equity portfolio. The recent underperformance of defensive strategies was consistent with the historical norm. The current cycle of underperformance was further exacerbated by the concentration of the rally on a handful of mega-cap companies. Compared to the equal-weighted version of the MSCI World Index, the strategy's underperformance is cut considerably compared to that of the underperformance versus the cap-weighted index. We would argue that a more complete assessment of the strategy should consider the full market-cycle performance. Taking account of the market downturn in 2022 and the subsequent recovery so far this year, the strategy actually maintained a 1.8% lead over the market index, while delivering a total risk outcome that was 27% lower than the market's total risk.

The recent market cycle aside, the post-Global Financial Crisis period presented a challenging environment for low-risk strategies. Since January 2009, the MSCI World Minimum Volatility Index underperformed the MSCI World Index by 1.4% per annum. From a risk-adjusted return standpoint, however, the merits of the low-volatility strategies remain compelling. Broadly, defensive styles and the MSCI World Minimum Volatility Index achieved better Sharpe ratios than the market, despite the challenging market setup. The underperformance over an extended period was disappointing but not unexpected. The unique pandemic market environment in 2020 certainly did its share of damage to the strategies' active returns. In our view, the prolonged low interest rate environment had been an even more persistent headwind on performance since the Global Financial Crisis.

The figure 8 shows the yearly performance of the MSCI World Minimum Volatility Index strategy vs the MSCI World Index and the corresponding 10-Year Real Interest Rates. Since the end of the Global Financial Crisis in 2009, the Fed's ultra-loose monetary policy kept real interest rates artificially low — an environment that saw a rather ebullient equities market with strong returns punctuated by very few and shallow market drawdowns. The investing environment presented scant attractive alternatives outside of equities. Within equities, a prolonged period of close-to-zero real interest rates promoted growth at any price narratives that favored higher risk, and increasingly expensive, growth cohorts. These secular bull market conditions posed significant headwinds to low-volatility strategies that ordinarily depend on both up and down swings to add value over full market cycle. In contrast, pre-Global Financial Crisis, real interest rates were in a more robust range between 1.5% to 4%. While post-GFC equities market generated 10% per annum, the pre-GFC (1989–2008) was a more modest 5.7% per annum return, and the MSCI World MV Index generated a 1.5% per annum outperformance versus the market over the period. For the GDE strategy, the ultra-low real interest rates regime presented headwinds for both low-beta allocation as well as stock selection performance.

Figure 8
Low Volatility vs. Market: Impact of Low Real Interest Rates Regime



Source: FactSet, MSCI. Data as of September 30, 2023.

As shown in the chart above, the end of September marked the first time since the Global Financial Crisis when real interest rates reached above 1.5%. While it is too early to tell if we are indeed entering a higher-for-longer interest rates regime, our view is that many of the favorable conditions that had kept real interest rates low are receding. First, inflation is likely to remain elevated with tight labor markets and the reorientation of global supply chains and the unwinding of many aspects of free trade globally. Lower global trade and other geopolitical issues are likely to reduce foreign reserves demand for Treasuries, while the US deficits and thus Treasury issuance will continue to grow. We strongly believe that the higher real interest rates, if sustained, could drive a significant shift in market pricing for risks not priced appropriately today. At the very least, it would inject a higher dose of volatility in the market and create a more balanced risk and return outcome similar to the pre-Global Financial Crisis conditions that would be more favorable to low-risk strategies. For sure, higher real interest rates do pose specific challenges for a certain segment of the defensive theme. For example, high dividend yield equities in Utilities and Real Estate could face increasing competition from other fixed income opportunities as rates stay high. A normalization of the low beta payoff, in our view, should more than mitigate the pocket of weakness from high yield equities.

Furthermore, as highlighted earlier in the section “Unexpected Factor Payoffs or Is This Time Different?” a shift in real interest rates regime could provide a more conducive environment for stock selection — the other key component of our active defensive process. Our multi-factor stock selection model with Value and Quality at the core should work well in a higher real interest rate environment.

After more than a decade of central banks’ largess that blessed the market with 10% per annum equity returns, it is no surprise that the market had settled into strongly held doctrine and biases. The recent shift in the real interest rates regime should be a signal for investors to reassess prior assumptions and mitigate the potential for higher equity risk and shifting investment opportunities ahead.

Intangibles

Chen He, CFA, Ph.D
Research Analyst

Toby Warburton
Head of Active
Portfolio Management

The Systematic Equity-Active team has for years been actively researching firms' intangible assets and how these intangible assets, which are missing from financial statements, can affect valuations and potential future stock returns. Among the streams of research to better understand the value and quality of firms' intangibles have been projects on research and development (R&D) assets, organizational capital, and patents, where, for example, we developed hypotheses giving us new insights into firms' innovative capabilities and how they relates to future returns.

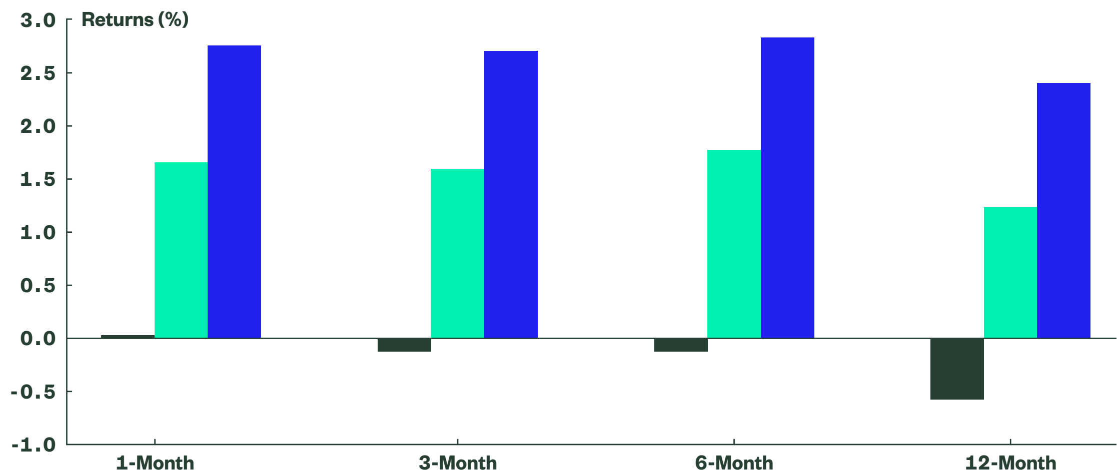
As a second phase to this patent work, we realized that we could further leverage a patent dataset to drill down into companies with innovative technologies in areas that are needed to help with a transition to a lower-carbon economy. These "Green Patents" give us a more nuanced insight into the innovation and adaptation that companies are undertaking in green technologies, with our hypothesis being that those firms that are more active, and better placed in this area, are likely to continue to benefit going forward.

We leverage the International Patent Classification Green inventory, compiled by the World Intellectual Property Organization, to generate insights from the broader patent effort that are specific to green technology investments. We have built a proprietary mechanism to identify the patents that are most relevant for "environmental" technologies, while focusing on industries where these investments are more prevalent.

Our empirical analysis agreed with our hypothesis. For example, we split the MSCI World Universe into three groups based on companies' scores on our green patents signal. Companies that scored the best were grouped into "Tercile 3", and the worst on this metric were in "Tercile 1." The following chart shows tercile returns of our green patent signal in the MSCI World Standard Universe, with the highest-scoring companies considerably outperforming the weakest over the test period.

Figure 9
Green Patent Signal Returns

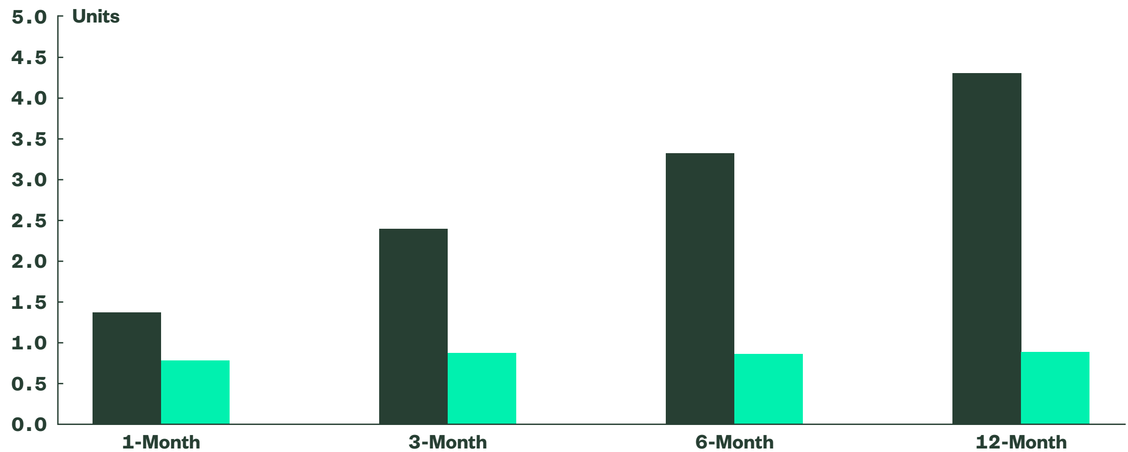
Tercile 1
Tercile 2
Tercile 3



Source: State Street Global Advisors, MSCI. Data as of August 31, 2023.

Our tests also demonstrated attractive information coefficients, and risk-adjusted information coefficients over 1-month to 12-month horizons.

Figure 10
Average ICs and ICIRs of Green Patent Signal in MSCI World Standard Universe



* IC refers to information coefficient and ICIR refers to information coefficient information ratio.
Source: State Street Global Advisors, MSCI. Data as of August 31, 2023.

As part of our standard research protocol we investigate the correlation of a potential new signal with existing signals and factors within our model. A low correlation indicates we are bringing new, orthogonal information into the model, which is a desirable outcome. Although conceptually being aligned with aspects of our existing Sustainability sub-family, the Green Patents showed low correlations with it, as well as with all of our other factor themes. The following table shows the average cross-sectional correlations of the patent signal with our Sustainability sub-family (and other factor themes).

Figure 11
Green Patent Signal Correlations with Core Model Components

Sustainability	Value Broad	Value Sector	Quality Broad	Quality Sector	Sentiment Direct	Sentiment Indirect	Catalyst	Risk
0.18	0.05	0.31	0.17	0.03	0.04	0.08	0.05	0.05

Source: State Street Global Advisors, MSCI. Data as of August 31, 2023. Universe is MSCI World Index.

As a result of our research, we believe that incorporating an analysis of Green Patents within our return model will be value-additive and help us capture nuances in companies' innovative capability, in particular in technologies that will become more prevalent if the world adapts to a lower-carbon future.

Emerging Markets: Don't Get Skewed

Christopher Laine
Senior Portfolio Manager

Jay Siegrist
Portfolio Manager

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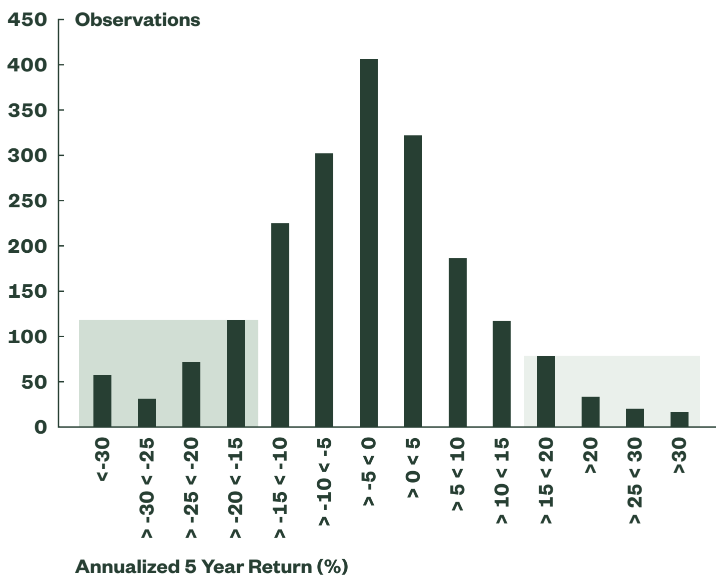
Investment Strategist

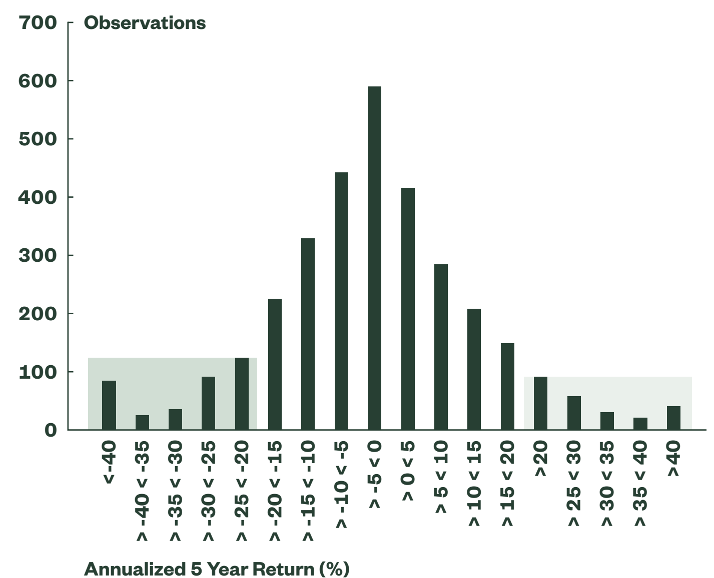
Our review of emerging market equities begins with a single word: **skew**. Skew refers to the measure of asymmetry in the distribution of market returns. In a 'normal distribution,' skew is zero. What a nice and neat world it would be if market returns exhibited normal distributions! While we recognize that 'normal' doesn't often exist in the "real" world, it most certainly does not happen in emerging market equities. As investors, we are thankful that this is the case for this dynamic drives active alpha generation. A return distribution that shows 'fat tails' is a blessing for it increases the opportunity set for investment managers to add value. However, negative skew (more common jargon), or where outliers on the downside outweigh the upside, is not a blessing. While a large right tail of the distribution suggests that managers who have real skill can generate meaningful excess returns in emerging markets, one must be careful. (Figure 12).

Figure 12
Downside vs. Upside Risk in Emerging Markets

MSCI Emerging Markets



MSCI Emerging Markets Small Cap



Source: FactSet as of September 30, 2023. Returns greater than one year are annualized. **Past performance is not a reliable indicator of future performance.**

The graph above shows the annualized 5-year returns of all the stocks in the MSCI Emerging Market index. The index exhibits significant "down-side skew" — that is, the winners are outweighed by the losers by approximately 2.5–1 (in the second chart above one can see this **skew** is even worse in emerging market small caps). Again, for skilled investment managers, there are plenty of stocks that can generate strong alpha (more so that one could find in developed markets). However, like in most avenues of life, there are no freebies. The cost here is that if one takes concentrated positions and does not bring skill (or more charitably, gets unlucky), the impact of falling into the left side of the distribution can be quite painful (when one has high single-stocks portfolio positions). If we recall our algebra, if one has a 50% draw down in a specific position, one will need to a 100% gain to get back to where you were. **Math is just so unfair like that.**

And the portfolio implication will be felt — at best — by total portfolio volatility and at even worse, by index underperformance — and quite likely both.

How Best to Manage Portfolios with Negative Skew

Harry Markowitz was reported to have said that "Diversification is the only free lunch in finance." This is true in most cases, yet when dealing with downside risks, it really is the best way to preserve your capital. It is almost inevitable that any active manager can make a mistake, whether he or she follows a fundamental or quantitative approach. However, quantitative managers generally understand this is their portfolio construction and often will hold several hundred positions. They know that their signals are less powerful at the single security level, but robust at the portfolio level. Therefore, quantitative managers prefer to limit the amount of idiosyncratic risks. We prefer to keep our risk diversified to the broad underlying themes — whether it be value, quality, or the like — that generate **portfolio alpha. We focus more on the broad forest, less on the single tree.**

How This Works in a Hypothetical Portfolio

Figure 13
Bad Luck or Bad Skill?

Number of stocks in a portfolio	40.0	150.0	300.0	600.0
Average portfolio weight assumption (%)	2.5	0.7	0.3	0.2
Number of stocks with a 50% drawdown required to have a 3%+ underperformance	3.0	10.0	19.0	37.0

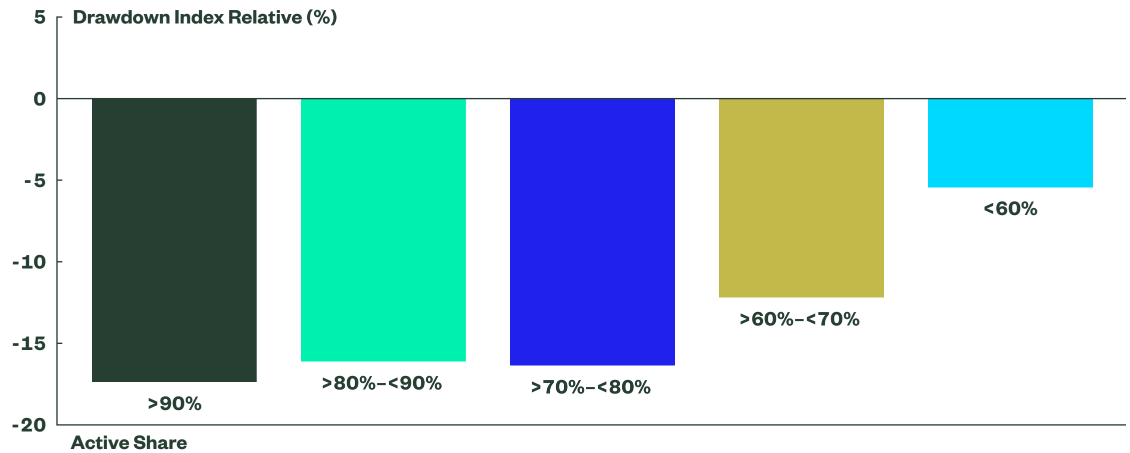
Source: State Street Global Advisors. This is a stylized example that assumes the value of the other stocks in the portfolio and the corresponding index remain unchanged.

If a manager is running a portfolio at a tracking error of 3%, for example, we can run a scenario to see how many "bad stocks" it will take to reach their tracking error limit. The concentrated manager, holding 40 names, can reach this limit with three poorly performing stocks – assuming all else is constant. One can imagine the concentrated manager hitting this limit with some degree of frequency when there is a whiff of sector volatility or simply bad news. For the diversified manager, that number rises to 37 — making it less a case of pure idiosyncratic risk versus style/factor positioning. The question of bad luck versus bad skill does begin to blend, but if a manager has a 3% excess return target, wouldn't one simply prefer to take that with greater diversification? This should provide a better information ratio. In this, **the math is really fair.**

How this works in "Real Life"

The stylized example above is useful, to a point. The next question one should ask is how this affects managers more broadly. We can think about this as such: firstly, what is the relationship between active share and portfolio (relative) drawdowns. Intuitively, one might think there is a linear relationship here, but as Figure 14 shows, this is not the case. The last five years have been 'peculiar' with pandemic, war, and rising geopolitical tensions. However, it is likely we will continue to see heightened risk in the years ahead. In short, this active share/ drawdown relationship could remain unpredictable.

Figure 14
Max Drawdown Over 5-Year Period



Source: State Street Global Advisors, Evestments. Data as of June 30, 2023. If a fund has an active share of 60%, then 40% of the holdings of the fund is identical to the holdings of the benchmark, and 60% of the holdings is different (constituting either over-weights or under-weights relative to the holdings of the benchmark). Excludes index/passive funds.

The Bottom Line

The wise words from a long-ago mentor ring as true as ever in today's markets: "Concentrated portfolios work — until they don't" And for emerging markets, it is not enough simply to be diversified. Identifying names to avoid is as critically important as selecting names to hold in a portfolio. In the long run, one often wins by not losing.

Emerging Markets: Recent Developments Higher for longer has gotten priced in Emerging Market stocks. We have been witnessing a textbook script on stock performance in a rising rate environment: EM risk assets have underperformed, EM currencies have sold off, earnings expectations have come down, and interest expense has been rising, value/quality outperforming. However, this should be expected and the fact that we have (mostly) crossed the river without significant stress tells us that we may be getting closer to an entry point. Other asset classes (i.e. US equities) have defied gravity for too long and relative positioning (developed market vs. emerging market) has gotten fairly extreme.

As we begin to look out to 2024, we see a relative value play in EM returning with higher rates. We think shorter duration assets are the best play, ideally ones without a strong cyclical exposure. Controversially, we are starting to add positions in China — but selectively. Our strategy is to avoid crowded trades, be careful on the quality dynamics, and do not try to catch any falling knives. The information technology (IT) and energy sectors in China look attractive at current valuations in the large cap space.

Endnotes

1 State Street Global Advisors, Federal Reserve, Rosenberg Research as of September 30, 2023.

2 Source: Macrobond. Data as of January 31, 2022.

3 Reinhart, C. and Rogoff, K. "This Time is Different." 2011.

4 Based on year-to-date contribution towards total returns of the S&P 500, stock names include: NVIDIA, Apple, Microsoft, Alphabet, Meta, Amazon and Tesla as of Sept. 30, 2023.

5 As of Sept. 30, 2023.

6 Macrobond, State Street Global Advisors Economics, Federal Reserve Board, ECB updated as of September 29, 2023.

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* Pensions & Investments Research Center, as of December 31, 2022.
† This figure is presented as of September 30, 2023 and includes approximately $58.13 billion USD of assets with respect to SPDR products for which State Street Global Advisors Funds Distributors, LLC (SSGA FD) acts solely as the marketing agent. SSGA FD and State Street Global Advisors are affiliated. Please note all AUM is unaudited.

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